ENVIRONMENTAL STATEMENT

VOLUME 2

(CHAPTER 16)

LAND AT HARTNOLLS FARM,

TIVERTON

PREPARED FOR

WADDETON PARK LIMITED

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13a- 15a Old Park Avenue, Pinhoe, Exeter, Devon
EX1 3WD United Kingdom
t: + 44 (0)1392 363812
w: www.pclplanning.co.uk

Contents

16. Scarce Resources

APPENDICES

KCC1 Natural England's TIN049
KCC2 MAFF ALC Report and Plan
KCC3 Extracts from the Pocketbook for Farm Management

Introduction

16.1 Planning application 21/01576/MOUT for "**the extension of existing business park for up to 3.9 ha of employment land and up to 150 dwellings with associated infrastructure and access**" was refused by Mid Devon District Council on 19th January 2023.

16.2 Reason for Refusal No 1 states as follows:

> *"By reason of the site's location, which is defined as countryside, on Grade 1 BMV agricultural land, beyond a settlement boundary identified within strategic policies S10-S13 of the adopted Local Plan, and because the Local Planning Authority can demonstrate an up to date housing 5 year land supply, the proposed development of 150 dwellings is contrary to Policies S1, S2, S3, S4 & S14 of the Mid Devon Local Plan 2013-2033 and guidance within the National Planning Policy Framework".*

16.3 A contributing factor is the assessment by the case officer that the site contains Grade 1 Best and Most Versatile (BMV) agricultural land. This will have formed part of the balancing of planning issues.

16.4 The site is not, in fact, Grade 1 agricultural land. It is a mixture of Grades 2 and 3a, with some urban land.

16.5 This chapter sets out the factual matters relating to the land quality, and assesses that in the context of land quality locally, and planning policy in the National Planning Policy Framework (NPPF) and the Local Plan. This evidence then expresses an opinion on the weight that should be accorded to agricultural matters.

Planning Policy of Relevence

National Planning Policy

16.6 The National Planning Policy Framework (NPPF) (2021) paragraph 174 notes that planning policies and decisions should contribute to and enhance the natural and local environment by, inter alia, recognising "**the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land**".

16.7 The best and most versatile (BMV) agricultural land is defined in Annex 2 of the NPPF as that in grades 1, 2 and 3a of the Agricultural Land Classification.

16.8 Paragraph 175 deals with plan making. It requires plans to, inter alia, allocate land with the least environmental or amenity value, where consistent with other policies in the Framework. Footnote 58 of the NPPF identifies that "**where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be prepared to those of a higher quality**".

16.9 There is no definition of what constitutes "significant" development. However the "Guide to assessing development proposals on agricultural land" (Natural England, February 2021) advises local planning authorities to "**take account of smaller losses (under 20 hectares) if they're significant when making your decision**", suggesting that 20 ha is a suitable threshold for defining "significant" in many cases.

Local Plan

16.10 Reason for Refusal 1 refers to Mid Devon Local Plan 2013-2033 (July 2020) policies S1, S2, S3, S4 and S14.

16.11 Policy S1 criterion j) requires development to support the creation of sustainable communities by encouraging "**the effective use of land, taking into account the economic and other benefits of the best and most versatile agricultural land**".

16.12 Policy TIV 1 sets out the policy for the Tiverton Eastern Urban Extension (TEUE), a 153 ha site. Paragraph 3.10 notes that this policy "**necessitates the loss of some Grade 2 agricultural land**". The Appeal site is to the immediate east of the TEUE.

The Proposals and The Site

16.13 It is **proposed** to develop 12.7 ha of mostly agricultural land for the development described in the application.

16.14 The site is shown edged red on the Google Earth image below.

Insert 1: The Site on Google Earth

16.15 The site comprises two fields and part of two others and wraps around the western and southern side of the Hartnoll Business Centre.

16.16 The site needs to be considered in its context. To the north is a golf course and residential development, recently extended. To the west is land allocated for development as part of the Tiverton Eastern Urban Extension.

16.17 Agricultural land lies to the south and east.

Agricultural Land Quality

16.18 In this section I set out:

(i) the old provisional ALC map information;

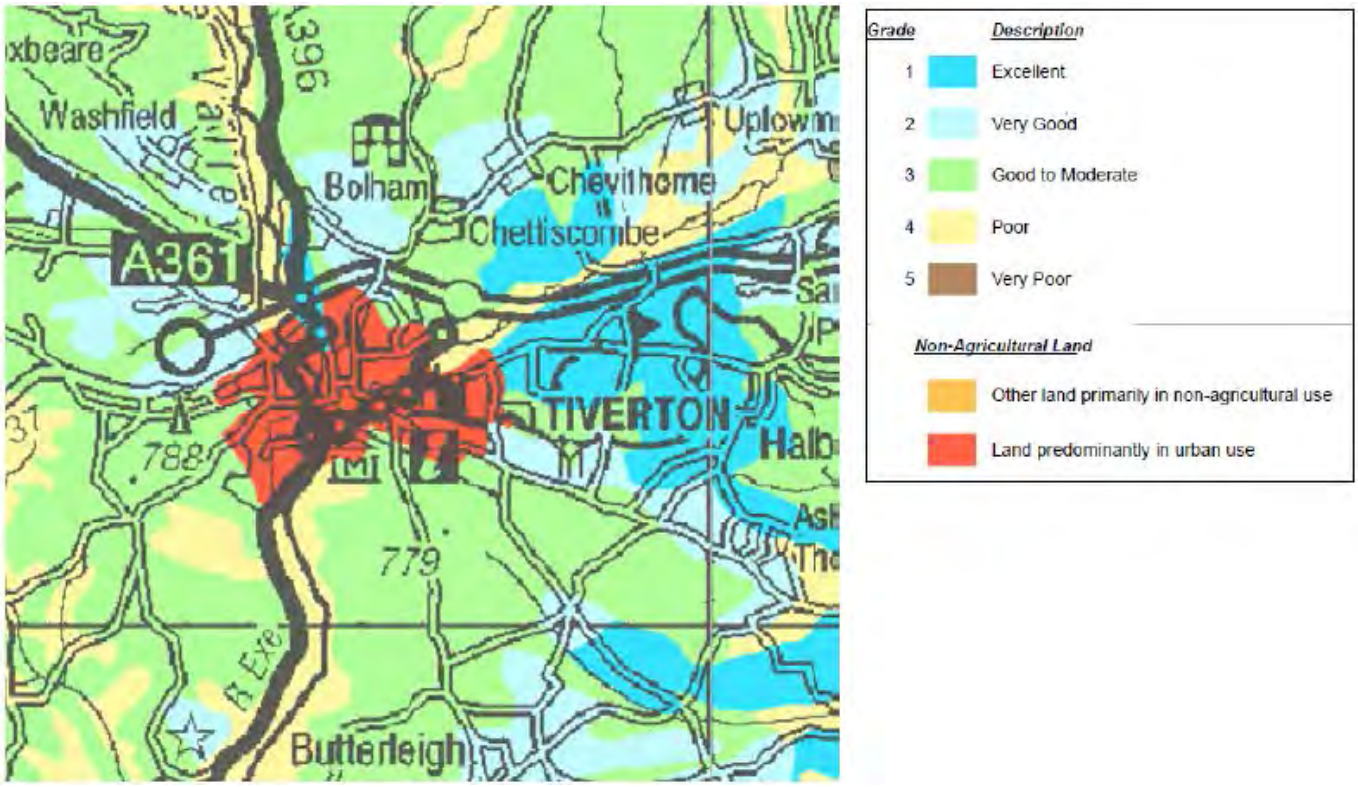
(ii) detailed ALC survey information;

(iii) the information available to the Council at the determination date.

Provisional ALC Maps

16.19 The provisional ALC maps from the 1970's show the site as falling into ALC Grade 1. This is excellent quality land. An extract from the map is reproduced below.

Insert 2: Provisional ALC Map Extract

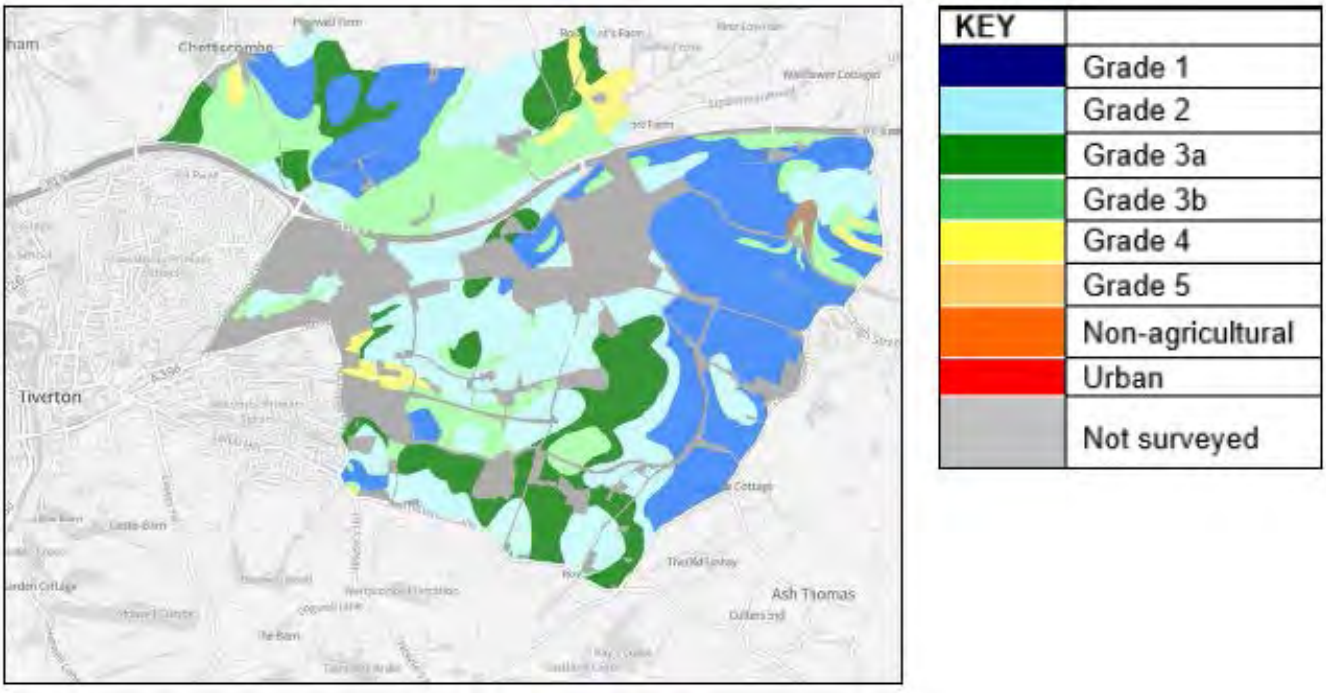


16.20 As set out in Natural England's Technical Information Note 049 (**Appendix KCC1**) these maps are not to be relied upon for site specific site analysis.

Detailed ALC Survey Information

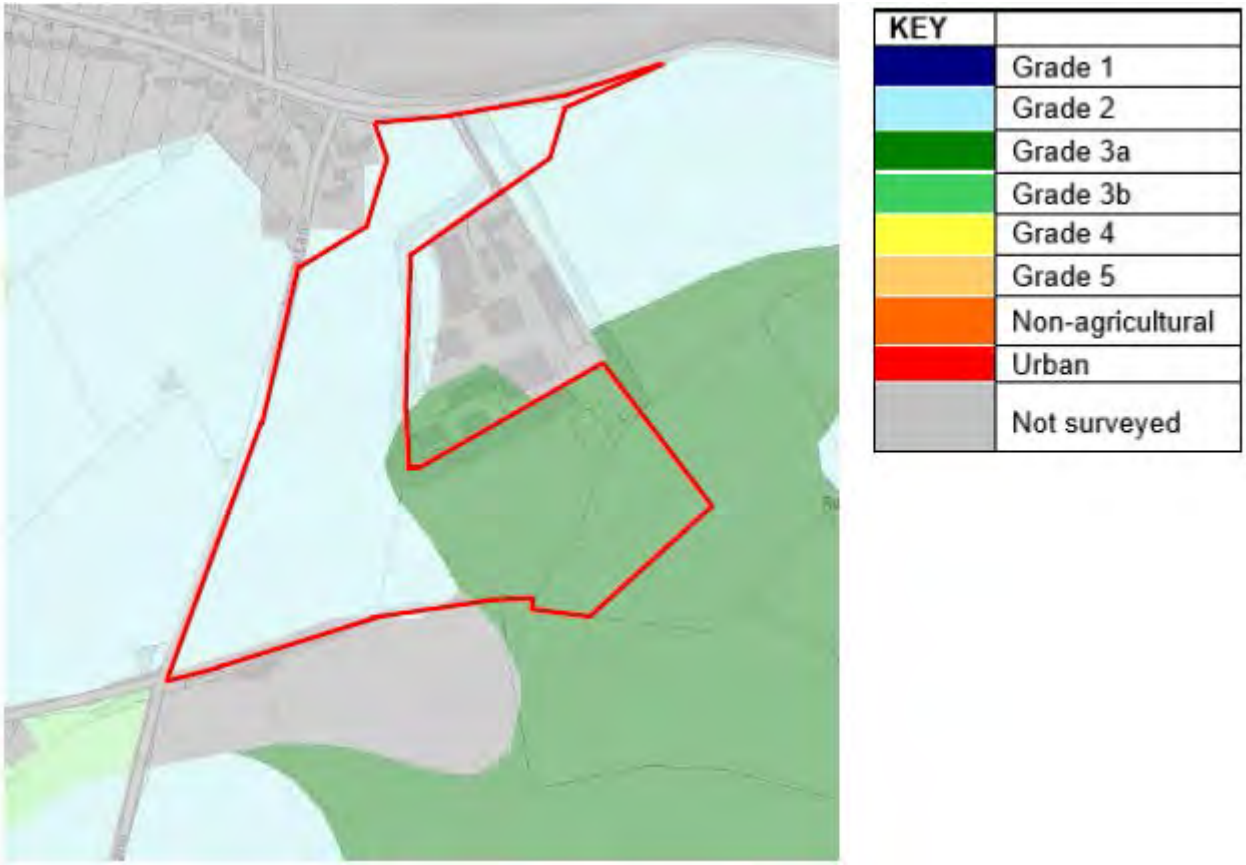
16.21 Where a Government agency has carried out an Agricultural Land Classification survey this is available on the www.magic.gov.uk website. Most of the eastern side of Tiverton has been surveyed, as shown below.

Insert 3: www.magic.gov.uk ALC Records



16.22 The site is edged red (approximately) on the extract below. The original MAFF ALC report and plan are reproduced in **Appendix KCC3**.

Insert 4: Site Edged on ALC Map



16.23 We estimate the ALC of the appeal site as follows. Please note that we have recorded the built areas of the Business Centre shown as built as "urban" rather than 3a, as shown below and in the table.

Insert 5: ALC Measurement

Table 1: ALC Measurement

ALC Grade	Description	Ha	%
2	Very good	7.0	55
3a	Good	4.1	32
Urban	Buildings and screening	1.6	13
Total		**12.7**	**100**

16.24 As a matter of fact, therefore, the land is not Grade 1, as described in the Reasons for Refusal. It is a mixture of Grade 2, subgrade 3a and some urban land.

Information Available to the Council

16.25 The Scoping Opinion produced by the Council on 15th October 2021 scoped in agricultural land.

16.26 Under 9 "Ground Conditions and Contamination" the Council commented as follows:

> *"Assessment of ground conditions should also refer to soil and agricultural land quality. It should include reference to the degree to which best and most versatile land (grades 1, 2 and 3a) is to be involved and assess the impact of the development upon such land availability. Further information may be gained from Natural England".*

16.27 The ES and its Appendix did not provide any ALC information.

16.28 Natural England, a key consultee, however did provide information. Their response of 26th August 2021 provided the following information:

> *"Soils and Land Quality*
> *Available Agricultural Land Surveys (ALC) indicate that the development site is classed as Grade 2 and 3a 'best and most versatile' agricultural land. ALC surveys are now available through Natural England's public geographic data at https://www.gov.uk/guidance/how-to-access-natural-englands-maps-and-data.*
>
> *We consider this application falls outside the scope of the Development Management Procedure Order (as amended) consultation arrangements, as the proposed development would not lead to the loss of over 20 ha 'best and most versatile' agricultural land (paragraph 170 and 171 of the National Planning Policy Framework).*
>
> *For this reason we do not propose to make any detailed comments in relation to agricultural land quality and soils except to advise that if the development proceeds, the developer uses an appropriately experienced soil specialist to advise on and supervise soil handling, including identifying when soils are dry enough to be handled and how to make best use of the different soils on site.*
>
> *Further guidance is available in the Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (including accompanying Toolbox Talks) and we recommend that this is followed".*

16.29 Therefore the Council was informed that the site contained ALC grades 2 and 3a and not Grade 1.

Assessment of the Issues

Land Quality and Losses

16.30 As set out above, the site involves a mixture of land of Grade 2 and subgrade 3a and Urban ALC grades.

16.31 The Framework Plan shows that the proposals involve open space and woodland planting, as well as gardens. Therefore there will be a need for soils to be

retained for use within the development. The Framework Plan is reproduced in part below.

Insert 6: Extract from the Framework Plan

16.32 In respect of future agricultural use, none of the site will be available for use. Accordingly the "loss" of agricultural land is as set out in the table as follows:

Insert 7: Land Lost

ALC Grade	Description	Ha	%
2	Very good	7.0	55
3a	Good	4.1	32
Urban	Buildings and screening	1.6	13
Total		**12.7**	**100**

16.33 In respect of the soil resource, however, this can be retained within the development.

The Economic and Other Benefits

16.34 The economic benefits of BMV land on this site are modest. In the absence of any empirical data, any economic assessment is inevitably crude. Taking standard budgeting textbooks, such as the John Nix Pocketbook for Farm Management (extracts from which are reproduced in **Appendix KCC4**), it is possible to show the difference between moderate and high yields, as an illustration, between crops.

16.35 Taking that crude measure for winter wheat and oilseed rape, the differences are shown below.

Table 2: Assessment of Economics of Farmed Land

Item	Winter Wheat		Oilseed Rape	
	Average	High	Average	High
Yield (t/ha)	8.6t/ha	10.0t/ha	3.5t/ha	4.0t/ha
Output (£/ha)	2,108	2,423	1,803	2,060
Gross Margin (£/ha)	1,200	1,515	1,066	1,323
Uplift (£/ha)	-	315	-	257

John Nix Pocketbook for Farm Management, September 2023

16.36 For the 11.1 ha of BMV within the site the economic benefits of BMV land to non-BMV land would be £2,852 - £3,496. Hence the economic benefits are modest.

16.37 There are no farm buildings or other agricultural infrastructure owned within the site.

16.38 The Appeal development will consequently not have a significant adverse effect on a full-time farm business, nor will it result in any other agricultural land being affected or becoming unfarmable. Other land can continue to be managed as it is now.

16.39 An amendment to NPPF footnote 58 is currently out for consultation. This sets out, in the context of plan making, that the availability of land used for food production should be considered, alongside other policies, when deciding what

sites are most appropriate for development. Using the two crops of winter wheat and oilseed rape used for the economic assessment, the comparable food production would be as follows:

- increase in yield of wheat 1.4t/ha;
- increase for 11.1 ha BMV 15.5t;
- increase in yield of oilseed rape 0.5t/ha;
- increase for 11.1 ha BMV 5.5t.

16.40 Hence the production benefits are modest.

16.41 Soil has other important benefits. In the Environment Agency's 2019 report "**The State of the Environment: Soil**" it was recorded that the UK's soils currently store about 10 billion tonnes of carbon, roughly equal to 80 years of current annual greenhouse gas emissions. The retention of soil for use within the development will retain this benefit. Natural England's response (see 4.12 above) advises on the use of a soil specialist to advise on how to make best use of the soils within the site. This could be covered by a planning condition.

Whether This is "Significant" Development

16.42 There is no definition of what constitutes "significant" development of agricultural land in the context of the NPPF. As set out earlier, the threshold for consultation with Natural England on losses of BMV land, is 20 ha. The loss in this case is 11.1 ha.

16.43 Natural England did not object to the development, as it falls outside the scope of the consultation arrangements.

16.44 Whether 11.1 ha is "significant" or not is normally a balanced decision taking into account factors such as the prevalence of BMV in the area.

16.45 The utilised agricultural area of England in June 2022 was 8.9 million hectares, 69% of the total land area. Arable crops were planted over 4.9 million ha (Agricultural Land Use in England at 1 June 2022, Defra, 29 September 2022). Natural England estimate that 42% of farmland falls within the BMV category (see TIN 049, **Appendix KCC1**). About half of this falls within Grades 1 and 2.

Therefore nationwide there is of the order of 1.87 million ha of grades 1 and 2 and 1.87 million ha of subgrade 3a.

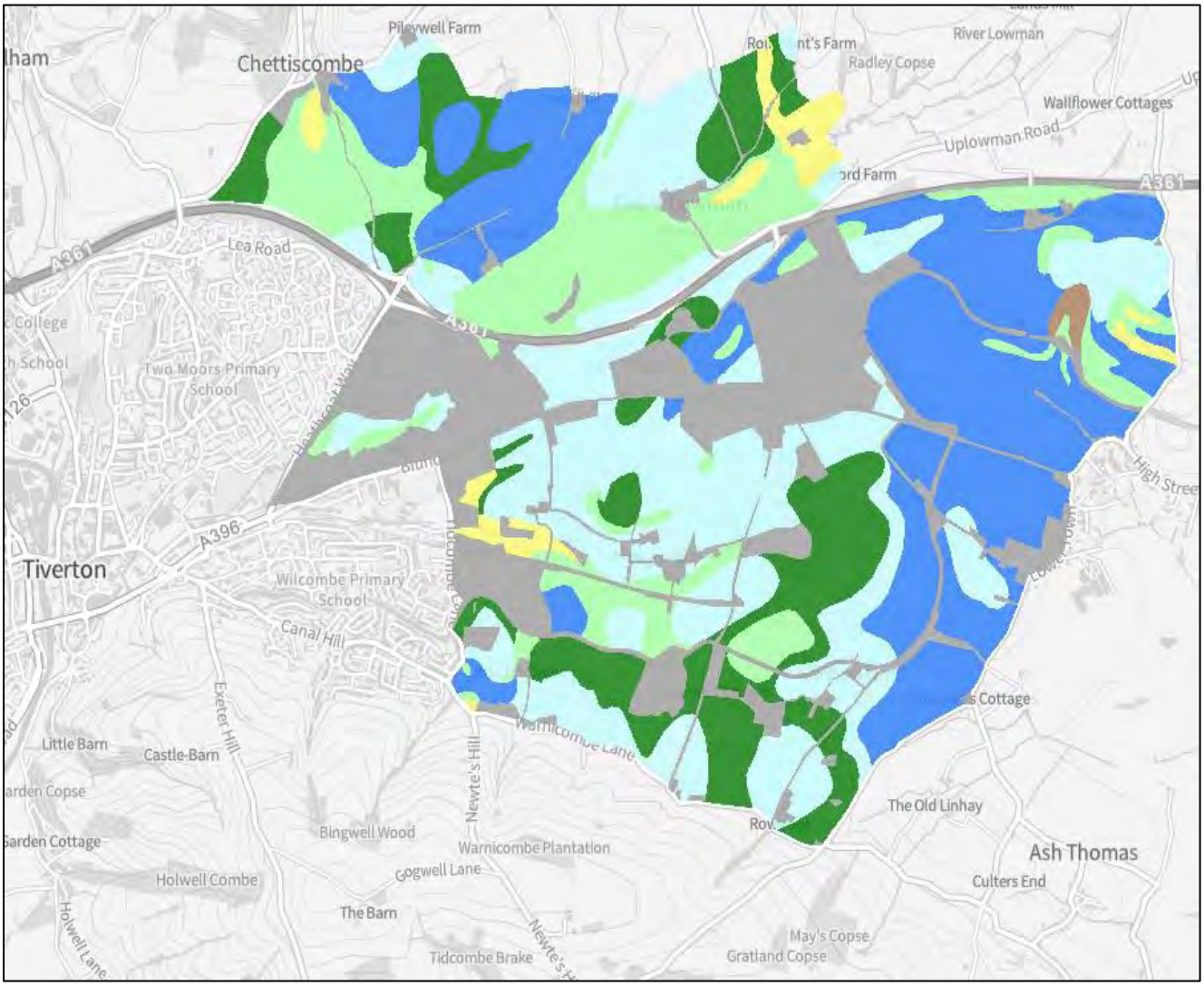
16.46 As shown on Insert 3, BMV land is prevalent locally. It is not a rare resource in the context of Tiverton.

Whether Poorer Quality Land is Available

16.47 If the development is not "significant" development, then the NPPF footnote 58 is not triggered and the availability of poorer quality land is not relevant.

16.48 In the case of Tiverton, there is considerable available detailed ALC information, as set out earlier. This is shown again on the ALC survey details published on www.magic.gov.uk.

Insert 8: ALC Data Near Tiverton



16.49 It can be seen that there is no poorer quality land available on the eastern side of the town.

The Council's Approach

16.50 The Council's approach to plan making, which NPPF footnote 58 relates to has been to recognise that development east of Tiverton requires the loss of BMV land. Local Plan policy TIV 1, involving an area of the order of 153 ha and mostly agricultural land of Grade 2, the Local Plan acknowledges that there was a balance **"involving the loss of some Grade 2**". In quantitative terms, the loss for the TEUE is of the order of 14 times the quantum involved in this site, which is also only partly of Grade 2 quality.

16.51 Therefore:

(i) the site is a mix of Grade 2 and subgrade 3a, not grade 1 as considered in the Council's decision;

(ii) there is of the order of 11.1 ha of agricultural land that will be irreversibly developed;

(iii) the economic benefits of this quantum of land are modest;

(iv) the food production benefits relative to poorer quality land, are minimal;

(v) the benefits of the soil in respect of carbon storage, will not be lost;

(vi) this is not significant development of agricultural land in the context of the NPPF;

(vii) even if it were, there is no poorer quality land available on this side of Tiverton;

(viii) the Council, in allocating 153 ha of development on grade 2 land, via policy TIV 1, recognise this.

Summary and Conclusions

16.52 The site extends to 12.7 ha.

16.53 This contains 1.6 ha of urban land/woodland, 7.0 ha of Grade 2 "very good" quality land and 4.1 ha of subgrade 3a "good" quality land.

16.54 The site does not involve Grade 1 agricultural land as set out in Reason for Refusal No 1.

16.55 Grade 2 and subgrade 3a land falls within the definition of "best and most versatile" agricultural land set out in the NPPF, and is accorded a degree of protection in the NPPF and Local Plan.

16.56 BMV land is not a rare resource. Natural England estimate that 42% of agricultural land is BMV, and in 2022 that equates to about 3.74 million hectares of BMV land in active agricultural use.

16.57 To the east of Tiverton most of the land is of BMV quality. This is recognised by the Council. The Tiverton Urban Extension Area involves of the order of 153 ha and is mostly Grade 2.

16.58 Only limited weight should be given to the loss of 11.1 ha of BMV agricultural land in this case. That is because:

(i) the land is not Grade 1 as assessed by the Council;
(ii) the economic benefits are modest;
(iii) the food production benefits are minimal;
(iv) the benefits of soils for holding carbon can be preserved with good soil management and use;
(v) in policy terms this is not "significant development" of agricultural land;
(vi) even if it were, poorer quality land is not available on this side of Tiverton.

Appendix KCC1

Natural England's TIN049

Natural England Technical Information Note TIN049

Agricultural Land Classification: protecting the best and most versatile agricultural land

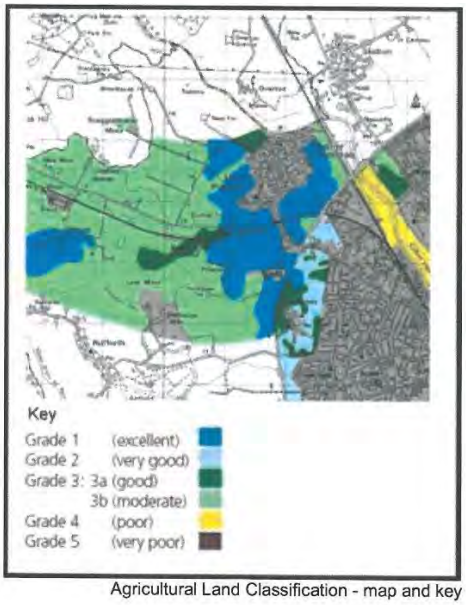
Most of our land area is in agricultural use. How this important natural resource is used is vital to sustainable development. This includes taking the right decisions about protecting it from inappropriate development.

Policy to protect agricultural land

Government policy for England is set out in the National Planning Policy Framework (NPPF) published in March 2012 (paragraph 112). Decisions rest with the relevant planning authorities who should take into account the economic and other benefits of the best and most versatile agricultural land. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of higher quality. The Government has also re-affirmed the importance of protecting our soils and the services they provide in the Natural Environment White Paper The Natural Choice:securing the value of nature (June 2011), including the protection of best and most versatile agricultural land (paragraph 2.35).

The ALC system: purpose & uses

Land quality varies from place to place. The Agricultural Land Classification (ALC) provides a method for assessing the quality of farmland to enable informed choices to be made about its future use within the planning system. It helps underpin the principles of sustainable development.



Agricultural Land Classification - map and key

Second edition 19 December 2012
www.naturalengland.org.uk

NATURAL ENGLAND

Natural England Technical Information Note TIN049

Agricultural Land Classification: protecting the best and most versatile agricultural land

The ALC system classifies land into five grades, with Grade 3 subdivided into Subgrades 3a and 3b. The best and most versatile land is defined as Grades 1, 2 and 3a by policy guidance (see Annex 2 of NPPF). This is the land which is most flexible, productive and efficient in response to inputs and which can best deliver future crops for food and non food uses such as biomass, fibres and pharmaceuticals. Current estimates are that Grades 1 and 2 together form about 21% of all farmland in England; Subgrade 3a also covers about 21%.

The ALC system is used by Natural England and others to give advice to planning authorities, developers and the public if development is proposed on agricultural land or other greenfield sites that could potentially grow crops. The Town and Country Planning (Development Management Procedure) (England) Order 2010 (as amended) refers to the best and most versatile land policy in requiring statutory consultations with Natural England. Natural England is also responsible for Minerals and Waste Consultations where reclamation to agriculture is proposed under Schedule 5 of the Town and Country Planning Act 1990 (as amended). The ALC grading system is also used by commercial consultants to advise clients on land uses and planning issues.

Criteria and guidelines

The Classification is based on the long term physical limitations of land for agricultural use. Factors affecting the grade are climate, site and soil characteristics, and the important interactions between them. Detailed guidance for classifying land can be found in: *Agricultural Land Classification of England and Wales: revised guidelines and criteria for grading the quality of agricultural land* (MAFF, 1988):

- **Climate:** temperature and rainfall, aspect, exposure and frost risk.
- **Site:** gradient, micro-relief and flood risk.
- **Soil:** texture, structure, depth and stoniness, chemical properties which cannot be corrected.

The combination of climate and soil factors determines soil wetness and droughtiness. Wetness and droughtiness influence the choice of crops grown and the level and consistency of yields, as well as use of land for grazing livestock. The Classification is concerned with the inherent potential of land under a range of farming systems. The current agricultural use, or intensity of use, does not affect the ALC grade.

Versatility and yield

The physical limitations of land have four main effects on the way land is farmed. These are:

- the range of crops which can be grown;
- the level of yield;
- the consistency of yield; and
- the cost of obtaining the crop.

The ALC gives a high grading to land which allows more flexibility in the range of crops that can be grown (its 'versatility') and which requires lower inputs, but also takes into account ability to produce consistently high yields of a narrower range of crops.

Availability of ALC information

After the introduction of the ALC system in 1966 the whole of England and Wales was mapped from reconnaissance field surveys, to provide general strategic guidance on land quality for planners. This Provisional Series of maps was published on an Ordnance Survey base at a scale of One Inch to One Mile in the period 1967 to 1974. These maps are not sufficiently accurate for use in assessment of individual fields or development sites, and should not be used other than as general guidance. They show only five grades: their preparation preceded the subdivision of Grade 3 and the refinement of criteria, which occurred after 1976. They have not been updated and are out of print. A 1:250 000 scale map series based on the same information is available. These are more appropriate for the strategic use originally intended and can be downloaded from the Natural England **website**. This data is also available on 'Magic', an interactive, geographical information website **http://magic.defra.gov.uk/**.

Since 1976, selected areas have been re-surveyed in greater detail and to revised

guidelines and criteria. Information based on detailed ALC field surveys in accordance with current guidelines (MAFF, 1988) is the most definitive source. Data from the former Ministry of Agriculture, Fisheries and Food (MAFF) archive of more detailed ALC survey information (from 1988) is also available on **http://magic.defra.gov.uk/**. Revisions to the ALC guidelines and criteria have been limited and kept to the original principles, but some assessments made prior to the most recent revision in 1988 need to be checked against current criteria. More recently, strategic scale maps showing the likely occurrence of best and most versatile land have been prepared. Mapped information of all types is available from Natural England (see *Further information* below).

New field survey

Digital mapping and geographical information systems have been introduced to facilitate the provision of up-to-date information. ALC surveys are undertaken, according to the published Guidelines, by field surveyors using handheld augers to examine soils to a depth of 1.2 metres, at a frequency of one boring per hectare for a detailed assessment. This is usually supplemented by digging occasional small pits (usually by hand) to inspect the soil profile. Information obtained by these methods is combined with climatic and other data to produce an ALC map and report. ALC maps are normally produced on an Ordnance Survey base at varying scales from 1:10,000 for detailed work to 1:50 000 for reconnaissance survey

There is no comprehensive programme to survey all areas in detail. Private consultants may survey land where it is under consideration for development, especially around the edge of towns, to allow comparisons between areas and to inform environmental assessments. ALC field surveys are usually time consuming and should be initiated well in advance of planning decisions. Planning authorities should ensure that sufficient detailed site specific ALC survey data is available to inform decision making.

Consultations

Natural England is consulted by planning authorities on the preparation of all development plans as part of its remit for the natural environment. For planning applications, specific consultations with Natural England are required under the Development Management Procedure Order in relation to best and most versatile agricultural land. These are for non agricultural development proposals that are not consistent with an adopted local plan and involve the loss of twenty hectares or more of the best and most versatile land. The land protection policy is relevant to all planning applications, including those on smaller areas, but it is for the planning authority to decide how significant the agricultural land issues are, and the need for field information. The planning authority may contact Natural England if it needs technical information or advice.

Consultations with Natural England are required on all applications for mineral working or waste disposal if the proposed afteruse is for agriculture or where the loss of best and most versatile agricultural land agricultural land will be 20 ha or more. Non-agricultural afteruse, for example for nature conservation or amenity, can be acceptable even on better quality land if soil resources are conserved and the long term potential of best and most versatile land is safeguarded by careful land restoration and aftercare.

Other factors

The ALC is a basis for assessing how development proposals affect agricultural land within the planning system, but it is not the sole consideration. Planning authorities are guided by the National Planning Policy Framework to protect and enhance soils more widely. This could include, for example, conserving soil resources during mineral working or construction, not granting permission for peat extraction from new or extended mineral sites, or preventing soil from being adversely affected by pollution. For information on the application of ALC in Wales, please see below.

Natural England Technical Information Note TIN049

Agricultural Land Classification: protecting the best and most versatile agricultural land

Further information

Details of the system of grading can be found in: *Agricultural Land Classification of England and Wales: revised guidelines and criteria for grading the quality of agricultural land* (MAFF, 1988).

Please note that planning authorities should send all planning related consultations and enquiries to Natural England by e-mail to **consultations@naturalengland.org.uk**. If it is not possible to consult us electronically then consultations should be sent to the following postal address:

Natural England
Consultation Service
Hornbeam House
Electra Way
Crewe Business Park
CREWE
Cheshire
CW1 6GJ

ALC information for Wales is held by Welsh Government. Detailed information and advice is available on request from Ian Rugg (**ian.rugg@wales.gsi.gov.uk**) or David Martyn (**david.martyn@wales.gsi.gov.uk**). If it is not possible to consult us electronically then consultations should be sent to the following postal address:

Welsh Government
Rhodfa Padarn
Llanbadarn Fawr
Aberystwyth
Ceredigion
SY23 3UR

Natural England publications are available to download from the Natural England website: **www.naturalengland.org.uk**.

For further information contact the Natural England Enquiry Service on 0300 060 0863 or e-mail **enquiries@naturalengland.org.uk**.

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Appendix KCC2

Agricultural Land Quality Report (text and plans only)

TIVERTON EAST

AGRICULTURAL LAND CLASSIFICATION SURVEY

CONTENTS

TIVERTON EAST

AGRICULTURAL LAND CLASSIFICATION SURVEY

INTRODUCTION

1. This report presents the findings of a semi-detailed Agricultural Land Classification (ALC) survey of 1078 ha of land at Tiverton. Field survey was based on 408 auger borings and 19 soil profile pits, and was completed in December 1996.

2. The survey was conducted by the Resource Planning Team of ADAS Taunton Statutory Group on behalf of MAFF Land Use Planning Unit in its statutory role in the preparation of Mid Devon Local Plan.

3. Information on climate, geology and soils, and from previous ALC surveys was considered and is presented in the relevant section. Apart from the published regional ALC map (MAFF 1977), which shows the site at a reconnaissance scale as mainly Grade 1 with other lower grades, the only part of the site which had been surveyed previously was the route of the North Devon Link Road which was surveyed at a scale of 1:25 000 (ADAS 1984).

4. Within the current survey area a total of 116 ha in six separate sites have been surveyed previously at detailed intensity in connection with the Tiverton Local Plan at that time (ADAS 1991). This survey shows mainly Grade 2 and both this and the current survey can be combined into a composite map with only minor modification. Although the 1984 survey for the North Devon Link Road shows a similar pattern of grades to the current survey, the two cannot be totally reconciled, partly because the current survey was conducted at lower intensity but more particularly because the 1984 survey used the previous guidelines for ALC criteria which have now been superseded, particularly in relation to the assessment of wetness and droughtiness. The current survey uses the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1988) and grade descriptions are summarised in Appendix I.

5. At the time of survey land cover was mainly grass and cereals for mixed dairy farming with maize for silage and a small area of potatoes. The only horticultural unit was Abbots Hood Fruit Farm at Halberton. Other non-agricultural land which was not surveyed included the golf course, industrial and residential land, roads and the canal and small areas of woodland and wetland.

SUMMARY

6. The distribution of ALC grades is shown on the accompanying 1:20 000 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: Tiverton East

Grade	Area (ha)	% Surveyed Area (707 ha)
1	252	36
2	171	24
3a	115	16
3b	140	20
4	25	3
5	4	1
Other land	214	
Total site area	921	

7. 76 % of the area was found to be best and most versatile. This was mainly Grade 1, red soils with no significant limitation although otherwise similar soils on the same deposits were found to be medium clay loam with a lower sand content in the topsoil and are therefore classified as Grade 2 with a minor limitation due to workability. Other good quality soils, mainly on the lower slopes, show a moderate limitation mainly due to wetness and are classified as Subgrade 3a.

8. Soils on the lower lying land frequently show a more serious moderate limitation due to wetness and are mapped mainly as Subgrade 3b. However, these mapping units also contain scattered borings of other grades, particularly Grade 4 with a severe wetness limitation. Where such observations occur consistently in a distinct area, this is shown as a Grade 4 mapping unit. Throughout the area there are several scattered short banks with stronger slopes which are shown as Subgrade 3b with a more serious moderate limitation due to gradient, but small areas of Grades 4 and 5 due to gradient are found only on the hills north of Halberton.

CLIMATE

9. 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.

10. 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 over most of the area there is no overall climatic limitation but in two isolated small areas, one near Chettiscombe and the other above Sellake there is an overall climatic limitation which limits the land to Grade 2.

11. 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: Tiverton East

Grid Reference		SS 971132	SS 985147	ST 007139
Altitude (m)		75	107	135
Accumulated Temperature (day °C)		1505	1467	1435
Average Annual Rainfall (mm)		1022	1043	1043
Overall Climatic Grade		1	1	2
Field Capacity Days		210	212	210
Moisture deficit (mm):	Wheat	89	85	83
	Potatoes	78	73	69

12. Although exposure and frost risk may cause a limitation in local areas around the site, they are not considered to be the primary limitation at any point.

RELIEF

13. Altitude ranges from 70 metres at Cowley Moor to 135 metres above Halberton with mainly level to moderate slopes which are not limiting. However, there are isolated short banks with strong slopes which are shown mainly as Subgrade 3b. The only moderately steep and steep slopes are found in small areas on the hills above Halberton. These are shown as Grades 4 and 5.

14. A risk of flooding is identified from local knowledge in the valley of the River Lowman from Bradford Farm to Little Gornhay. This is reported to affect perhaps one field on each side of the river, mainly in winter and flooding to a depth of several inches can be expected around six times a year, with each event lasting for a matter of hours rather than days. Although this seems to fit with the ALC restriction to Subgrade 3a, it is locally considered that such land is not suitable for cropping to cereals and in this survey it has therefore been restricted to Subgrade 3b. This affects several observations which otherwise would have been Subgrade 3a on soil characteristics.

GEOLOGY AND SOILS

15. The underlying geology of the site is shown on the published geology map (IGS, 1974) as Lower Sandstone, breccia and conglomerate with alluvium and river gravels. The river gravel deposits are shown in scattered areas on the higher ground on either side of the River Lowman valley. The current survey found little distinction between the deposits of Lower Sandstone and those of breccia and conglomerate, although if anything the Lower Sandstone tended to medium clay loam topsoil textures while the others were more gritty. The deposits shown as breccia and conglomerate were found to be mainly breccia but were not particularly stony and only in two isolated hilltop situations was a droughtiness limitation due to stone content noted, even to Grade 2 level.

16. Soils were mapped by the Soil Survey of England and Wales at a reconnaissance scale of 1:250 000 (SSEW, 1983) as mainly Bromsgrove, Crediton and Newnham associations with Hollington association developed on alluvial deposits on the valley of the River Lowman.

17. Bromsgrove associaton is described as well-drained reddish coarse loamy soils mainly over soft sandstone, deep in places and associated with fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging. Crediton association is described as well-drained gritty reddish loamy soils over breccia, locally less stony and with steep slopes in places. Newnham association is described as well-drained reddish coarse and fine loamy soils over gravel, locally deep. Hollington association is described as deep stoneless reddish fine silty and clayey soils variably affected by groundwater, found on flat land with a risk of flooding.

18. The published description and distribution was almost entirely substantiated by the current survey. The Crediton association soils were found to be consistently well-drained but the Bromsgrove association, as indicated in the description above, was found to be more variable and displayed a wider range of ALC grades based on topsoil texture and wetness characteristics.

AGRICULTURAL LAND CLASSIFICATION

19. The distribution of ALC grades found by the current survey is shown on the accompanying 1: 20 000 scale map and areas are summarised in Table 1. 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.

Grade 1

20. Soils shown as Grade 1 are all Wetness Class I, strong red or browny red soils found on the higher ground on Lower Sandstone and breccia deposits. Topsoil textures, many of which were confirmed by laboratory analysis, are mainly medium sandy loam with some fine sandy silt loam. The sandy loams, particularly on the gritty breccia deposists, were firm to texture by hand and appeared to take a slight polish, giving the impression of a sandy clay loam or even heavy clay loam texture but this was consistently dispelled by particle size distribution analysis. In practice, workability would be assisted by the grit and small stone content which is generally present, particularly on the breccia.

21. Two small areas were down-graded and shown as Grade 2 because of a minor droughtiness limitation due to apparent stone content, but generally the climatic conditions of this site make moderately stony profiles relatively resistant to a droughtiness limitation. This is illustrated by Pits 15 and 16 which remain droughtiness Grade 1 despite a considerable stone content which was assessed by sieving and displacement. In particular, Pit 15 was sited in a position reported to be especially gravelly and droughty although the droughtiness calculation based on measured stone content would not substantiate this.

Grade 2

22. Grade 2 soils on this site show minor limitations from a variety of causes. Two small areas on the highest ground, one near Chettiscombe and one near Sellake, have an overall climatic limitation limiting them to Grade 2, despite soil profiles otherwise similar to those described above for Grade 1. These are illustrated by Pits 6 and 17.

23. In the previous survey of sites within the current survey area (ADAS 1991), workability was found to be the main limitation due to medium clay loam topsoil textures. The current survey found this less general and mainly confined to areas around the previous survey sites. Perhaps the best illustration is provided by Pit 13 where medium clay loam topsoil is found at Wetness Class I, which is similar to the large block of Grade 2 on the north side of Craze Lowman.

24. The scattered blocks of Grade 2 in the south of the survey area lie in places found to show a slight wetness limitation, typically with fine sandy silt loam topsoil at Wetness Class II with gleying present in the lower subsoil or perhaps a slowly permeable layer evident just above 80 cm. Such profiles are illustrated by Pit 12.

Subgrade 3a

25. Extensive areas of Subgrade 3a with a moderate limitation due to wetness are found through the north and particularly in the south of the survey area. Typically these have a medium clay loam topsoil at Wetness Class II, most frequently due to gleying in the lower subsoil. Such conditions are illustrated by Pits 5 and 11.

26. Smaller areas of Subgrade 3a with a moderate limitation due to droughtiness were found developed on the patches of river gravel. This is illustrated by Pits 2 and 10 which although Wetness Class I with medium clay loam topsoils were found to have a stone content ranging from 25 to 30% in the topsoil to around 60% in the lower subsoil. Although stone contents of medium or larger stones at both these pits were only around 4 or 5%, the topsoil content of medium and large stones was assessed at Pit 3 as 11% indicating an additional limitation to Subgrade 3a due to topsoil stoninesss. However, this is considered to apply only to a limited area around this pit.

Subgrade 3b

27. The extensive areas of land shown as Subgrade 3b are limited most often by wetness mainly due to the presence of a slowly permeable horizon in the subsoil which on this site gives Subgrade 3b with heavy clay loam topsoil at Wetness Class III or medium clay loam topsoil at Wetness Class IV. These are illustrated by Pits 7 and 19 respectively. However, by the nature of slowly permeable layers which vary in depth and porosity, the Subgrade 3b mapping unit contains other observations of Subgrade 3a and Grade 4. Fields adjacent to the River Lowman are also considered to be subject to a risk of flooding equivalent to Subgrade 3b as described earlier in this report.

28. Small isolated areas of short strong slopes are found scattered through the survey area and are shown mainly as Subgrade 3b.

Grade 4

29. Several areas of Grade 4 are shown where several observations indicate a severe wetness limitation, although isolated borings occur in other mapping units. These are mainly Wetness Class IV with heavy silty clay loam topsoil textures as illustrated by Pits 1 and 8 although the small areas of marshland to the west and south of Pool Anthony Farm are considerably wetter than this, at least in parts, and the wettest areas have been fenced to exclude stock as they are unfit for grazing.

30. One small area of moderately steep slopes is shown to the north of Halberton.

Grade 5

31. Another steeply sloping bowl of land north of Halberton is shown as Grade 5 due to a very severe gradient limitation.

P Barnett
Resource Planning Team
Taunton Statutory Group
ADAS Bristol
January 1997

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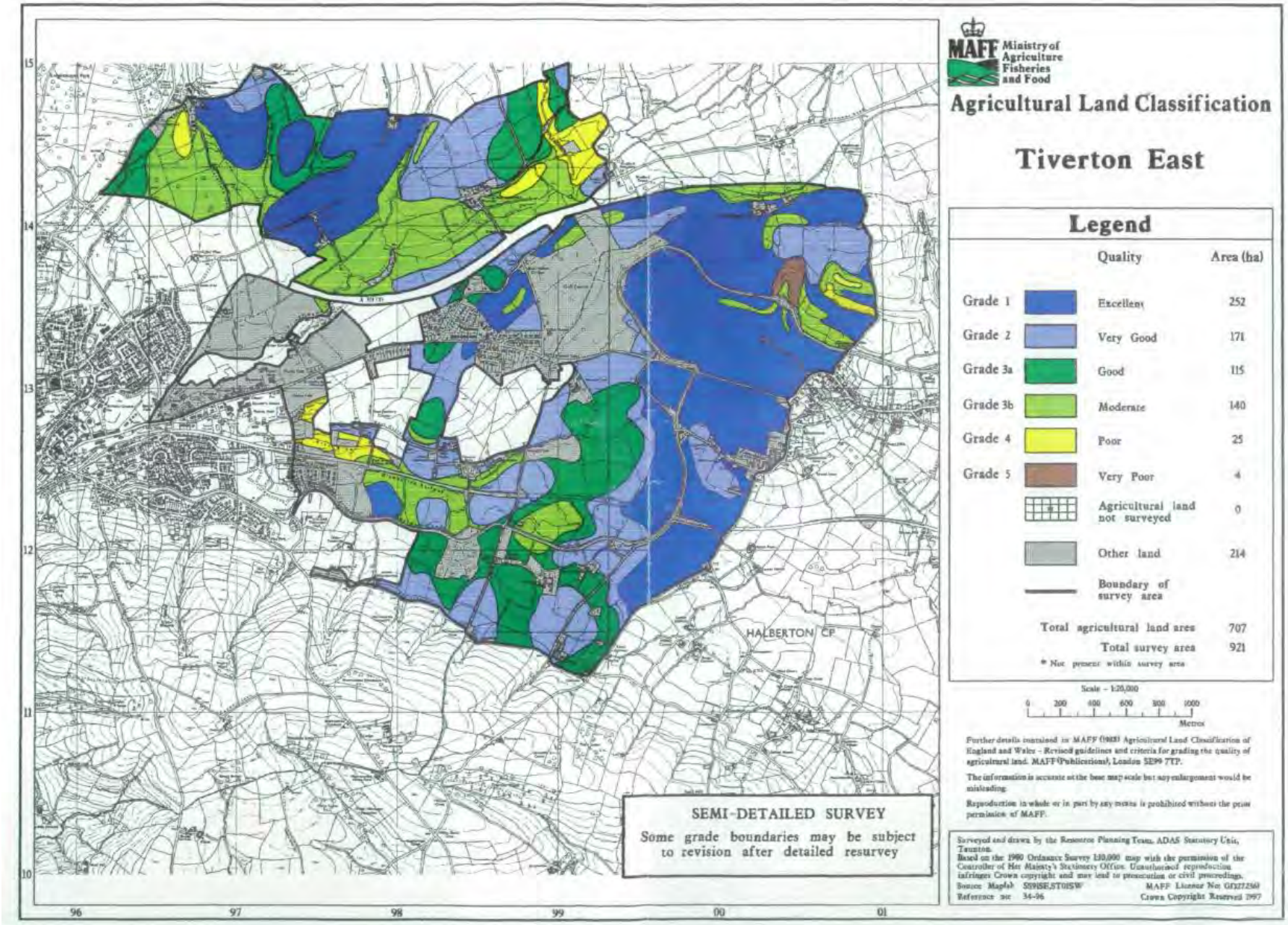
MAFF Ministry of Agriculture Fisheries and Food
Agricultural Land Classification
Tiverton East
Legend
Quality
Area (ha)
Grade 1 Excellent 252
Grade 2 Very Good 171
Grade 3a Good 115
Grade 3b Moderate 140
Grade 4 Poor 25
Grade 5 Very Poor 4
Agricultural land not surveyed 0
Other land 214
Boundary of survey area
Total agricultural land area 707
Total survey area 921
* Not present within survey area
Scale – 1:25,000
0 200 400 600 800 1000
Metres
Further details contained in MAFF (1988) Agricultural Land Classification of England and Wales – Revised guidelines and criteria for grading the quality of agricultural land. MAFF (Publications), London SE99 7TP.
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SEMI-DETAILED SURVEY
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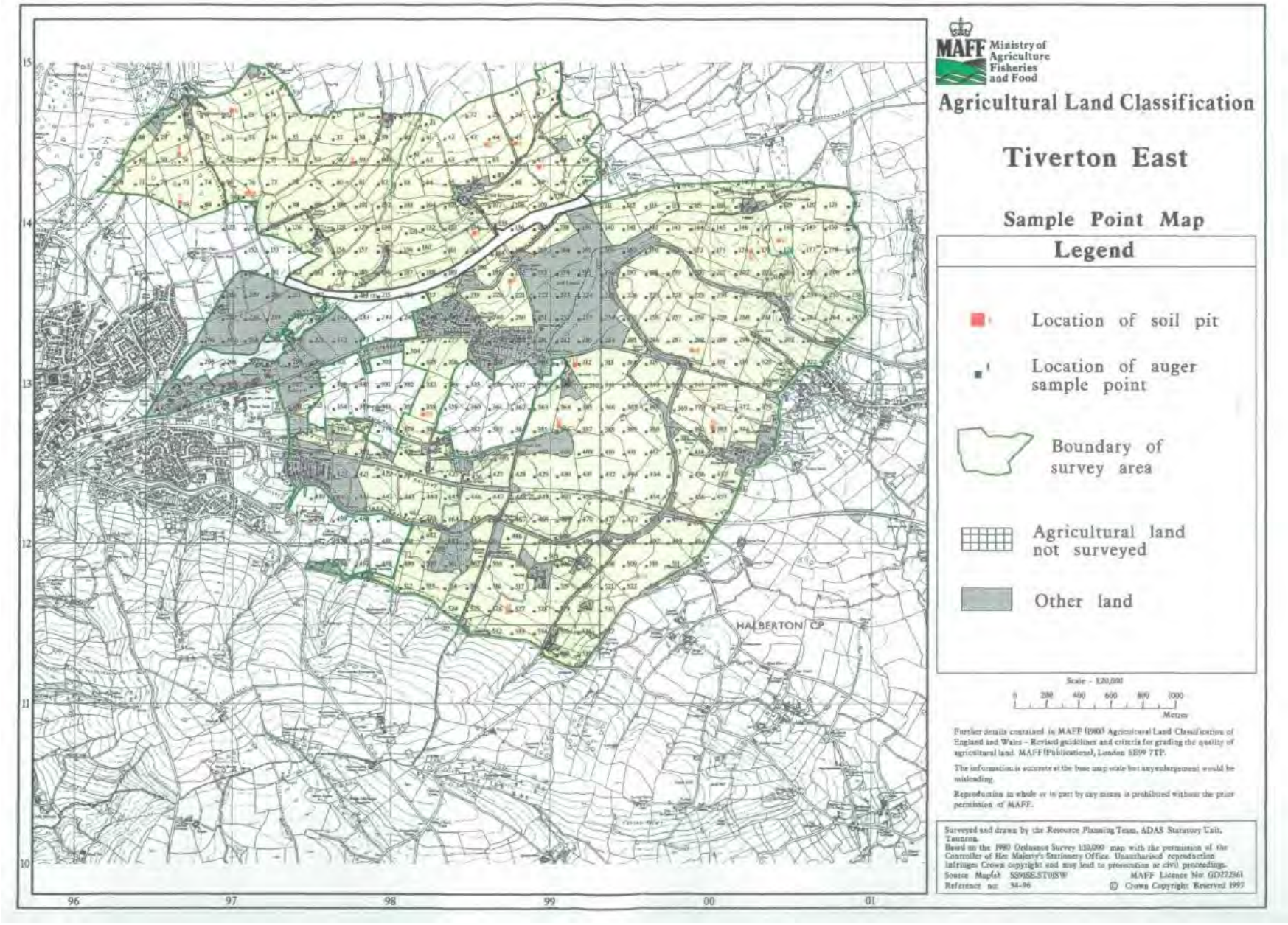
MAFF Ministry of Agriculture Fisheries and Food
Agricultural Land Classification
Tiverton East
Sample Point Map
Legend
Location of soil pit
Location of auger sample point
Boundary of survey area
Agricultural land not surveyed
Other land
HALBERTON CP
Scale - 1:20,000
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Metres
Further details contained in MAFF (1988) Agricultural Land Classification of England and Wales - Revised guidelines and criteria for grading the quality of agricultural land. MAFF(Publications), London SE99 7TP.
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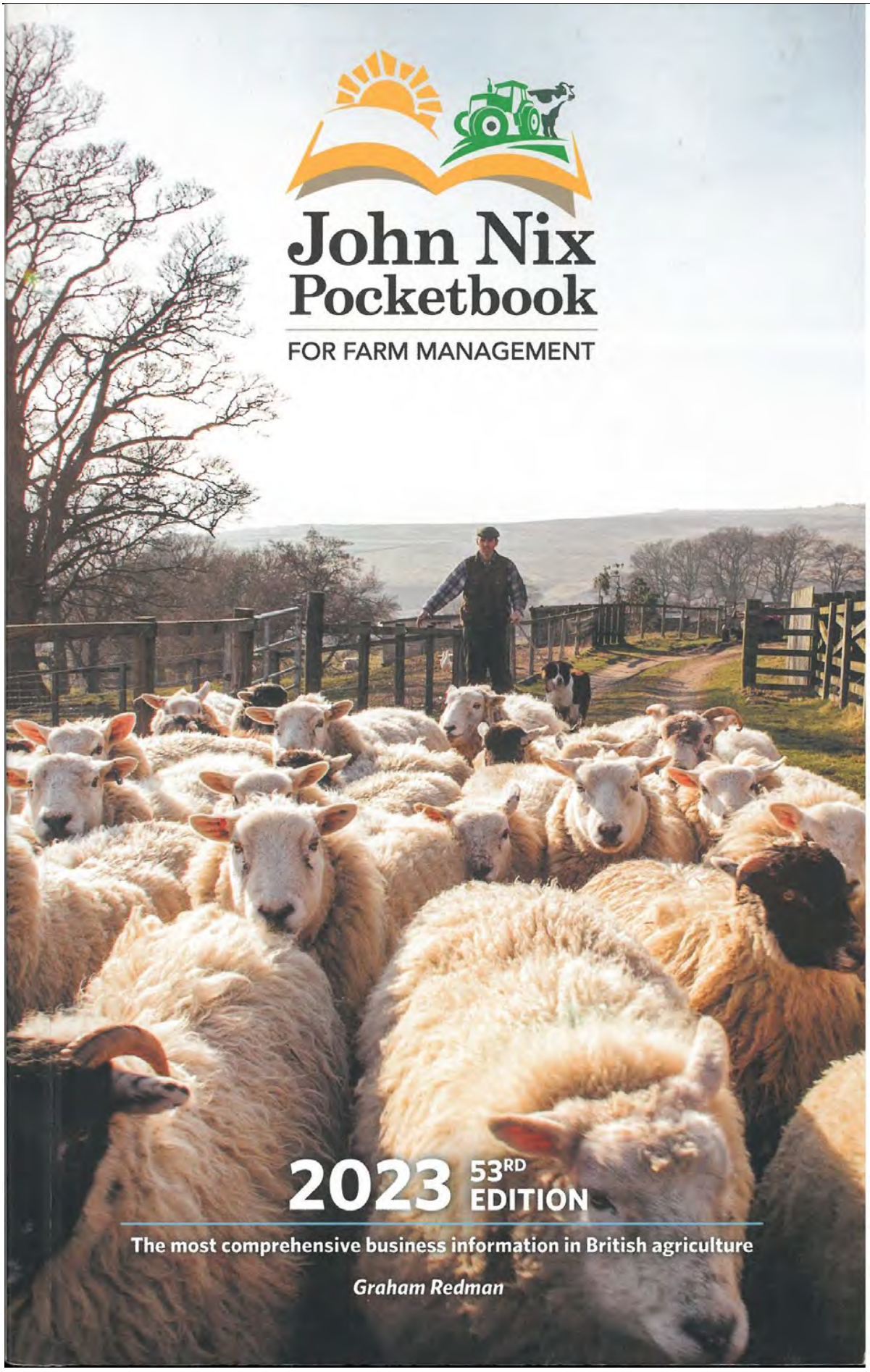
Appendix KCC3

Extracts from the Pocketbook for Farm Management


John Nix
Pocketbook
FOR FARM MANAGEMENT
2023 53RD EDITION
The most comprehensive business information in British agriculture
Graham Redman

II. ENTERPRISE DATA

1. CROPS

WHEAT

Feed Winter Wheat

Production level	Low	Average	High	
Yield: t/ha (t/ac)	7.25 (2.9)	8.60 (3.5)	10.00 (4.1)	
	£	£	£	£/t
Grain at £225/t	1,631	1,935 (784)	2,250 (911)	
Straw in Swath	173 (70)	173 (70)	173 (70)	
Total Output	**1,804 (731)**	**2,108 (854)**	**2,423 (981)**	***245***
Variable Costs £/ha *(£/ac)* :				
Seed.....		97 (39)		*11*
Fertiliser.....		533 (216)		*62*
Sprays.....		278 (113)		*32*
Total Variable Costs		908 (368)		*106*
Gross Margin £/ha (ac)	**896** (363)	**1200** (486)	**1,515** (613)	***140***

Fertiliser Basis 8.6t/ha				**Seed:**		**Sprays £/ha:**	
Nutrient	Kg/t	Kg/Ha	£/Ha	£/t C2	£605	Herbicides	£121
N	22	190	£358	Kg/Ha	175	Fungicides	£110
P	7.0	60	£85	% HSS	30%	Insecticides	£3
K	10.5	90	£90	£/t HSS	£435	PGRs	£17
						Other	£28

1. *Yields*. The average yield is for all winter feed wheat, i.e. all varieties and 1st and subsequent wheats. See over for First and Second Wheats. The yield used for feed and milling wheats including spring varieties is 8.4t/ha.

   The table below offers a weighted estimate of yield variations according to wheat type based on a national yield of 8.41t/ha. Percentages compare yield categories with 'all wheat'. These yields are used in the gross margins.

   Calculation of spread of 'average yields depending on wheat type –

		Winter	1st WW	2nd WW	spring	Total
t/ha		101%	102%	93%	85%	
Total	100%	8.49	8.63	7.82		**8.41**
Feed	101%	8.58	8.71	7.90		8.49
Bread	93%	7.90	8.02	7.27	6.18	7.82
Biscuit	99%	8.41	8.54	7.74		8.32

2. *Straw* is sold in the swath. Fertiliser accounts for mineral depletion.
3. *Seed* is costed with a single purpose dressing. Up to a third of growers require additional seed treatments, specifically to supress BYDV. This can add £150/t of seed (£26.50/ha). This has not been added in the gross margins so should be considered.
4. This schedule does not account for severe *grass weed infestations* such as Black Grass or Sterile Brome. Costs associated with managing such problems can amount to up to £170/hectare additional agrochemical costs. Yield losses increase as infestation rises:

OILSEED RAPE

Winter Oilseed Rape

Production level	Low	Average	High	
Yield: t/ha (t/ac)	3.00 (1.2)	3.50 (1.4)	4.00 (1.6)	
	£	£	£	£/t
Output at £515/t	1545 (626)	1,803 (730)	2,060 (834)	*515*
Variable Costs £/ha *(£/ac)* :				
Seed.....		74 (30)		*21*
Fertiliser.....		410 (166)		*117*
Sprays.....		253 (102)		*72*
Total Variable Costs		737 (298)		*210*
Gross Margin £/ha (ac)	**808** (327)	**1066** (432)	**1,323** (536)	***305***

Fertiliser Basis 3.5t/ha				**Seed:**		**Sprays:**	
Nutrient	Kg/t	Kg/Ha	£/Ha	£/Ha C	45	Herbicides	£125
N	*46*	160	£301	£/Ha Hy	90	Fungicides	£68
P	14	49	£69	£/Ha HSS	30	Insecticides	£16
K	11	39	£39	C:Hy:HSS	20:20:60	PGRs	£0
	Seed write-off		7%	Kg/Ha	5.5	Other	£44

1. *Prices*. The price used for the 2023 crop is £484/t plus oil bonuses at 44% oil content. The bonus is paid on the percentage of oil over 40%, at 1.5 times the sale value of the crop and an equal but opposite penalty below 40%. For example, in this case, the bonus is on 4% oil x £484 x 1.5 = £29. (Figures are rounded to the nearest £5.00 in the margin)

Spring Oilseed Rape

Production level	Low	Average	High	
Yield: t/ha (t/ac)	2.00 (0.8)	2.28 (0.9)	2.50 (1.0)	
	£	£	£	£/t
Output at £515/t	1030 (417)	1,172 (475)	1,288 (522)	*515*
Variable Costs £/ha *(£/ac)* :				
Seed.....		71 (29)		*31*
Fertiliser.....		202 (82)		*89*
Sprays.....		132 (53)		*58*
Total Variable Costs		405 (164)		*178*
Gross Margin £/ha (ac)	**625** (253)	**767** (311)	**883** (358)	***337***

2. *Inputs: Seed* as per WOSR, but 45% conventional, 5% HSS, 50% hybrid. *Fertiliser:* N/P/K at 80/32/25 kg/ha. *Sprays,* Herbicides. £51, Fungicides, £41, Insecticides £13, and Others £28/ha

3. *Winter Versus Spring*: As little as 8,000 hectares of spring OSR are grown in the UK which is 2.5% of the entire crop. As can be seen, the financial reward is slim compared with other combinable crops.