HURN AIRPORT, CHRISTCHURCH

AGRICULTURAL LAND CLASSIFICATION SURVEY

SUMMARY

1. This report presents the findings of a semi-detailed Agricultural Land Classification (ALC) survey of 229.6 ha of land at Hurn Airport, Christchurch. Field survey was based on 88 auger borings and 7 soil profile pits, and was completed in October 1997. During the survey 8 samples were analysed for particle size distribution (PSD).

2. The survey was conducted by the Resource Planning Team of FRCA Western Region on behalf of MAFF in its statutory role in the preparation of Christchurch Borough Local Plan.

3. Information on climate, geology and soils, and from previous ALC surveys was considered and is presented in the relevant section. The published regional ALC map (MAFF 1977) shows the site at a reconnaissance scale as mainly Grade 2 through the centre of the site with Grade 4 in the flood plain of the river and Grade 3 north of Parley Lane at both ends of the site. However, this report is based on comprehensive field survey and uses the revised Guidelines and Criteria for grading the quality of agricultural land (MAFF, 1988) and therefore supersedes any previous ALC information. Grade descriptions are summarised in Appendix I.

4. Other sites with recent detailed ALC survey include Hurn Court Farm (ADAS 1993), which is adjacent to this site, Longham (ADAS 1993) and four sites within the area of Christchurch Local Plan (ADAS 1992). All these sites are on similar parent materials to the current survey and show mainly Grade 2 and Subgrade 3a with varying degrees of limitation due to droughtiness. Another previous survey adjacent to the current site was on land on the other side of the river at Throop and Holdenhurst (ADAS 1987), but this was carried out to the previous ALC Guidelines which have now been superceded.

5. At the time of survey land cover was mixed, including winter cereals, short term ley grass for dairy cows and permanent grass for other stock and horses. Other land which was not surveyed included the sports ground at East Parley, a golf course east of Parley Court, an area under excavation for the construction of a car park east of the airport buildings and a children's playground at Merritown Farm. There were also the usual roads, residential land, farm buildings and several small areas of woodland.

6. The distribution of ALC grades is shown on the accompanying 1:12 500 scale ALC map. The detail of information shown at this scale is appropriate to the intensity of field survey but could be misleading if enlarged or applied to small areas. Areas are summarised in the Table 1.

Table 1: Distribution of ALC grades: Hurn Airport

Grade	Area (ha)	% Surveyed Area (152.5 ha)
3a	20.5	13
3b	124.4	82
4	7.6	5
Other land	77.1	
Total site area	229.6	

7. This shows that only 13% of the area surveyed was found to be best and most versatile. This was Subgrade 3a, limited by droughtiness and within this survey area was considered to be mainly borderline to Subgrade 3b. The main part of the survey area is shown as Subgrade 3b with limitations of droughtiness in the north of the site and wetness on the lower flood plain in the south of the site. A small area of Grade 4 is more severely limited by wetness.

Paul Bamett
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November 1997

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CLIMATE

8. Estimates of climatic variables for this site were derived from the published agricultural climate dataset "Climatological Data for Agricultural Land Classification" (Meteorological Office, 1989) using standard interpolation procedures. Data for key points around the site are given in Table 2 below.

9. Since the ALC grade of land is determined by the most limiting factor present, overall climate is considered first because it can have an overriding influence by restricting land to a lower grade despite more favourable site and soil conditions. Parameters used for assessing overall climate are accumulated temperature, a measure of relative warmth and average annual rainfall, a measure of overall wetness. The results shown in Table 2 indicate that there is no overall climatic limitation.

10. Climatic variables also affect ALC grade through interactions with soil conditions. The most important interactive variables are Field Capacity Days (FCD) which are used in assessing soil wetness and potential Moisture Deficits calculated for wheat and potatoes, which are compared with the moisture available in each profile in assessing soil droughtiness limitations. These are described in later sections

Table 2: Climatic Interpolations: Hum Airport

Grid Reference		SZ115968	SZ098977
Altitude (m)		8	11
Accumulated Temperature (day º C)		1562	1558
Average Annual Rainfall (mm)		809	817
Overall Climatic Grade		1	1
Field Capacity Days		167	169
Moisture deficit (mm):	Wheat	114	113
	Potatoes	109	108

RELIEF

11. Altitude ranges from 7 metres at the south east corner to 11 metres in the north west and the land is mainly level or gently sloping which causes no limitation to ALC.

12. Flood risk on the flood plain in the lowest part of the site was assessed by reference to local knowledge. This indicates that parts of the land may be liable to flood for up to half a day on a return period of five to ten years. This implies that any flood risk causes limitation no more serious than to Subgrade 3b.

GEOLOGY AND SOILS

13. The underlying geology of the site is shown on the published geology map (BGS, 1991) as various river terrace deposits with alluvium in the flood plain of the river. This was largely borne out by the current survey, apart from small banks of gravelly river terrace deposits which were found south of Merritown Farm and within the area shown as alluvium which had characteristic wet clay soils.

14. Soils were mapped by the Soil Survey of England and Wales at a reconnaissance scale of 1:250 000 (SSEW, 1983) as mainly Hucklesbrook Association through the centre of the site with Fladbury 1 Association in the flood plain of the river and Sollom 2 Association north of Parley Lane and continuing

through the area occupied by the airport. Hucklesbrook Association is described as well drained coarse loamy and sandy soils usually on flat land. Fladbury 1 Association is described as stoneless clayey soils, in places calcareous, variably affected by ground water on flat land with a risk of flooding. Sollom 2 Association is described as deep often stoneless and very acid humose sandy soils with bleached subsurface horizon affected by groundwater.

15. Soils matching these descriptions were found during the current survey. Although the boundary between Hucklesbrook and Fladbury Associations was generally distinct and marked by a visible and sudden fall in land level, the boundary between Sollom 2 and Hucklesbrook was found to be more gradual, with stone content increasing from north to south as the topsoil texture became perceptibly heavier towards sandy loam.

AGRICULTURAL LAND CLASSIFICATION

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Subgrade 3a

17. The large area shown as Subgrade 3a has mainly medium sandy loam topsoil textures and was found to be freely draining, assessed as Wetness Class 1 (See Appendix II). Stone contents increase from 5 or 10% in the topsoil to 50 or 60% in the gravel which is found in the lower subsoil. This is illustrated by Pit 4 where available water calculation through the profile indicates droughtiness to be borderline between Subgrade 3a and Subgrade 3b. The droughtiness of profiles within this mapping unit is likely to hover around this level, with occasional Subgrade 3b profiles included within the area shown as Subgrade 3a.

18. The smaller areas of Subgrade 3a south of Merritown Farm and to the east of Parley Court were found to be rather mixed, generally with sandy loam or even sandy clay loam topsoil textures and generally heavier textures down the profile, with gravel evident only in the lower subsoil.

Subgrade 3b

19. The area shown as Subgrade 3b includes the heavy wet soils on the flood plain of the River Stour. Profiles in this area have a shallow topsoil, 10 - 15 cm, of heavy clay loam or clay, frequently with common rusty root channels or fully gleyed. A sticky clay slowly permeable layer was generally found to start immediately below the topsoil and to continue to at least 50 cm although there was evidence of gravel starting at around this depth in some borings. These were assessed as Wetness Class IV and a profile pit was not considered necessary.

20. At the north ends of the site stoneless or slightly stony sandy soils were found. These had mainly loamy medium sand topsoil over loamy medium sand rapidly becoming medium sand at varying depth in the subsoil. Such profiles were freely draining and assessed as Wetness Class I although some gleying due to ground water was indicated by coarse ochreous mottles in the lower subsoil of some profiles. These profiles were particularly evident immediately to the south of the sports ground and are illustrated by Pit 5.

21. Further south, and running through the centre of the site, but particularly at the east and west ends, stone contents were found to increase from 5 or 10% in the topsoil to 50 or 60% in the gravel subsoil which was found at depths varying from 40 cm - 110 cm or even just out of reach of the auger. These profiles were found to have mainly loamy medium sand topsoil, although this was tending to medium sandy loam towards the area of Subgrade 3b in the centre of the site. Such profiles are illustrated by Pits 3 and 7 where stone contents were assessed for each horizon and the available water for these profiles was calculated to range through the limits for Subgrade 3b.

22. Around Parley Court Farm, auger borings found medium sandy loam topsoil textures which tended to continue into at least the upper subsoil, but assessment of stone content at Pits 1, 2 and 6 found these all to be droughtiness Subgrade 3b and are therefore reliably included within this mapping unit.

Grade 4

23. The small area of Grade 4 is similar to the wettest of the Subgrade 3b in the flood plain, but was frequently found to have organic clay loam topsoils over very slowly permeable subsoils, Wetness Class IV. This implies a severe wetness limitation and this area has generally not been improved from rough wet grazing with high water table levels throughout the year.

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November 1997

APPENDIX 1

DESCRIPTION OF GRADES AND SUBGRADES

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 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 (e.g. cereals and forage crops) the yields 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.

Source: MAFF (1988) Agricultural Land Classification of England and Wales Revised Guidelines and Criteria for Grading the Quality of Agricultural Land, MAFF Publications, Alnwick.

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