NORTH SEA CAMP FRONTAGE, THE WASH, LINCOLNSHIRE.

Agricultural Land Classification
ALC Map and Report

August 1998

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RPT Job Number: 53/98
MAFF Reference: EL24/02797
FRCA Job Number: ME1GNKQ

AGRICULTURAL LAND CLASSIFICATION REPORT

NORTH SEA CAMP FRONTAGE, THE WASH, LINCOLNSHIRE.

INTRODUCTION

1. This report presents the findings of an Agricultural Land Classification (ALC) survey of 262.6 ha of land at North Sea Camp, near Boston, Lincolnshire. The northern part of the site (corresponding with the area of 'loss' asociated with the partial managed re-alignment option) was surveyed at a detailed level and the remainder of the site at a semi-detailed level. The survey was carried out during August 1998.

2. The survey was carried out by the Farming and Rural Conservation Agency (FRCA) for the Ministry of Agriculture, Fisheries and Food (MAFF), in connection with proposals (currently being discussed by the Environment Agency, MAFF and the Prisons Authority) to affect a managed retreat from part or all of the site area by re-alignment of the sea wall. This survey supersedes previous ALC information for this land.

3. The work was conducted by members of the Resource Planning Team in the Eastern Region of FRCA. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.

4. At the time of survey the agricultural land on site comprised a wide variety of uses, including post harvest stubble of wheat, barley and peas, cultivated land, grassland, potatoes, cabbages, cauliflowers, onions and sugar beet. The areas mapped as 'Other land' include the prison farm and sports field in the south-west, concrete roads, a sewage storage facility and various other small hard standings and buildings.

SUMMARY

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10 000; it is accurate at this scale but any enlargement would be misleading.

6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Tables 1, 2 and 3 which relate to the 3 options of managed retreat currently being considered by the Environment Agency, MAFF and the Prisons Authority.

Table 1: Area of grades and other land within the area of 'loss' associated with the straight line option of managed sea wall re-alignment.

Grade/Other land	Area (hectares)	% site area
2	21.6	8
Total site area	262.7	100

Table 2: Area of grades and other land within the area of 'loss' associated with the partial managed sea wall re-alignment option.

Grade/Other land	Area (hectares)	% site area
2	66.3	25
Other land	2.2	1
Total site area	262.7	100

Table 3: Area of grades and other land within the area of 'loss' associated with the full managed sea wall re-alignment option.

Grade/Other land	Area (hectares)	% surveyed area	% site area
1	52.5	21	20
2	193.3	79	74
Other land	16.8	N/A	6
Total surveyed area	245.8	100	94
Total site area	262.6	-	100

7. The fieldwork was conducted at an average density of approximately 1 auger boring per hectare in the northern part and approximately one auger boring per 2.5 hectares over the remainder of the site. A total of 153 auger borings and 7 soil pits was described.

8. The majority of the site, mainly corresponding to the northern two thirds, has been mapped as grade 2 (very good quality agricultural land). It is restricted to this grade by minor wetness and workability constraints and/or a minor droughtiness imperfection. Land of grade 1 (excellent quality agricultural land) dominates in the southern third of the site and also occurs in a small area just south of the middle of the site.

FACTORS INFLUENCING ALC GRADE

Climate

9. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

10. The key climatic variables used for grading this site are given in Table 4 (see page 3) and were obtained from the published 5 km grid datasets using the standard interpolation procedures (Met. Office, 1989).

11. The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.

12. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR), as a measure of overall wetness, and accumulated temperature (AT0, January to June), as a measure of the relative warmth of a locality.

Table 4: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	TF 398 414
Altitude	m, AOD	2
Accumulated Temperature	day°C (Jan-June)	1432
Average Annual Rainfall	mm	583
Field Capacity Days	days	110
Moisture Deficit, Wheat	mm	119
Moisture Deficit, Potatoes	mm	114
Overall climatic grade	N/A	Grade 1

13. The site is immediately adjacent to the coast and may suffer from exposure to winds. However sea banks on both the landward and seaward sides offer some shelter. It is therefore not felt that exposure limits the agricultural versatility of the land.

14. The combination of rainfall and temperature at this site mean it is relatively warm and dry during the critical crop growing season. The site is therefore of climatic grade 1.

Site

15. The site is virtually level, its altitude ranging from 0 to 2 m AOD. It occupies a band of land bounded to the west by the old sea bank and to the east by a newer sea bank, constructed by North Sea Camp Prison occupants between the 1940's and 1970's. To the north it abuts agricultural land and to the south the bank of 'The Haven'. Prior to the construction of the eastern sea bank the site comprised salt marsh and mud flats.

16. Since enclosure the creeks of the salt marsh have been infilled to give the largely flat topography. A series of dykes and ditches have been dug which run in a north-west to south-east direction. Groundwater is controlled by pumping.

Geology and soils

17. No detailed geology map is available for this area. The published 1:253 440 scale drift edition geology map, sheet 12 (British Geological Survey, 1971) maps the site as post glacial and recent alluvium, peat and fen silt.

18. The soils on site have been mapped on two occasions. At a scale of 1:50 000, sheet 131, Soils of the Boston and Spalding District (Soil Survey and Land Research Centre, 1989) gives the most recent and detailed information. The whole site is mapped as the Agney Series, and the soil is briefly described as: medium silty calcareous alluvial soils with brownish topsoils over greyish brown mottled subsoils developed in marine alluvium.

19. At a reconnaissance scale of 1:250 000 the Soil Survey of England and Wales (Sheet 4, Soils of Eastern England, 1983) maps the site as the Tanvats Association, which is briefly described as: deep stoneless fine and coarse loamy and clayey soils with groundwater controlled by ditches and pumps. Flat land.

20. The current survey identified the presence of two main soil types.

21. The first soil type occurs mainly in the northern two thirds of the site. Topsoils comprise heavy silty clay loams (occasionally medium silty clay loams or silty clays) and extend to 30/40 cm. Upper subsoils typically extend to 50 cm depth and comprise medium silty clay loam or fine sandy silt loam textures. The lower subsoils are typically of loamy fine sand texture (occasionally fine sandy silt loam) and extend to depth. All horizons are stoneless and typically very calcareous. Profiles are free draining due to their high porosity, but exhibit strong gleying in the subsoils.

22. The second soil type occurs mostly in the southern third of the site but also sporadically in the central third. Topsoils typically comprise medium silty clay loams or fine sandy silt loams and extend to 30/35 cm depth. Upper subsoils of fine sandy silt loam or fine sandy loam typically extend to 50/75 cm, or occasionally to depth. Lower subsoils typically comprise loamy fine sands or fine sands. Profiles are stoneless, free draining and typically very calcareous.

AGRICULTURAL LAND CLASSIFICATION

23. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1, page 1.

24. The location of the auger borings and pits is shown on the attached sample location map.

Grade 1

25. The grade 1 land on site corresponds to the soils described in paragraph 22. The topsoil textures combined with the free draining subsoils mean that the land suffers from no wetness and workability limitation. These stoneless, silty soils also have a large capacity to retain water for crop growth and therefore suffer no droughtiness constraint. Thus this land has no or only very minor limitations to its agricultural use and is therefore of grade 1 quality.

Grade 2

26. The majority of the site has been graded 2, and corresponds to the soils described in paragraph 21. The land is mainly restricted to this grade by slight wetness and workability constraints, or by minor droughtiness imperfections or equally by both.

27. The wetness limitation arises where topsoils are of heavy silty clay loam or silty clay. Profiles have been assessed as Wetness Class I, and due to the calcareous nature of the soils, these heavy textures only impose a minor limitation to the workability of the land.

28. Profiles are slightly droughty either where poorly structured fine silty upper subsoils extend to moderate depth, or where fine sandy profiles are encountered at shallow depth. In either of these cases, the soils ability to retain water for crop growth is slightly limited, thus precluding the land from grade 1.

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SOURCES OF REFERENCE

British Geological Survey (1971). *Sheet No. 12.* BGS: London.

Ministry of Agriculture, Fisheries and Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.* MAFF: London.

Met. Office (1989) *Climatological Data for Agricultural Land Classification.*
Met. Office: Bracknell.

Soil Survey and Land Research Centre, (1989) *sheet 131, Soils of the Boston and Spalding District.* SSLRC: Silsoe.

Soil Survey of England and Wales (1983) *Sheet 4, Eastern England.*
SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in Eastern England*
SSEW: Harpenden

APPENDIX I

DESCRIPTIONS OF THE 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 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 or horticultural crops can usually be grown but on some land of this 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 land.

Grade 3: Good to Moderate Quality Land

Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When 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 the 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 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 severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.