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Test Valley Borough Local Plan
Site 355 008 North Baddesley Hampshire
Agricultural Land Classification
ALC Map and Report
July 1993

TEST VALLEY BOROUGH LOCAL PLAN
SITE 355-008 NORTH BADDESLEY HAMPSHIRE

AGRICULTURAL LAND CLASSIFICATION REPORT

1 Summary

1 1 In May 1993 a detailed Agricultural Land Classification (ALC) was made on approximately 18 hectares of land at Nutburn near North Baddesley Hampshire

1 2 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS in response to a commission by MAFF s Land Use Planning Unit to provide information on the quality of agricultural land affected by proposals for development in the Test Valley Borough Local Plan

1 3 The classification has been made using MAFF's revised guidelines and criteria for grading the quality of agricultural land (MAFF 1988) These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on its use for agriculture

1 4 The fieldwork was carried out with an observation density of approximately one per hectare A total of 16 borings and 1 soil pit were examined

1 5 The land on at this site consists of Grade 2 (very good quality) Subgrade 3a (good quality) and Subgrade 3b (moderate quality) The Grade 2 land towards the south-east of the site is limited by wetness evidenced by gleying over a deep slowly permeable clay layer The Subgrade 3a land extends across the centre and towards the north of the site and is also limited by wetness evidenced by shallow gleying over a slowly permeable clay layer The remaining area of this quality has been graded on the basis of a high groundwater table The severity of the problem was assessed by the depth of soil saturation present at the time of the survey The Subgrade 3b land covers the remainder of the site and is characterised by wet vegetation indicating a significant degree of waterlogging The soils were found to be saturated at a shallow depth at the time of the survey

Table 1 Distribution of Grades and Subgrades

Grade	Area(ha)	% of Site	% of Agricultural Area
2	1 2	6 7	9 0
3a	4 8	26 8	37 3
3b	6 9	38 6	53 7
Non Agricultural	1 7	9 5	100% (12 9 ha)
Woodland	0 2	1 1	
Urban	3 1	17 3	
Total	17 9 ha	100%	

1 6 The distribution of the ALC grades is shown on the attached map The information is presented at a scale of 1 5 000 it is accurate at this level but any enlargement would be misleading This map supersedes any previous ALC information for this site

1 7 At the time of survey the land was in permanent rough grazing and being grazed by horses

1 8 A general description of the grades and subgrades is provided as an appendix The main classes are described in terms of the type of limitation that can occur the typical cropping range and the expected level and consistency of yield

2 Climate

2 1 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

2 2 The main parameters used in the assessment of the overall climatic limitation are annual average rainfall as a measure of overall wetness and accumulated temperature as a measure of the relative warmth of a locality

2 3 A detailed assessment of the prevailing climate was made by interpolation from a 5km gridpoint dataset (Met Office 1989) The details are given in the table below and these show that there is no overall climatic limitation affecting the site

2 4 No local climatic factors such as exposure or frost risk affect the site

Table 2 Climatic Interpolations

Grid Reference	SU393203	SU397204
Altitude (m)	41	45
Accumulated Temperature (days)	1507	1503
Average Annual Rainfall (mm)	820	820
Field Capacity (days)	174	174
Moisture Deficit Wheat (mm)	107	107
Moisture Deficit Potatoes (mm)	101	101
Overall Climatic Grade	1	1

3 Relief

3 1 The land within the survey area lies between 41m and 48m AOD and was in the form of a shallow valley Gentle slopes rise to the north and south away from the open drain across the centre of the site At no point does gradient represent a limitation to agricultural land quality

4 Geology and Soil

4 1 The published geological sheet (British Geological Survey 1973 Sheet 315 Southampton) for the site shows it to be underlain with Eocene Bracklesham Beds glauconitic evenly bedded clays loams and sands

4 2 The main soil type occurring on the site as shown by the Soil Survey map of South East England Sheet 6 (SSEW 1983 1 250 000) was found to be the Wickham 3 association a seasonally waterlogged clayey soil with slowly permeable sub surface horizons

5 Agricultural Land Classification

5 1 Table 1 provides the details of the area measurements for each grade and the distribution of each grade is shown on the attached ALC map

5 2 The location of the soil observation points is shown on the attached sample point map

Grade 2

5 3 Land of this quality covers a small area to the south-east of the site It is slightly limited by wetness to Wetness Class II (see Appendix II) by evidence of gleying in the heavy clay loam subsoil below 40 cm over a deep (c 80 cm) slowly permeable clay layer similar to that found in Pit 1 at moderate depth (See Appendix III) This with a medium clay loam topsoil means that the land can be classified no higher than Grade 2

Subgrade 3a

5 4 Land of this quality covers approximately one third of the agricultural area of the site The key limitation is soil wetness evidenced in one of two forms Firstly towards the centre of the site there is evidence of shallow gleying in a heavy clay loam subsoil beneath a medium clay loam topsoil This occurs over a slowly permeable clay layer at moderate depth as observed in Pit 1 (see Appendix III) Secondly towards the north of the site the land has been graded on the basis of the depth to the water table at the time of survey along with gleying found at moderate depth The water table was encountered around 65 cm during May suggesting that the profile is wet within 70 cm for more than 180 days in most years The soils are placed in Wetness Class III and this in combination with the topsoil texture (medium clay loam) limits the land to Subgrade 3a at the prevailing Field Capacity level (174 days)

Subgrade 3b

5 5 The majority of the agricultural area is classified as this grade on the basis of a wetness limitation Where gleying is evidenced in the medium clay loam topsoil and upper subsoil overlying a slowly permeable clay subsoil the soils are placed in Wetness Class IV (see Appendix III) Soils with a shallow water table have also been placed in Wetness Class IV and have been assessed as being likely to be wet within 40cm depth for

91-210 days in most years The grading is based on the severity of restrictions on cultivation or grazing by livestock, as well as how plant growth is affected by in this case, wetness within the soil The lower the grading the greater the risk of structural damage to the soil by trafficking and the higher the likelihood of plant growth being inhibited by poor seed germination and development due to excess water in the soil

5 6 The area marked as Non-agricultural is an area of scrubby marshland which is partially covered with brambles and willows over rough marsh grasses

ADAS Reference 1512/68/93
MAFF Reference EL6105

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

- British Geological Survey (1973) Sheet 315 Southampton, 1 50 000 Drift edition
- MAFF (1988) Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land
- Meteorological Office (1989) Climatic datasets for Agricultural Land Classification
- Soil Survey of England and Wales (1980) Soils of Kent 1 250 000 map and accompanying legend

APPENDIX I

DESCRIPTION OF THE GRADES AND SUB-GRADES

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 on 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 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

Sub-grade 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 (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

Urban

Built-up or 'hard' uses with relatively little potential for a return to agriculture 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

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 eg buildings in large grounds and where map scale permits the cover types may be shown separately Otherwise the most extensive cover type will be shown

APPENDIX II

DEFINITION OF SOIL WETNESS CLASSES

Wetness Class I

The soil profile is not wet within 70cm depth for more than 30 days in most years

Wetness Class II

The soil profile is wet within 70cm depth for 31-90 days in most years **or** if there is no slowly permeable layer within 80cm depth it is wet within 70cm for more than 90 days but not wet within 40cm depth for more than 30 days in most years

Wetness Class III

The soil profile is wet within 70cm depth for 91-180 days in most years **or** if there is no slowly permeable layer within 80cm depth it is wet within 70cm for more than 180 days but only wet within 40cm depth for 31-90 days in most years

Wetness Class IV

The soil profile is wet within 70cm depth for more than 180 days but not wet within 40cm depth for more than 210 days in most years **or** if there is no slowly permeable layer within 80cm depth it is wet within 40cm depth for 91-210 days in most years

Wetness Class V

The soil profile is wet within 40cm depth for 211-335 days in most years

Wetness Class VI

The soil profile is wet within 40cm depth for more than 335 days in most years

(The number of days is not necessarily a continuous period 'In most years is defined as more than 10 out of 20 years)

APPENDIX III

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents

SOIL PROFILE DESCRIPTIONS EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a database This has commonly used notations and abbreviations as set out below

Boring Header Information

1 GRID REF national grid square and 8 figure grid reference

2 USE Land use at the time of survey The following abbreviations are used

ARA Arable WHT Wheat BAR Barley CER Cereals OAT Oats MZE Maize OSR Oilseed rape
BEN Field Beans BRA Brassicae POT Potatoes SBT Sugar Beet FCD Fodder Crops LIN Linseed
FRT Soft and Top Fruit HRT Horticultural Crops PGR Permanent Pasture LEY Ley Grass RGR Rough Grazing
SCR Scrub CFW Coniferous Woodland DCW Deciduous Woodland HTH Heathland BOG Bog or Marsh
FLW Fallow PLO Ploughed SAS Set aside OTH Other

3 GRDNT Gradient as measured by a hand-held optical clinometer

4 GLEY/SPL Depth in cm to gleying or slowly permeable layers

5 AP (WHEAT/POTS) Crop-adjusted available water capacity

6 MB (WHEAT/POTS) Moisture Balance

7 DRT Best grade according to soil droughtiness

8 If any of the following factors are considered significant an entry of Y will be entered in the relevant column

MREL Microrelief limitation FLOOD Flood risk EROSN Soil erosion risk EXP Exposure limitation FROST Frost
DIST Disturbed land CHEM Chemical limitation

9 LIMIT The main limitation to land quality The following abbreviations are used

OC Overall Climate AE Aspect EX Exposure FR Frost Risk GR Gradient MR Microrelief
FL Flood Risk TX Topsoil Texture DP Soil Depth CH Chemical WE Wetness WK Workability
DR Drought ER Soil Erosion Risk WD Combined Soil Wetness/Droughtiness ST Topsoil Stoniness

Soil Pits and Auger Borings

1 TEXTURE soil texture classes are denoted by the following abbreviations

S Sand LS Loamy Sand SL Sandy Loam SZL Sandy Silt Loam CL Clay Loam ZCL Silty Clay Loam
SCL Sandy Clay Loam C Clay SC Sandy Clay ZC Silty Clay OL Organic Loam P Peat SP Sandy Peat
LP Loamy Peat PL Peaty Loam PS Peaty Sand MZ Marine Light Silts

For the sand loamy sand sandy loam and sandy silt loam classes the predominant size of sand fraction will be indicated by the use of prefixes

F Fine (more than 66% of the sand less than 0 2mm)
M Medium (less than 66% fine sand and less than 33% coarse sand)
C Coarse (more than 33% of the sand larger than 0 6mm)

The clay loam and silty clay loam classes will be sub-divided according to the clay content

M Medium (< 27% clay) H Heavy (27 35% clay)

2 MOTTLE COL Mottle colour

3 MOTTLE ABUN Mottle abundance expressed as a percentage of the matrix or surface described

F few <2% C common 2 20% M many 20-40 VM very many 40%+

4 MOTTLE CONT Mottle contrast

F faint indistinct mottles evident only on close inspection D distinct mottles are readily seen
P prominent mottling is conspicuous and one of the outstanding features of the horizon

5 PED COL Ped face colour

6 STONE LITH One of the following is used

HR all hard rocks and stones MSST soft medium or coarse grained sandstone
SI soft weathered igneous or metamorphic SLST soft oolitic or dolimitic limestone
FSST soft fine grained sandstone ZR soft argillaceous or silty rocks CH chalk
GH gravel with non porous (hard) stones GS gravel with porous (soft) stones

Stone contents (> 2cm > 6cm and total) are given in percentages (by volume)

7 STRUCT the degree of development size and shape of soil peds are described using the following notation

degree of development WK weakly developed MD moderately developed ST strongly developed

ped size F fine M medium C coarse VC very coarse

ped shape S single grain M massive GR granular AB angular blocky SAB sub-angular blocky PR prismatic PL platy

8 CONSIST Soil consistence is described using the following notation

L loose VF very friable FR friable FM firm VM very firm EM extremely firm EH extremely hard

9 SUBS STR Subsoil structural condition recorded for the purpose of calculating profile droughtiness

G good M moderate P poor

10 POR Soil porosity If a soil horizon has less than 0 5% biopores > 0 5 mm a Y will appear in this column

11 IMP If the profile is impenetrable a Y will appear in this column at the appropiate horizon

12 SPL Slowly permeable layer If the soil horizon is slowly permeable a Y will appear in this column

13 CALC If the soil horizon is calcareous a Y will appear in this column

14 Other notations

APW available water capacity (in mm) adjusted for wheat
APP available water capacity (in mm) adjusted for potatoes
MBW moisture balance wheat
MBP moisture balance potatoes

SOIL PIT DESCRIPTION

Site Name N BADDESLEY TVLP S 355 Pit Number 1P

Grid Reference SU39502030 Average Annual Rainfall 820 mm
Accumulated Temperature 1503 degree days
Field Capacity Level 174 days
Land Use Permanent Grass
Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	MOTTLES	STRUCTURE
0- 25	MCL	10YR31 00	0	2	C	
25- 38	MCL	10YR41 00	0	2	C	MDCSAB
38- 49	C	05GY61 00	0	10	M	MDCSAB
49- 67	C	05G 61 00	0	10	M	

Wetness Grade 3A Wetness Class III
Gleying 0 cm
SPL 049 cm

Drought Grade APW mm MBW 0 mm
APP mm MBP 0 mm

FINAL ALC GRADE 3A
MAIN LIMITATION Wetness

SAMPLE NO	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	SU39502060	PGR			055		3	3A		0		0					WE	3A	WATR TABLE 65
1P	SU39502030	PGR			0	049	3	3A		0		0					WE	3A	PIT 67
2	SU39502050	PGR			026		4	3B		0		0					WE	3B	WATR TABLE 65
3	SU39602050	PGR			035	068	3	3A		0		0					WE	3A	WATR TABLE 65
4	SU39402040	PGR			0		5	4		0		0					WE	4	IMP50 WATTBLO
5	SU39502040	PGR			032		4	3B		0		0					WE	3B	WATR TABLE 32
6	SU39602040	PGR			0		4	3B		0		0					WE	3B	WATR TABLE 50
7	SU39702040	PGR			0		4	3B		0		0					WE	3B	WATR TABLE 50
8	SU39302030	PGR			026		4	3B		0		0					WE	3B	WATR TABLE 45
9	SU39402030	PGR			0	055	3	3A		0		0					WE	3A	SPL 55 SEE 1P
10	SU39502030	PGR			0	055	3	3A		0		0					WE	3A	SPL 55 SEE 1P
11	SU39602030	PGR			0	063	3	3A		0		0					WE	3A	SPL 63 SEE 1P
12	SU39702030	PGR			0	070	3	3A		0		0					WE	3A	SPL 70 SEE 1P
13	SU39402020	PGR			0	045	4	3B		0		0					WE	3B	SPL 45 SEE 1P
14	SU39502020	PGR			0	045	4	3B		0		0					WE	3B	SPL 45 SEE 1P
15	SU39602020	PGR			045	080	2	2	134	27	114	13	2				WE	2	WE & DR
18	SU39602010	PGR					1	1	055	-52	055	-46	4				DR	3B	IMP 40

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
1	0-28	osl	10YR21 00						0	0	HR	2							
	28 40	lms	10YR71 21						0	0	HR	2		M					
	40-55	msl	75YR21 00	10YR46 00	C				0	0		0		M					
	55-120	scl	05Y 63 00	75YR58 00	M			Y	0	0		0		M					
1P	0-25	mcl	10YR31 00	10YR46 00	C			Y	0	0	HR	2							WITHFINE SAND
	25-38	mcl	10YR41 00	10YR46 00	C			Y	0	0	HR	2	MDCSAB FR	M					
	38-49	c	05GY61 00	75YR58 00	M			Y	0	0	HR	10	MDCSAB FR	M					
	49-67	c	05G 61 00	75YR58 00	M			Y	0	0	HR	10		P	Y		Y		
2	0-26	ocl	10YR21 00						0	0	HR	2							
	26-45	msl	10YR63 21	10YR46 00	C			Y	0	0	HR	2		M					
	45-120	scl	05Y 63 00	75YR58 00	M			Y	0	0		0		M					
3	0-28	ocl	10YR21 00	10YR46 00	C			Y	0	0	HR	2							
	28-35	msl	10YR52 21						0	0		0		M					
	35-68	msl	10YR63 00	10YR58 00	M			Y	0	0		0		M					
	68-120	sc	05Y 72 00	75YR58 00	M			Y	0	0	HR	2		P			Y		
4	0-32	ocl	10YR21 00	10YR46 00	C			Y	0	0	HR	2							
	32-50	scl	25Y 61 00	10YR66 00	C			Y	0	0	HR	20		M					
5	0-32	mcl	10YR31 00	10YR46 00				Y	0	0	HR	2							
	32-42	lms	10YR61 00	10YR66 00	C			Y	0	0	HR	10		M					
	42-120	scl	05Y 73 00	75YR58 00	M			Y	0	0	HR	5		M					S&C LENS= SCL
6	0-28	mcl	10YR41 00	10YR46 00	C			Y	0	0	HR	3							
	28-50	mcl	10YR53 31					Y	0	0	HR	5		M					
	50-80	scl	25Y 61 00	10YR66 00	C			Y	0	0	HR	25		M					
	80-120	scl	05Y 63 00	75YR58 00	M			Y	0	0	HR	10		M					
7	0-32	mcl	10YR41 00	10YR46 00	C			Y	0	0	HR	3							
	32-70	msl	10YR61 00						0	0	HR	25		M					
8	0-26	scl	10YR41 00						0	0	HR	5							
	26-45	scl	10YR41 00	75YR56 00	C			Y	0	0	HR	5		M					
	45-60	msl	10YR41 72					Y	0	0	HR	15		M					
9	0-26	mcl	10YR41 00	75YR56 00	C			Y	0	0	HR	2							WITH SAND
	26-39	fszl	10YR41 00	75YR56 00	C			Y	0	0	HR	2		M					
	39-55	hcl	25Y 63 72	75YR58 00	C			Y	0	0	HR	5		M					
	55-80	c	25Y 72 63	75YR58 00	M			Y	0	0	HR	5		P			Y		
	80-120	c	25Y 72 63	75YR58 00	M			Y	0	0	HR	15		P			Y		
10	0-26	mcl	10YR41 00	75YR56 00	C			Y	0	0	HR	3							WITHFINE SAND
	26-39	mcl	10YR41 51	75YR56 00	C			Y	0	0	HR	5		M					
	39-55	c	25Y 73 00	75YR58 56	M			Y	0	0	HR	1		M					
	55-70	c	25Y 72 00	75YR58 56	M			Y	0	0	HR	5		P			Y		
	70-120	c	25Y 62 00	75YR58 56	M			Y	0	0	HR	15		P			Y		

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
11	0-28	mcl	10YR41 00	75YR56 00	C			Y	0	0	HR	3							
	28-40	mcl	25Y 62 73	75YR58 00	C			Y	0	0	HR	2		M					
	40-63	hcl	25Y 62 00	75YR58 00	M			Y	0	0		0		M					
	63-80	c	05Y 62 00	75YR58 00	M			Y	0	0	HR	8		P			Y		
12	0-26	mcl	10YR41 00	10YR46 00	C			Y	0	0		0							
	26-70	hcl	10YR53 52	75YR56 00	M			Y	0	0		0		M					
	70-100	c	25Y 63 61	75YR58 00	M			Y	0	0		0		P			Y		
13	0-29	mcl	10YR41 00	75YR56 00	C			Y	0	0	HR	2							WITH SAND
	29-45	mcl	25Y 73 00	75YR58 00	M			Y	0	0	HR	2		M					
	45-60	c	25Y 73 00	75YR58 00	M			Y	0	0		0		P			Y		
14	0-26	mcl	10YR41 00	75YR56 00	C			Y	0	0	HR	1							WITHFINE SAND
	26-45	mcl	25Y 73 62	75YR58 00	M			Y	0	0	HR	1		M					
	45-60	c	25Y 72 73	75YR58 00	M			Y	0	0	HR	1		P			Y		
15	0-26	scl	10YR42 00						0	0	HR	1							WITHFINE SAND
	26-40	mcl	10YR54 00						0	0	HR	1		M					
	40-45	hcl	10YR54 00	75YR58 00	C				0	0	HR	1		M					
	45-65	hcl	10YR53 54	75YR58 00	M			Y	0	0	HR	1		M					
	65-80	c	10YR53 54	75YR58 00	M			Y	0	0	HR	1		M					
	80-120	c	25Y 63 00	25YR58 00	M			Y	0	0	HR	10		P			Y		
18	0-30	msl	10YR31 00						0	0	HR	5							
	30-40	lms	10YR31 00						0	0	HR	20		M					