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AGRICULTURAL LAND CLASSIFICATION
PROPOSED B2015 HALE STREET BY-PASS
- SUPPLEMENTARY REPORT
COVERING NORTHERN ROUTE MODIFICATION

November 1992

RESOURCE PLANNING TEAM
ADAS STATUTORY GROUP
READING

MAFF Ref EL 20/00105

AGRICULTURAL LAND CLASSIFICATION - SUPPLEMENTARY REPORT

B 2015 HALE STREET BY-PASS, KENT (NORTHERN ROUTE MODIFICATION)

1 SUMMARY

1 1 A detailed Agricultural Land Classification (ALC) survey of approximately 8 ha of land along the line of the proposed northern route modification of B2015 Hale Street By-Pass was undertaken during November 1992 The work was undertaken on behalf of MAFF who were commissioned by the Kent County Council, Highways and Transportation Department This ALC survey forms a supplement to earlier work carried out by ADAS for Kent County Council in August 1992 for the proposed Hale Street by-pass

1 2 The results of this survey are presented in the form of a coloured plan illustrating the distribution of the ALC grades along the line of the proposed northern route modification of the by-pass Within the survey 'corridor' the extent and percentage of the ALC grades is as follows

	Ha	% Agricultural Area
Grade 2	2 35	33
3a	1 22	17
3b	3 20	45
4	0 35	5
Non-Agricultural) Urban)	0 80	—
Total	7 92	

1 3 The main factors influencing the ALC grades found within the survey area are the result of interactions between soil and climatic factors namely soil wetness and/or droughtiness

2 BACKGROUND

2 1 The Agricultural Land Classification provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long term limitations on agricultural use The limitations can operate in one or more of four principal ways they may affect the range of crops which can be grown the level of yield, the consistency of yield and the cost of obtaining it The classification system gives considerable weight to flexibility of cropping whether actual or potential but the ability of some land to produce consistently high yields of a somewhat narrower range of crops is also taken into account

2 2 The principal physical factors influencing agricultural production are climate site and soil These factors together with interactions between them form the basis for classifying land into one of five grades Grade 1 land being of excellent quality and Grade 5 land of very poor quality Grade 3 which constitutes about half of the agricultural land in England and Wales is now divided into two subgrades designated 3a and 3b General descriptions of the grades and subgrades are given in Appendix 1

2 3 Further details of the Agricultural Land Classification System are contained in the MAFF publication 'Agricultural Land Classification of England and Wales - Revised guidelines and criteria for grading the quality of agricultural land (MAFF 1988)

2 4 In connection with the detailed ALC survey work on the northern route modification at Hale Street a corridor of land, approximately 50 m wide, was surveyed with the line of the proposed road route lying at the centre of the corridor 16 soil auger boring examinations were made using a 1 2 m Dutch soil auger together with a hand dug soil inspection pit Data from the earlier ALC work undertaken in August 1992, was also used to assist in the assessment and delineation of the ALC grades

2 5 At the time of the survey (November 1992) the land was mainly in grass and arable production (cereals)

3 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

3 1 Climatic data was obtained by interpolation from a 5 km grid point dataset adjusted for the height and location of the survey area (Met Office, 1989) The data interpolated for the survey area is as follows

Grid Reference	TQ677494	TQ669504
Altitude	12 m A O D	18 m A O D
Average Annual Rainfall (mm)	661	661
Accumulated Temperature (day °c)	1498	1491
Moisture Deficit (wheat - mm)	123	121
Moisture Deficit (potatoes - mm)	121	118
Field Capacity Days	137	138

3 2 The above figures indicate that climatic factors per se place no limitation on agricultural land quality at this location However they do affect interactions between climate and soil namely soil wetness and droughtiness The site has a relatively low average annual rainfall with high moisture deficits This increases the risk and degree of droughtiness on soils which lack good reserves of available moisture Conversely the relatively dry climate (137-138 field capacity days) reduces the likelihood of soil wetness problems and increases the opportunities for land work in favourable conditions

Relief

3 3 The survey area around Hale Street lies in an area of flat and very gently sloping land known as the Low Weald The northern modification of the proposed by-pass route runs across low lying clay areas rising gently to slightly elevated river terraces which border the River Medway floodplain Altitudes within the survey area vary from about 12-18 m A O D

Geology and Soils

3 4 The published geological map sheet covering the Hale Street area (Sheet 287) (IGS 1971) indicates that the northern modification of the proposed road route passes through areas of alluvium adjoining the River Medway and its small tributary streams with spreads of brickearth on the slightly elevated terrace formations Weald Clay is mapped as occurring in the vicinity of Beech Wood and Seven Mile Lane

3 5 A semi-detailed soil map at a scale of 1 25000 is published for the Paddock Wood area (Soil Survey Record No 99-SSEW, 1986) This covers the south eastern portion of the northern route modification and maps the soils of the proposed by-pass route as the Hamble and Park Gate soil series developed in stoneless drift (brickearth) with the Fladbury series in clayey river alluvium The north western portion of the route modification has not been mapped in detail by the Soil Survey of England and Wales but is shown as the loamy over clayey or clayey Wickham I association on the reconnaissance scale (1 250 000 scale) Soil Map of South East England (SSEW 1983)

3 6 Detailed survey along the line of the proposed by-pass modification confirms the general occurrence of these soil types Topsoils are typically non-calcareous medium clay loams heavy clay loams or heavy silty clay loams (occasionally medium sandy silt loam) over similar textured subsoils which commonly pass to horizons with a higher clay content which reduces soil permeability On the more poorly drained soil types slowly permeable clay often occurs immediately below the topsoil giving rise to soils with moderate to severe wetness and workability limitations

4 AGRICULTURAL LAND CLASSIFICATION

4 1 The results of this survey are presented in the form of a coloured plan illustrating the distribution of the ALC grades along the line of the northern modification of the proposed by-pass Within the survey corridor the extent and percentage of the ALC grades is as follows

	Ha	%
Grade 2	2 35	33
3a	1 22	17
3b	3 20	45
4	0 35	5
Total agricultural land	9 12	100
Non-Agricultural) Urban)	0 80	
Total Area	9 92	

4 2 Land quality ranges from grade 2 to grade 4 Land of a higher quality (grades 2 and 3a) is mainly so graded because of droughtiness and/or wetness limitations whilst 3b land is predominately associated with heavy slowly permeable soil types developed on Weald Clay or alluvium Grade 4 land occurs as a small wet flush at the edge of the Medway floodplain Non-agricultural land includes small water areas whilst urban land represents existing roads

Grade 2

4 3 Land of this quality occurs southeast of Borough s Oak Farm and north of Smithers Lane The associated soils are similar in type at both locations having stoneless to very slightly stony non-calcareous medium sandy silt loam or medium clay loam topsoils over similar textured or heavier upper subsoils derived from brickearth drift Below about 60-75 cm these pass to clays, most of which are gleyed and slowly

permeable These soils are moderately well drained wetness class II (occasionally wetness class I) with slight wetness causing the main limitation to land quality However moisture balance calculations do indicate that some profiles also have a droughtiness limitation causing land to be graded 2 due to a slight risk of drought Such land is versatile and capable of a wide range of agricultural and horticultural cropping

Grade 3a

4 4 In the vicinity of Borough s Oak Farm, land graded 3a comprises non-calcareous stoneless to slightly stony topsoils of medium clay loam, or occasionally medium silty clay loam These typically overlie medium or heavy clay loam subsoils passing to gleyed slowly permeable clays from 45-60 cm Coarse sandy or gravelly horizons may occur Such soils usually exhibit gleying (waterlogging) within 40 cm Consequently the soils are mainly allocated to wetness class III limiting soils to grade 3a on the basis of wetness limitations In addition moisture balance calculations indicate that occasional soil profiles are also limited to grade 3a due to droughtiness as a result of their relatively shallow depth over gravelly or coarse sandy horizons

4 5 In common with land graded 2 most of these soils are flexible in use although they may have workability limitations due to increased risk of wetness

Grade 3b

4 6 Land graded 3b along the northern route modification is associated with heavy poorly drained clayey soils developed from either Weald Clay or alluvium Adjoining Seven Mile Lane and Borough s Oak Farm these comprise non-calcareous heavy silty clay loam heavy clay loam or medium clay topsoils overlying gleyed and slowly permeable clay either immediately below the topsoil or within 45 cm These are assigned to wetness class IV and graded 3b due to wetness and workability restrictions affecting flexibility of cultivations, cropping and grazing

4 7 Similar soils also occur south of the Pumping Station at the outer edge of the River Medway floodplain These alluvial soils have thin organic topsoils overlying gleyed and slowly permeable clay which may contain organic or peaty horizons Again these soils are assigned to wetness class IV and graded 3b due to wetness and workability limitations A small area of droughty shallow gravelly soils at the edge of the river terrace are also included in this mapping unit

Grade 4

4 8 Land included in grade 4 represents a small area of very poorly drained land occupying the site of a wet flush close to the outer edge of the Medway floodplain The soils are similar to the alluvial soils described in paragraph 4 7 above but are wetter due to water seepage from the edge of the terrace The agricultural usage of this area is likely to be severely restricted

November 1992
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Reading

SOURCES OF REFERENCE

INSTITUTE OF GEOLOGICAL SCIENCES (1971) Geological Map Sheet no 287 (solid and drift) 1 63360 Scale Sevenoaks

MAFF (1988) Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land

METEOROLOGICAL OFFICE (1989) Climatological datasets for Agricultural Land Classification

SOIL SURVEY OF ENGLAND AND WALES (SSEW) 1983 Soil Map of South East England (1 250,000 scale) and accompanying legend

SOIL SURVEY OF ENGLAND AND WALES (SSEW) (1986) Soil Survey Record no 99 Soils in Kent IV Sheet TQ 64 (Paddock Wood) 1 250 000 scale

DESCRIPTION OF THE GRADES AND SUBGRADES

The ALC grades and subgrades are described below in terms of the types of limitation which can occur, typical cropping range and the expected level and consistency of yield In practice, the grades are defined by reference to physical characteristics and the grading guidance and cut-offs for limitation factors in Section 3 enable land to be ranked in accordance with these general descriptions The most productive and flexible land falls into Grades 1 and 2 and Subgrade 3a and collectively comprises about one-third of the agricultural land in England and Wales About half the land is of moderate quality in Subgrade 3b or poor quality in Grade 4 Although less significant on a national scale such land can be locally valuable to agriculture and the rural economy where poorer farmland predominates The remainder is very poor quality land in Grade 5 which mostly occurs in the uplands

Descriptions are also given of other land categories which may be used on ALC maps

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

Descriptions of other land categories used on ALC maps

Urban

Built-up or hard uses with relatively little potential for a return to agriculture including housing industry commerce education transport religious buildings, cemeteries Also, hard-surfaced sports facilities, permanent caravan sites and vacant land, all types of derelict land including mineral workings which are only likely to be reclaimed using derelict land grants

Non-agricultural

Soft uses where most of the land could be returned relatively easily to agriculture, including private parkland public open spaces sports fields, allotments and soft-surfaced areas on airports/airfields Also active mineral workings and refuse tips where restoration conditions to soft after-uses may apply

Woodland

Includes commercial and non-commercial woodland A distinction may be made as necessary between farm and non-farm woodland

Agricultural buildings

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses Temporary structures (eg polythene tunnels erected for lambing) may be ignored

Open water

Includes lakes ponds and rivers as map scale permits

Land not surveyed

Agricultural land which has not been surveyed

Where the land use includes more than one of the above land cover types eg buildings in large grounds, and where map scale permits the cover types may be shown separately Otherwise the most extensive cover type will usually be shown