cc NO incl report
To ~~NO~~ X

Ministry of Agriculture, Fisheries and Food
Whitehall Place London SW1A 2HH

From the Minister's
Private Office

File

Andrew Turnbull Esq
10 Downing Street
London SW1

12 October 1984

Dear Andrew

As you requested, I enclose a copy of Professor Bell's report on ADAS. You may also find it useful to refer to the note that my Minister has circulated to the members of MISC 106, giving his preliminary reactions to the report.

As I told you over the telephone, we are giving the report extremely limited circulation to named persons only, and I would be grateful if you would ensure that it is handled with particular care.

X

Yours ever

Ivor

C I LLEWELYN
Private Secretary

MANAGEMENT-IN-CONFIDENCE: PERSONAL TO THE NAMED ADDRESSEE

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REPORT OF A STUDY OF ADAS

BY

ITS DIRECTOR GENERAL,

PROFESSOR RONALD L BELL

SEPTEMBER 1984

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I INTRODUCTION

1. On joining the Ministry last March as Director General of the Agricultural Development and Advisory Service, I was asked by the Minister, the Rt Hon Michael Jopling, MP to carry out my task of familiarisation with the Service in such a way as to enable me by the end of six months, to let him have my views on the future shape and direction of the Service. My study was given the following terms of reference:

(i) To assess and define the importance of the main services provided by ADAS having regard to:

(a) the benefit of those services both to the Ministry and its policies and to the agricultural, horticultural and related industries;

(b) the quality of the services;

(c) the net public cost of carrying them out;

(d) any similar services provided elsewhere;

(e) the Government's wider economic policies.

(ii) In the light of this assessment to examine whether:

(a) ADAS has the right priorities and whether there is a need for change in the present range and level of services;

(b) any of the services currently provided by ADAS could in the future be economically and effectively provided by the private sector either direct or under contract to ADAS; and

(c) there is scope for passing on some or all of the cost of any ADAS service to the users rather than the taxpayer.

2. In carrying out this remit, I have been supported by a small team comprising Mr C R Bodrell, Head of Management Services Division, Mr K B Baker, Deputy Regional Veterinary Officer, Leeds, Mr D E Bawcutt, Assistant Regional Agricultural Officer, Wolverhampton and Mr M J Ibbotson, Principal with specialist background as an Economic Adviser.

3. Conduct of the Study - It was clearly necessary for me to get to know the Service as quickly and as comprehensively as possible. This has involved an intensive programme of visits and discussions designed to cover all aspects of ADAS work both at Regional and Divisional and at the headquarters levels. Whilst it was not possible in the time available to visit every ADAS Unit, a selection of Regional, Divisional and Area Offices has been covered as well as the major laboratories of the Agricultural Science and Veterinary Services and also the Experimental Farms and Stations. Visits have also been made to Wales, Scotland and Northern Ireland for discussions with colleagues in ADAS and the other Agricultural Departments.

A list of the visits undertaken is at Appendix I. I have had personal discussions with about 550 ADAS staff and have met many more.

4. The Ministry's announcement of my appointment and the remit which I had been given included an invitation to any interested organisation to submit views and comments. Written views have been received from numerous organisations and individuals. These are listed in Appendix 2. There has also been a number of meetings - listed in Appendix 3 - with some of those who submitted written evidence and discussions with members of the Minister's Eastern and South Eastern Regional Panels.

5. Members of my support team have joined me in the range of visits and discussions and have carried out a number of desk studies of key topics. A great deal of ground has had to be covered in a relatively short time, but I believe that I have gained a sufficiently clear picture of this wide-ranging Service to be able to propose a general strategy for ADAS as we move into the second half of the 1980s. My report avoids the discussion of detail because many of my proposals will require further study and investigation before action can be taken.

II CURRENT ORGANISATION, AIMS AND OBJECTIVES, AND FUNCTIONS OF ADAS

6. Organisation - ADAS was formed in 1971 with the merging of the former National Agricultural Advisory Service (NAAS), the

Agricultural Land Service, the Land Drainage Service and the State Veterinary Service. ADAS is staffed by professional, scientific, technical and industrial staff and organised into four services: Agriculture Service, State Veterinary Service (SVS), Agricultural Science Service (ASS) and Land and Water Service (LAWS). Each is headed by an officer at Grade 3 level. Apart from the ASS which operates at Regional level, the other Services operate at Regional, Divisional and Area Office levels in England and Wales. Apart from the field staff of the SVS, ADAS does not operate in Scotland.

7. There are, currently, 4,800 staff in ADAS distributed between the four Services as follows:

Agriculture	1628	(33%)
Veterinary	1447	(31%)
Agricultural Science	1110	(23%)
Land and Water	622	(13%)

8. Aims and Objectives - The role of ADAS in line with MAFF aims is to foster an efficient, competitive, market-orientated and environmentally conscious agricultural industry in England and Wales, particularly by promoting the transfer of relevant technological information and/adoption of sound business, marketing and husbandry practices.

9. Functions - In pursuit of these aims and objectives, the principal functions of ADAS are to:

(i) provide information and advice to farmers and growers to help them develop technically efficient and financially sound farm businesses;

(ii) identify problems requiring further investigation and to carry out the necessary research and development;

(iii) contribute to advice given to Ministers and administrative colleagues on the scientific, technical and business implications of policy proposals and their implementation;

(iv) assist in the execution of Government policy measures such as plant and animal health and hygiene regulations, land drainage and other capital grant schemes, disease eradication, and safeguarding agricultural land in relation to other land uses.

10. A fuller description of the functions of each Service is at Appendix 4.

11. These functions, which might succinctly be classified as statutory, advisory, and research and development, currently consume the following resources expressed in man years:

Functions

Service	Statutory Regulatory & Scheme (man years)	Advice & Promotion (including Agricultural Services Scheme) (man years)	R & D (man years)
Agriculture	287	650	691
Agricultural Science	254	304	552
LAWS	284	257	81
Veterinary	941	233	273
Weighted Average (per cent)	37%	30%	33%

12. The exercise of these functions clearly reflects the substantial measure of Government involvement in the agricultural sector. A question, fundamental to my study, is whether the objectives of ADAS which so closely reflect the objectives of the Minstry towards the agricultural industry could be more effectively and efficiently achieved by other means and, in particular, by a lesser degree of public sector involvement. I have considered this question in relation to each of the three main functions of ADAS and the report discusses and recommends a number of changes. My overall conclusion, however, is that the continuing need for a substantial public service to meet the objectives is inescapable given:

(i) the high content of statutory and regulatory work;

(ii) the fact that the industry has to operate in the extremely competitive EC environment

with other Member States providing direct support of one sort or another to their industries;

(iii) the widely scattered and disparate nature of individual farm businesses which need to be kept up with technological progress and cannot reasonably be expected to do this for themselves;

(iv) the need for a service which provides impartial advice; and

(v) the need to provide advice which pays proper regard to environmental and other public interests.

13. Importance of main services provided - ADAS provides a range of services both to the industry and to the Ministry, the importance of which cannot be measured on a single scale. The Service has, however, established priorities in carrying out its functions. ADAS, as its name suggests, has two main functions, firstly of developing agricultural technology to the point where it can be put to use by the industry and/in secondly, ensuring that this happens through its promotional and advisory activities. However, there is a symbiosis between these two functions and the statutory function to which the Service is obliged to give top priority. This last-named function currently occupies over one third of its manpower resource. The advisory and promotional effort which to a large degree has been demand-led commands second priority and R & D comes next. That said, as the table in paragraph 11

shows, the contributionsto these three main functions vary considerably between Services. Thus, the SVS is most heavily involved in statutory work and the ASS in R & D, whilst Agriculture Service provides a particularly large contribution to the front line advisory effort. LAWS effort is divided fairly evenly between statutory and advisory work, with some R & D back-up.

14. The total net cost of ADAS in 1983/84 was £122.7m which includes the cost of support services both at Headquarters and in the Regions. £37.3m of these costs can be attributed to Advice and Promotion, including the Agricultural Services Scheme, £45.6m to Statutory, Regulatory and Scheme work and £39.8m to Research and Development. ADAS generated receipts of £7.3m in 1983/84 for the chargeable services it provided and for the produce which it sold from the EHFs and the EHSs.

15. During 1983 the value of final agricultural and horticultural output in the UK was of the order of £10,600m and its contribution to the gross domestic product was 2.1%. Our self-sufficiency in the products which we can produce in this country is now about 76%, compared with 67% in 1970/71. Moreover, the volume of exports has grown very substantially in this period. This is a reflection of the considerable increase in yields which have occurred and of the increase in productivity which the industry continues to achieve. This increase in productivity is estimated at 2% per annum on average. While it is not possible to assess in any detailed way the contribution which ADAS has made to the increases in agricultural productivity in this country over the years there can be no doubt that,

without it, this increase would not have been achieved. Many factors, including capital grants have of course made their contribution. But developments in technology, improvements in animal health, livestock and crop husbandry techniques and the production of new and better varieties have been extremely important and ADAS has had an unparalleled role in taking results of research from private and public sector laboratories, developing them and transferring the new technology to the industry.

III THE FUTURE REQUIREMENTS

16. Because an organisation is recognised as having made a significant contribution to the improved efficiency of a national industry it does not follow that the full range of services that it provides should continue to be provided or that the whole cost of such services should necessarily be borne by the taxpayer. In making my own assessment of what I see as a future requirement for a government-sponsored development and advisory service, I have had regard to the likely economic framework within which such an organisation would function over the next decade and the interests which the organisation would be required to serve.

17. The National Interest and the EC - During and since the war a major element of Government agricultural policy has been to encourage economic production and productivity though with much greater emphasis in recent years on cost-effectiveness and on the needs of the market. Of late there has been

an increasing volume of criticism of the cost of agricultural support and the production of large surpluses of key commodities. The Government has been pressing in Brussels for reductions in the real level of Community support. The more success there is in achieving this goal, the greater will be the need to foster the highest levels of efficiency in British agriculture. Efficiency is of course, not a matter of producing the highest levels of output regardless of cost, but of achieving the most favourable ratio of input to output having regard to the needs of the market.

18. Membership of the Community, places British agriculture in a highly competitive environment. Member countries give significant support to their agricultural industries (including the provision of research, development and advisory services) over and above that arising from the CAP. Government policy may, therefore, be expected to continue to encourage a healthy agricultural and horticultural industry in the United Kingdom capable of maintaining its competitiveness within the Community. The basis of this will, as previously, be the application and improvement of known techniques and the search for, and development of, new technology. This suggests that it will continue to be in the national interest for government to provide support for agricultural and horticultural

research and development and to ensure that the industry has access to information on new techniques and technology with which to maintain its efficiency and enhance its competitive strength.

19. But the national interest is concerned not simply with the economic health of the industry. The impact of modern farming methods on the countryside and on wildlife and farm animals has attracted criticism from a society which is showing increasing awareness of environmental and welfare issues. Section 41 of the Wildlife and Countryside Act 1981 placed upon Agriculture Ministers the duty to provide advice on the conservation and enhancement of the natural beauty and amenity of the countryside. This need has not diminished. Indeed concern about the effects of modern agriculture on the environment continues and Ministers accept that this concern must find a positive response in government.

20. The Needs of the Industry - The pressures facing the farming industry during the remainder of the 1980s are not hard to predict. Community measures designed to reduce surpluses will force producers to adapt ever more closely to market realities.

The quest for increased efficiency will accelerate. Efficient producers may be expected to continue to expand their businesses forcing the less efficient to look for alternative enterprises and additional sources of income or to leave the industry. The need to pay closer regard to environmental questions seems bound to develop, The requirements of the market for top quality, well presented produce, will continue to increase encouraged by the precise demands of the large retail outlets and of the consumer and by the work of Food From Britain. There is also a burgeoning interest in the health aspects of the national diet which will increasingly be brought to bear on the type and quality of agricultural produce that is required. These developments are not entirely new, but the pressures for substantial cut-backs in Community spending on agriculture and the reality of the recent measures in the milk sector mark a major change that farmers perceive as a shift in policy which, combined with the other pressures mentioned above, signal more challenging times ahead.

21. In these circumstances, farmers and growers may be expected to have even greater need of expert advice of a kind which ADAS is well equipped to provide. This is the strongly held opinion of many who have submitted views. The heavy demands placed upon the Service following the introduction of milk quotas provide clear evidence of the industry's dependence on ADAS help and guidance. Very substantial resources are being devoted to helping farmers to adapt to the new circumstances.

22. The agricultural supply industry embracing agrochemicals, veterinary pharmaceuticals, feeding stuffs and machinery is likely

to come under the same pressures as agriculture. The ever-increasing quest for improved efficiency in farming coupled with safety requirements demands extensive cooperation with the public service and in particular with ADAS. ADAS has a close working relationship with the agro-chemical industry under the Pesticides Safety Precautions Scheme and great reliance is placed upon ADAS information services, monitoring of pests and diseases and the warning schemes. There are also the private sector agricultural consultants who provide a limited advisory service to producers and who rely heavily on the specialist advice and services provided by ADAS.

23. The Requirements of Other Organisations - ADAS interacts with a large number of other organisations which have an interest in the agricultural scene. These include the Nature Conservancy Council, the Countryside Commission and the Farming and Wildlife Advisory Groups (FWAGS) whose main concern is with the effects of agriculture on wildlife and conservation; and the Agricultural Training Board which is concerned with the training of farmers and farm workers. It also has links with planning authorities and the Department of the Environment in furtherance of the Minister's land use policies and with the NCB in connection with restoration of open-cast coal sites. There is no indication that the demands of these organisations upon ADAS will diminish. Indeed, bodies like the NCC and the ATB have taken the opportunity of this Study to stress the importance to them of greater cooperation with the Service.

24. The Requirements of the Ministry - Within the Ministry, senior ADAS officials contribute practical advice to policy makers and Ministers based on the breadth and intimacy of the Service's knowledge of the industry gained through its daily contact with farmers and farming at all levels. Of course, much information is also obtained through the major organisations such as the NFU, the Marketing Boards and the various bodies like the MLC as well as the professional organisations. But this cannot replace the impartial, in-house contribution which ADAS provides.

25. The Service also performs the major task of implementation of a wide range of statutory functions, some of which - like the Milk and Dairies Regulations - are obligatory for all dairy farmers, while others, like the Maedi Visna Scheme in the animal health sphere and the Capital Grants Schemes are there for farmers who choose to avail themselves. Some of these functions might be capable of being performed by other official or Government agencies, and a number of options for hiving off have been examined in recent years. But the task of carrying out these functions creates opportunities for advisers to influence the efficiency of the industry and to that extent fits well with the objectives of the Service. More importantly, policy makers in the Ministry do not consider that these tasks could be performed better by other agencies; indeed the integration of policy making and its execution within the remit of one department probably leads to the most efficient administration of such policies. In the course of the manpower economies in recent years ADAS has been required to reduce its

resources committed to implementing statutory functions to the minimum consistent with providing a reliable service; but this work has been and continues to be treated as a first priority.

IV ADAS RESPONSE TO THE REQUIREMENTS

26. Research and Development - There are two very strong reasons why ADAS needs to continue to carry out development work. Firstly it is vital that the results of agricultural research carried out in the UK or elsewhere should be developed to the point where they can be utilised by or on behalf of the industry. Secondly, the ability of ADAS to carry out its statutory and advisory functions depends very much on its being actively involved with the latest technology.

27. Because of the importance of development work, it is important that, if funds for R & D are being reduced, ADAS should concentrate its efforts on the D end of the R to D spectrum. The distribution of public funds as between research and development does not adequately reflect the fact that development work is very much more costly than research. It is up to ADAS to ensure, so far as it can, that most of its R & D efforts go into converting research results into useable technology. I say "most" rather than "all" because it is important that a sufficient effort be devoted to the monitoring of development work in other countries. There is evidence that inadequate attention has been given to this aspect.

28. A very large fraction of all of the R & D which is carried out in ADAS is concentrated either in central laboratories

(CVL and satellites; Harpenden, Slough, Tolworth, Worplesdon; FDEU and the Farm Buildings Group), on the Experimental Husbandry Farms and Horticultural Stations, or in the Regional Science laboratories. In order to ensure that the work here is on topics of highest priority the procedures for approving the initiation and continuation of such work should be brought much more closely into line with those used for the commissioning of research which is contracted out. Further, to ensure that this in-house work is of the highest quality, that it is well coordinated with relevant work in Universities and AFRC Institutes, and that it is likely to produce results of benefit to the industry, it should be inspected periodically by an external review group comprising academics, members of AFRC staff and representatives of the industry.

29. The procedures discussed above are neither feasible nor necessary for the many small investigations which are carried out by staff in VI centres and by members of staff of Agriculture Service and LAWS based in Divisional and Area Offices. There is also a range of work carried out in the regional laboratories of the ASS which do not form part of a national programme. This work should not be classified as "R & D", valuable as it is for providing solutions to important problems. Rather, it should be seen as part of the advisory or statutory work in which these staff are primarily engaged. They should be encouraged to continue with such investigations as part of their service to the industry and as part of their Continuing Professional

(CPD)
Development/and training. But the effort expended on these activities at present is greater than their degree of priority would seem to justify. A useful guideline might be to place a ceiling of not more than 15% of these staff's time on CPD - this provision to include all elements of training. Careful management of this limit should lead to some saving in posts.

30. The transition from research to utilisation does not consist of a simple sequence of steps but rather of a complex series of iterations. For this and other reasons it is necessary for there to be a genuine partnership between those responsible for the research and those for the development. This is not easy to achieve but there is an excellent opportunity for progress to be made on the experimental centres. This extensive facility encompasses the whole range of farming types, soil types and geographical situations found in England and Wales. Some are better focussed and located than others. They do, however, provide a very special situation where new elements of technology can be tested as part of a complete farming system. To fully exploit this opportunity their terms of reference need to be made more clear, the staffing strengthened by the redeployment of specialists from other parts of ADAS and their efforts focussed on fewer projects. They should build up existing contacts with AFRC Institutes to ensure maximum benefit from research. At the other end, there is a pressing need to ensure that their own results are passed on to their colleagues and are demonstrated in a truly commercial situation through greater exploitation of the Development Farm concept. Steps should also be taken to ensure that the results of their work are rapidly written up for publication

in refereed or, if appropriate, other journals having a wide distribution.

31. A further stratagem for improving the rate of adoption of the results of development work is for ADAS to seek to involve the industry in the identification of and payment for appropriate projects which would be of national benefit. Since the pay-back time on development work can be relatively short it should be easier to attract external funds for development work than for research. I recognise, however, that the kind of development work that is most likely to attract commissions from the private sector is that related to products rather than production systems. ADAS should endeavour to exploit the opportunities. The possibility of raising revenue for R & D via a levy on the industry is mentioned in paragraph 51.

32. Advice to the Industry - The Service's role, which it is uniquely placed to fulfil, of interpreting and communicating the results and application of research to the industry and in focusing on environmental issues seems beyond doubt. It would be irresponsible to think in terms of abandoning this role without there being an adequate alternative in sight to take its place. It should continue to be the aim of the Service to ensure the speedy adoption of new and existing technology. In part, this will continue to be met through responses to problems posed by individual farmers and others in the industry / but I believe the Service could be more positive through active promotion of development work findings. The adoption of the advisory project approach, advisory centres and well conceived demonstrations and conferences facilitate this thrust. In many instances it is possible for ADAS to work in conjunction with other organisations in these activities and this should be encouraged.

33. Although the individual farm visit is an effective mode of operation there has been some shift of emphasis towards other techniques of getting over advice to farmers. Nonetheless there remains scope for further developing these techniques. In particular, more effort should be devoted to group activity. Such groups might be organised by farmers or other agencies eg the ATB, or the MLC, and the Service should actively seek to exploit these opportunities rather than duplicate activity or fail to respond to openings created by others. The industry will also be looking to obtain information and advice very quickly through use of modern information technology and the Service must be equipped and ready to meet this demand. I deal with this subject at greater length in Section V.

34. With the growing interest in environmental questions, the aim of the Service must be to reconcile the purely economic interests of the industry and the individual farmer with the wider public interest. Since the enactment of the Wildlife and Countryside Act, 1981, the Service has been grappling with this problem but there is need to encourage changes of attitude and appreciation among all advisers employed in the field. Sound conservation principles will need to be incorporated into all aspects of agricultural and horticultural practice; similarly in the urban fringes, farmers need encouragement to take the lead in improving access to the countryside and helping to acquaint the public with all that is involved in food production. No other organisation is as well placed or qualified as ADAS to take on these tasks. I also see scope for the State Veterinary Service and the Veterinary Investigation Service to play a more

active role in the promotion of animal welfare and preventive medicine, in cooperation, as appropriate, with the private practitioner.

35. I foresee a developing need for farm business, socio-economic (including diversification) and environment-related advice in the wake of adjustments to the CAP. The private sector may be expected in certain parts of the South and East of England to continue to provide a certain amount of farmer-sponsored consultancy for arable crops. Their contribution is less well developed in the livestock sector. But farmers and others in the industry are going to need the specialist, scientific knowledge which ADAS commands and within the Service a higher priority must be given to the need for all AAO's, HAO's and some LAWS personnel to develop business management, socio economic and conservation skills to meet the increasing demands for advice of this nature. The development of specialisation at the AAO level and the degree to which it has been taken within certain disciplines is encouraging.

36. In addition to giving technical advice, the Service is capable of providing services to the industry that are only partially met by the private sector. The VIS and Agricultural Science Service each provide diagnostic and analytical services on a chargeable basis. My impression is that these services are not vigorously marketed. Moreover the number of plant and

soil samples which are examined and charged for in support of advisory work seems disappointingly low. I believe that this owes something to the current system of collecting charges before results are provided. The Agricultural Services Scheme should be thoroughly reviewed with the aim of finding out what the industry requires and of seeking to improve the speed of service and to increase the volume of throughput. The review needs also to examine the pricing policy both as to the levels of charges and methods of payment. I have noted the recommendations of the VIS study that the system of charging for diagnostic work should also be reviewed.

37. Advice to Policy Divisions - As mentioned in paragraph 25, in a department like MAFF, Ministers and policy divisions need constant access to scientific and professional advice. The department's record of policy formulation based on science and technology is a good one, particularly in the field of animal and plant health where, of course, much of the work of the Service is statutorily based. There are, however, areas in the Ministry where the links with ADAS are not as well forged and where policy managers acknowledge that there is scope for greater cooperation and consultation.

38. As MAFF's science and technology arm, ADAS provides the basis of the Department's scientific input into policy formulation both at home and in Brussels. Every opportunity should be taken to strengthen this. There is a twofold need: firstly, for policy divisions to be more actively aware of the body of expertise

which ADAS has in technical matters and to use it; secondly, for ADAS staff, particularly those at Headquarters, readily to cooperate in the process of policy formulation and more actively to orientate their duties to that end.

39. As a decentralised organisation, one of the strengths of ADAS is its interaction with the farming community. It is thus well placed to monitor the performance of the industry and to have some influence over that performance. This offers the opportunity for ADAS to be active in promoting and furthering MAFF policies.

40. Statutory, Regulatory and Scheme Work - As indicated in paragraph 26, ADAS will continue to be required to undertake the numerous statutory, regulatory and scheme activities pertaining to agriculture, horticulture and animal and plant health. This considerable commitment seems unlikely to diminish.

41. There are certain aspects of these activities which need to be highlighted. Firstly, such work demands and receives the highest priority, whilst its volume is often unpredictable. Secondly, I suspect there is the tendency to devote undue time to it, in an effort to ensure that all eventualities are covered. This open-ended commitment detracts from the time available for other activities and means should be sought to minimise this effect. There are a number of ways in which this could be done.

42. Firstly, there is the information highlighted in our management information systems /regarding manpower effort which the various schemes currently absorb. Systematic study of this information should lead us to question whether or not the effort involved is consistent with the aims and purposes of individual schemes. Secondly, the management of staff who devote only a part of their time to carrying out a statutory function needs to be tightened up possibly through the prescription of average time allocations per case and more careful monitoring of performance. These are thoughts that need further consideration in consultation with senior management in the department.

43. The possibility of raising charges for statutory, regulatory and scheme work justifies careful consideration. In principle there is no reason why charges should not be introduced for many of these functions. I recognise however that many of the schemes are of a sensitive nature involving the control of animal diseases where the public interest could be prejudiced.

V IMPLICATIONS FOR THE FUTURE WORK OF ADAS

44. All that I have seen, read and heard in the last six months convinces me of the continuing need both within the Ministry and in the industry for a strong ADAS. There is, however, need for some directional change both in the Service's coverage and management of its R & D effort and in its advisory and promotional acitivities. There is also scope for the Service to attract funds in both these areas as well as, possibly, in its execution of its statutory functions. These possibilities are discussed at greater length in this Section of the report.

45. Marketing of Services - ADAS has tended to be a reactive organisation, responding to the demands and needs of the farming industry. What is now required is a positive, pro-active approach to its activities, and this approach must embrace the concept of marketing in all its aspects starting with an exploration of what the customer wants.

46. ADAS has a great deal to offer. Advice, promotional events and technical publications are generally of immediate benefit to the individuals concerned. Advice is sought in the expectation that, if followed, it will benefit the farm business. Attendance at promotional events and the reading of advisory literature is similarly motivated. In this sense, none of these services provided by ADAS are any different from the many others which individual farmers purchase. In principle, therefore, it seems entirely appropriate that farmers, growers, consultants and whoever else in the industry avail themselves of these services should meet the cost of their provision.

47. The introduction of charges for advice will, however, require amendment to the Agriculture (Miscellaneous Provisions) Act 1944. The Act provided for the establishment of the National Agricultural Advisory Service for the purpose of providing technical advice "free of charge". Section 41 of the Wildlife and Countryside Act refers to the requirement placed upon Ministers by the 1944 Act and extends the duty to provide free advice to include advice on the conservation and enhancement of the natural beauty and amenity of the

countryside. It seems unlikely that Ministers would wish to introduce charges for the latter though in the nature of things, this type of advice is inexorably linked with technical advice affecting the whole farm business. This will need to be taken into account in determining the approach to charging as well as the level of cost recovery that might be appropriate.

48. It has also to be recognised that the introduction of charges for a service which for so long has been provided free is bound to have undesired effects. Dependent on where the level of charges is pitched, there could be a substantial fall in demand which could jeopardise the dual objectives of maintaining a competitive, domestic industry, whilst seeking to influence those decisions of farmers and others which could otherwise have deleterious effects on the environment. The relationships between advisers and clients are likely to change and some of the good features attaching to a free service are likely to be lost forever. Farmers will be less inclined to cooperate with ADAS, for example, in permitting the free use of their farms for promotional events. There will be difficulties for advisers in balancing the demands of the department with the demands of the paying customer. Many ADAS staff are, naturally, very apprehensive about the changes in approach that will be required both in terms of "marketing" their services and in charging for them. The industry will also share this apprehension. If, therefore, Ministers decide that it is right to introduce charges for advice, it will call for careful planning and gradual introduction. It would clearly not be

sensible to look for full cost recovery at once. Indeed, it might well be preferable to make clear that in the national interest, the Government intends to continue to provide a specific level of service and to aim for recovery of no more than a proportion of its cost. This would allow charges to be fixed at levels which the market will bear and avoid the risk of killing off the Service.

49. There is, also, considerable concern that the introduction of charges across the board would effectively preclude some producers from gaining access to information and advice. This raises the need to consider whether a system of differential charging might be feasible. The difficulties of operating such arrangements should not, however, be under-estimated and it is suggested that this option should be thoroughly examined as part of the further studies that will be necessary before proposals for implementation of my recommendations are finally made.

50. An alternative to raising charges against the provision of advice to individuals is to seek to recoup that proportion of costs which might be thought appropriate via a compulsory levy on all agricultural output. This would avoid many of the difficulties foreseen in paragraphs 46 to 48, but cuts across the principle that the individual beneficiary should pay for the advice/service that he receives. A levy system would also do nothing to stimulate the provision of private sector services similar to those provided by ADAS. The case for raising levy revenue to help

finance R & D is somewhat stronger because the benefits are less obviously restricted to individuals and serve the general good of the agricultural industry. The Minister may wish to have the levy option further examined.

51. Privatisation and Contracting Out - ADAS already contracts out a significant proportion of veterinary work to private practitioners. The opportunities for moving any further significant areas of ADAS work into the private sector appear to be very limited at present. A policy of direct charging for the services provided would be likely, however, to encourage the development of private sector agencies capable, in time, of taking over some of the functions. At this stage, that eventuality can be seen only as a possible long term consequence of a charging policy rather than as a declared objective.

52. There could be some research activities which would benefit from being hived off as a consequence of an orientation towards development. Though these are likely to be very limited, they are worthy of further study.

53. There appears to be little, if any scope for privatising or contracting out of statutory and regulatory functions. One or two of the more obvious possibilities have, I understand, been explored recently eg the testing of samples for IBAP schemes, where privatisation has been found to be more costly than retention in-house.

54. Information Technology - Throughout ADAS, only a modest start has been made with the application of information technology. Hitherto, all ADAS services have relied almost exclusively on traditional methods of communication both within the Service and in their contacts with the industry. The Service has pioneered the presentation of agricultural information through Prestel, but only a small proportion of advisory staff and farmers actually have access to this service and greater emphasis now needs to be given to extending the range of information provided by such means.

55. I am convinced that there are great opportunities which the Service must grasp to step up its efficiency and effectiveness by making far greater use of information technology. As explained in Appendix 5, this will call for a considerable investment in hardware, software and manpower. A substantial training investment will also be required to ensure that the new technology is well used. Once the databases have been set up, however, and this will take up to five years, the possibility of staff savings can be foreseen as the Service uses the new technology to improve its efficiency in terms of speed and accuracy of response both to in-house work and to the demands of the industry. There is the added advantage that, where charging is in operation, any computer based information service has an intrinsic capability for automatic invoicing.

56. As information technology develops I foresee a reduced need for ADAS advisory publications. Currently there are too

many titles covering too many types of publication. More attention needs to be given to market requirements and this suggests a move to more readable, attractively presented and aggressively promoted material. Other than for awareness literature, all publications should carry a price and whenever possible farmers and growers should be encouraged to join annual subscription schemes.

57. The telephone information services are a useful adjunct to advisory activity but more effort is required in promoting these services and in improving their timeliness and availability.

58. Local radio also represents a valuable opening for ADAS information. This medium could be more fully exploited through the greater use of integrated promotional programmes in addition to news services.

59. Deployment and Management of Staff - The major resource of ADAS is its professional and support staff whose salaries and expenses account for a very large part of the total cost of the Service. If the proposals outlined in this report were adopted it would be necessary to examine in detail their implications for the deployment and management of the staff. In the short term, there is no requirement for a major reorganisation as a necessary pre-condition for implementation. Certain changes of a specific and limited kind would be necessary and these are detailed below.

60. As already suggested I envisage economies in staff once the turnover to computer-based information supply has been fully developed. To get to this point however there will be the requirement, in the immediate short term, for a substantial redeployment of existing specialist staff to build up the databases and to develop applications software. This implies some loss to the front-line service of specialist expertise in the short term, but I believe that this is an investment well worth making to achieve the leap forward that the turnover to computer-based information services will mean for the Service and the industry. Appendix 5 explains in greater detail how I envisage this redeployment of effort working.

61. Another area in which a redeployment is called for is in that of the experimental centres. I outline in paragraph 29 the opportunities which I see for better use of this resource. To make best use of the unique opportunity which the centres offer requires the staffing to be strengthened by the transfer of appropriate specialists from Agriculture Service, Science Service and possibly LAWS and SVS also.

62. In paragraph 35 I have referred to the requirement for greater involvement by the Service in conservation, farm animal welfare and socio-economic activities. This calls for some redeployment of effort but the requirement is not so much for more specialist staff as for strengthening the front-line advisory effort with better preparation for and encouragement to pursue these aspects of advisory work. There is the requirement for the deployment of additional staff resources here.

63. As I have said, I believe that the new approach that I have set out can be implemented through the present structure of the Service. But in the longer term I can foresee that changes in the approach to our work may lead to the need for organisational changes within the Service. For instance, a feature of ADAS which I find very surprising is the extent to which it is organised on a discipline basis rather than functionally. Whether or not this derives from the academic background where the Service had its origins, I believe that an organisation which is as "downstream" as ADAS should have a greater emphasis on a functional grouping of its staff with a greater delegation of responsibility to these groups so as to enable them to respond effectively to the needs of their customers. I should like to give these thoughts further consideration in consultation with senior colleagues before developing them further.

VI CONCLUSION AND RECOMMENDATIONS

64. During the extensive programme of visits and interviews which I have made as a preparation for this report I have been struck by the enthusiasm and dedication of ADAS staff and by the high esteem in which the whole Service is held by the industry which it serves. Clearly it has rendered to that industry a most valuable service. The needs of the industry are now entering a period of change. At the same time, with pressures on public spending, the whole of the Government Service is seeking ways of carrying out its functions more economically and more effectively. ADAS must respond to both these requirements. It has in the past shown the capacity to meet changes in its

stride and I believe that it can do so again. Given that the required changes are well articulated and carefully managed ADAS has a challenging future to which it should look forward with confidence.

65. The following recommendations are confined to matters of broad principle concerning ADAS functions. If the principles are approved it will be necessary to work out the details of and methods for their implementation.

66. Research and Development - Most effort should be concentrated at the D end of the R to D spectrum. Any work which is very far from this end or which is carried out in small units of doubtful viability should be critically examined with a view to its termination or to its being hived off. (Paragraphs 27 and 52)

67. All of the R & D which is carried out at central or regional laboratories/units/experimental centres should be subject to the same commissioning arrangements as are applied to external contractors and should be subject to periodic external review. (Paragraph 28)

68. The widely-distributed investigational work carried out by staff in the Divisional and Area Offices and in VI Centres

should not be classified as R & D. It should be seen as part of the advisory work of these staff and as part of their Continuing Professional Development, managed locally and subject to a prescribed time allocation which taken together with other training should amount to no more than an average of 15% of their time. (Paragraph 29)

69. The terms of reference of EHFs and EHSs should be sharpened up and their staffing enhanced by the inclusion of appropriate specialists drawn from all ADAS disciplines. (Paragraph 30)

70. Improved interactions between the experimental centres and the Institutes of AFRC should be sought. (Paragraph 30)

71. Industry should be invited to help identify development projects and to contribute to their cost. (Paragraph 31)

72. Greater attention should be paid to the need to monitor development work carried out overseas. (Paragraph 27)

73. Advice and Promotion - A "marketing" approach should be adopted in the provision of all advice (including publications) and promotion to the industry. This should involve continual consideration of what the customer wants and is prepared to pay for. (Paragraph 45)

74. Wherever there is a clearly identifiable and substantial benefit to the customer Ministers may like to consider whether the customer should bear part or all of the cost of providing the service whether by direct charging or by general levy. (Paragraphs 46-50)

75. There should be a commitment to the principle of using computer-based information technology as the method by which a great deal of information and advice is provided to the industry in the late 1980's. A substantial redeployment of effort should now be made in all four Services of ADAS so as to prepare for the transition. (Paragraphs 54-55)

76. Whilst there will be a continuing need for advice which helps farmers and growers to maintain their competitiveness a certain proportion of advisory effort should be earmarked for guiding them in conservation and animal welfare aspects. (Paragraph 62)

77. All ADAS officers should recognise their role in monitoring the performance of the industry on behalf of MAFF so as to provide information to guide policy decisions. ADAS as an integral part of the Ministry should actively promote and further Ministry policies. (Paragraphs 37-39).

78. The role of HQ officers of ADAS in providing technical advice to policy divisions on both the formulation and application of policy should be more extensively recognised and such cooperation encouraged. (Paragraphs 37-39)

79. Statutory, Regulatory and Scheme Work - ADAS should continue to carry out this work. (Paragraphs 25 and 40). The possibility of charging should however be examined in the case of each scheme so as to reveal where recoupment of costs could be made without prejudice to the public and national interest. (Paragraph 43)

80. Final Remark - Much of what is said in my report will not surprise members of the Service nor the farming community. There is, I am sure, a realisation that directional changes are necessary both in the industry and in the service which ADAS will be required to provide. On the other hand, I do not under-estimate the problem of managing the transition to a more commercially-orientated Service which will call for imaginative leadership at all levels and a not inconsiderable change of approach by all staff.

Ronald L Bell.

RONALD L BELL

VISITS TO ADAS OFFICES, LABORATORIES, ETC

Luddington EHS (A)	24.4.84
Midlands and Western Regional Office (Wolverhampton) (A)	24.4.84
Stafford Area Office (A)	25.4.84
Bakewell Area Office (A)	25.4.84
Worksop Area Office (A)	25.4.84
Chesser House, Edinburgh (DAFS)	2.5.84
Lasswade Laboratory (V)	2.5.84
Newcastle Divisional Office (L)	10.5.84
Agricultural Restoration Unit (Newcastle) (L)	10.5.84
Northern Regional Office (Leeds) (L, V)	11.5.84
Leeds Animal Health Centre (V)	11.5.84
South Western Regional Office (Bristol) (AS, L)	17.5.84
Taunton Divisional Office (L)	18.5.84
Guildford Divisional Office (A, V)	22.5.84
Winchester Animal Health Centre (V)	22.5.84
Winchester Area Office (A)	22.5.84
South Eastern Regional Office (Reading) (A)	23.5.84
Extension Development Unit (Reading) (A)	23.5.84
Agricultural Computing Unit (Reading) (A)	23.5.84
Norwich Divisional Office (L)	29.5.84
Eastern Regional Office (Cambridge) (AS, L)	30.5.84
Field Drainage Experimental Unit (Cambridge) (L)	30.5.84
Carmarthen VIC (V)	5.6.84
Carmarthen Divisional Office (A, L, V)	5.6.84
Wales - Park Avenue, Aberystwyth (L)	5.6.84
Trawsgoed EHF (A)	6.6.84
Newtown Area Office (A, L)	6.6.84
Worcester VIC (V)	13.6.84
Liscombe EHF (A)	14.6.84
Midlands and Western Region Sandland 84/Irrigation 84 Demonstration (A, AS, L)	26.6.84
Gleadthorpe EHF (A)	27.6.84
Boxworth EHF (A)	27.6.84
Brogdale EHS (The National Fruit Trials) (A)	29.6.84
Central Veterinary Laboratory (Weybridge) (V)	5.7.84
Harpenden Laboratory (AS)	6.7.84
Redesdale EHF (A)	11.7.84

High Mowthorpe EHF (A)	11.7.84
Bridgets EHF (A)	17.7.84
ADAS Unit, NAC, Stoneleigh (A, AS, L, V)	19.7.84
Slough Laboratory (AS)	1.8.84
Worplesdon Laboratory (AS)	1.8.84

NOTES:

1) Meetings were held with HQ groups of all ADAS Services.

2) Discussions were undertaken with some MAFF Under Secretaries and all Chief Regional Officers.

3) Where possible meetings were held with Local Trade Union representatives during visits to Regions and Wales.

4) During each visit to the Regions and Wales an evening meeting was held with the Regional Heads of Services.

CODE:

A - Agriculture Service

AS - Agricultural Science Service

L - Land and Water Service

V - Veterinary Service

ORGANISATIONS AND INDIVIDUALS CONTRIBUTING WRITTEN EVIDENCE

Agricultural and Allied Workers National Trade Group
Agricultural and Food Research Council
Agricultural Training Board
* Mr D B Allison
Association of County Councils
Association of District Councils
Bacon and Meat Manufacturers Association
Mr M Banwell
Mr R Bawcki
Beechams Foods
British Agrochemicals Association
British Institute of Agricultural Consultants
British Leather Federation
British Veterinary Association
Mr W B Cartmell
Chief Regional Officers, MAFF
* Mr A J Collard
Committee of Vice-Chancellors and Principals of the Universities of the UK
Council for the Protection of Rural England
Council of the Scottish Agricultural Colleges
Country Landowners Association
Countryside Commission
Crown Chemical Company
Department of Agriculture for Scotland
Dr F H Dodd
Ecology Party
Eggs Authority
Sir Charles Evans
Farm and Food Society
Farmers Union of Wales
Farming and Wildlife Advisory Group
* Mr J B Finney
Food From Britain
Food Manufacturers Association
Dr P Froggatt
* Mr R M Gamble
Mr A Green

* Mr C Groom
Mr P S Hamer
Home Grown Cereals Authority
Mr H V Hughes
Mr B E Humphrey
Imperial Chemical Industries PLC
Institute of Biology
Institute of Professional Civil Servants
Institution of Water Engineers and Scientists
* Mr J E E Jenkins
Dr H Kay
Landowners Group
Laurence Gould Consultants
Mr J D Ludlam
Mr E Maddison
Prof L Martin
Meat and Livestock Commission
*Mr R R Menneer
Milk Marketing Board
* Mr I B Munro
Mushroom Growers Association
National Farmers Union
National Farmers Union Cornwall County Branch
National Farmers Union Cumbria County Branch
National Farmers Union East Sussex County Branch
National Farmers Union Hampshire County Branch
National Farmers Union Watercress Branch
National Federation of Meat Traders
National Institute of Agricultural Botany
Natural Environment Research Council
Nature Conservancy Council
* Mr V C Nielson
Prof J Nix
* Mr R Heddyn Owen
Dr E S Page
Prof E M Patterson
Phosyn Chemicals Ltd
* Mr B H Powell
Prof R J Roberts
Royal Agricultural Society of England
Royal College of Veterinary Surgeons
Royal Institution of Chartered Surveyors

Mr J Surgey
Mrs R M Tittensor
United Kingdom Agricultural Supply Trade Association Ltd
Dr B C L Weedon
* Mr J M Weekes
Welsh Office

British Missions Abroad:

Mr J J Beale	Dublin
Mr I L Blackley	The Hague/Brussels
Miss S E Brown	Washington
Mr P S Collicott	Canberra
Mr R Crawshaw	Wellington
Mr D B A Evans	Rome
Mr S Sadowski	Copenhagen
Mr J C Suich	Bonn
Miss V K Timms	Paris
Mr D Thomadakis	Athens

* Denotes Members of ADAS

MEETINGS HELD WITH OUTSIDE ORGANISATIONS AND INDIVIDUALS

Regional Panel - Eastern Region	28.2.84
Council of Civil Service Unions	18.4.84/22.6.84
Principals of Scottish Agricultural Colleges	2.5.84
Department of Agriculture for Scotland	3.5.84
Welsh Office Agriculture Department	30.4.84/4.6.84/16.7.84
Agriculture and Food Research Council Directors	7.6.84
Council for Development in Agriculture - ACOT Republic of Ireland	11.6.84
Mr O Colborn	12.6.84
Cotswold Cereal Group	13.6.84
Nature Conservancy Council	19.6.84
Mushroom Growers Association	25.6.84
British Institute of Agricultural Consultants	25.6.84
Nottinghamshire NFU	26.6.84
Professor R J Harrison, Chairman of Farm Animal Welfare Council	4.7.84
English Tourist Board	16.7.84
Regional Panel - South Eastern Region	17.7.84
Mr G Paterson	17.7.84
Country Landowners Association	18.7.84
Royal Agricultural Society of England	19.7.84
UKF Fertilisers	18.7.84
Agricultural Training Board	20.7.84
National Farmers Union	20.7.84
British Council	25.7.84
Natural Environment Research Council	26.7.84
Association of District Councils	27.7.84
The Society for the Responsible Use of Resources in Agriculture and on the Land	28.7.84
Dr K Dexter	28.7.84
Agricultural and Allied Workers National Trade Group	30.7.84
Department of Agriculture Northern Ireland	31.7.84
Meat and Livestock Commission	23.8.84
Countryside Commission	10.9.84

CURRENT ORGANISATION AND FUNCTIONS OF ADAS

Figure 1 is a diagram of the structure of ADAS and its component services.

AGRICULTURE SERVICE

1. Qualified agriculturists and husbandry specialists, technical support staff, Horticultural Marketing Inspectors and industrial staff make up the Agricultural Service. The largest single group is that of the Agricultural Advisory Officers who are in regular contact with farmers and provide the main front-line input to advisory and development work. Members of this group are also stationed at the twelve Experimental Husbandry Farms (EHFs) and eight Experimental Husbandry Stations (EHSs).

2. Regional and National specialists in various disciplines provide back-up support to local advisers and, on occasions, advice to farmers direct. They also participate fully in investigational and development work and interact with staff at EHFs and EHSs. Extensive collaboration is maintained by these specialists with other organisations involved in agriculture who carry out work of importance to the industry.

3. The provision of socio-economic advice is of increasing importance and this is carried out by special interest advisers within divisions, supported by regional specialists. Horticultural Marketing Inspectors are responsible for enforcement of the EEC Quality Standards for fruit and vegetables, some work for the Intervention Board for Agricultural Produce (IBAP) and the collection of prices for Agricultural Market Reports.

4. Small groups of officers are stationed in the Extension Development Unit, Reading where they are responsible for studying the impact of advisory techniques and developing future strategies and at the National Agriculture Centre, Stoneleigh

where they participate fully in all activities of the NAC.

VETERINARY SERVICE

5. The State Veterinary Service (SVS) developed from the original Department set up to control rinderpest in 1865, and was incorporated into ADAS when it was formed in 1971.

6. The major functions of the Veterinary Service include the control and eradication of notifiable diseases; the operation of national disease control programmes; the investigation of new animal diseases and of zoonoses (ie those diseases of animals transmissible to man); control of the import and export of animals and animal products, meat hygiene and consumer protection work; the welfare of animals on the farm, in transit, in markets and in slaughterhouses; and the licensing of medicines and vaccines. Another important role is international disease surveillance, in order to guard against the introduction of exotic animal diseases such as foot-and-mouth disease, swine fever and rabies, from other countries. The SVS also co-operates with private veterinary surgeons, who are responsible for treatment of animals on the farm, in the investigation of disease and production problems in livestock. Four and a half thousand private practitioners are appointed as part-time Local Veterinary Inspectors to perform statutory animal disease control duties on behalf of, and under the direction of, the SVS.

7. The field staff, who are responsible for the implementation of statutory controls in England, Wales and Scotland, are supported in England and Wales by 23 Veterinary Investigation Centres. These centres provide a laboratory diagnostic service to the veterinary practitioners and through them an investigation, advisory and consultancy service on animal diseases to the livestock industry. There are separate laboratory arrangements in Scotland.

8. The Central Veterinary Laboratory at Weybridge, with its 11 departments, and the smaller laboratory at Lasswade, provide specialist diagnostic facilities and carry out a wide range of service work and Research and Development. The Cattle Breeding Centre at Shinfield provides a commercial artificial insemination service for cattle and pigs and carries out Research and Development on these species.

AGRICULTURAL SCIENCE SERVICE

9. The Service consists of staff based at Regional Laboratories and in a number of Central Laboratories. It is organised into Chemistry and Biology Divisions within which are further sub-divisions into Disciplines.

10. The Chemistry Division comprises Soil Science, Nutrition Chemistry and Analytical Chemistry which operate regionally and the Pest Control Chemistry and Pesticide Registration Departments at the Central Laboratories. In addition there are four small out-stationed HQ Units, dealing with Aerial Photography, Farm Waste, Feed Evaluation and Pesticide Residues. In the Regions the major function is support of Agriculture Service advisers with follow-up advice and promotion and R and D in support of such work. The analysis of samples for IBAP is also of major importance.

11. The Biology Division is represented at Harpenden, Slough, Tolworth and Worplesdon Central Laboratories. Within these laboratories the Division includes the Storage Pests and the Mammals and Birds Departments. The work of both departments is aimed at preventing losses to the agricultural industry caused by invertebrate pests in storage and mammals and birds, respectively.

12. There are two regionally based Disciplines - Wildlife and Storage Biology and Microbiology. The former provides advice on agricultural problems caused by vertebrate pests in crops and storage, and insect and mite pests of stored food and

animal houses, together with advice on environmental and wildlife implications of the use of agricultural chemicals. It also works with Land and Water Service on wildlife conservation and with Veterinary Service on badger control related to bovine tuberculosis. The latter is concerned with dairy hygiene and microbiological problems in processing, preservation and storage of farm and horticultural products and animal feedingstuffs, as well as with treatment and disposal of farm effluent.

13. Entomology and Plant Pathology Disciplines work at Central Laboratories and in the Regions where they are mainly concerned with advice and promotion for invertebrate pests and plant diseases together with any necessary R and D.

14. Finally, the Plant Health and Seeds Inspectorate act in a regulatory and inspectorial capacity under plant health legislation.

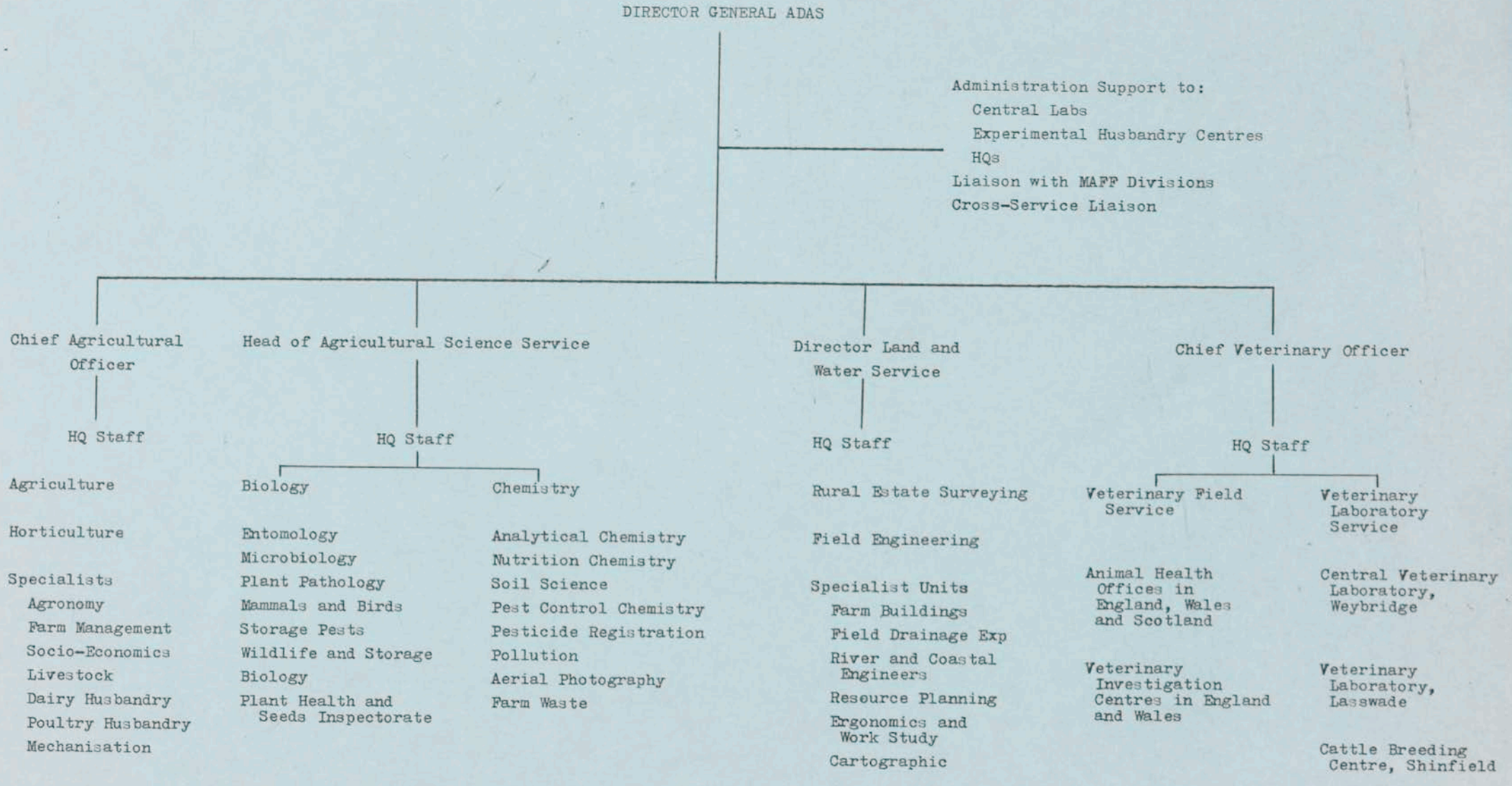
LAND AND WATER SERVICE

15. This is a service with a wide range of professional disciplines including surveyors, architects, engineers and geographers. It is organised into an HQ, Regional and Divisional structure together with a number of specialist units - Farm Buildings Group, Field Drainage Experimental Unit, River and Coastal Engineers, Resource Planning Group, Ergonomics and Work Study Unit and Cartographic Section. These provide a scientific backing to LAWS and the industry as a whole.

16. The Service is primarily concerned with capital investment in the infra-structure of agriculture and the efficient use of land as a resource. It advises MAFF, other Government Departments, Local Authorities and the agricultural industry generally, including contractors and consultants. The work ranges from major land use issues, such as new airports, major capital investment in flood protection, such as the Thames Barrier, to individual farm

investments. It is also the lead service on conservation matters, seeking to co-ordinate the inputs of specialists both within LAWS and elsewhere in ADAS and to provide outside bodies with a specific contact point.

17. The responsibility for all programmes of capital works on EHFs, EHSs and other Ministry property rests with Land and Water Service.



Appendix 4

FIGURE 1

INFORMATION TECHNOLOGY IN ADAS

1. Introduction - Recent developments in information technology (IT) give the possibility of rendering ADAS more efficient and more effective both in its service to the agricultural industry at large and in the conduct of its internal affairs. About 5,000 farming businesses already have IT facilities and within 10 years the number is expected to reach 50,000. The agricultural supply and service industries are also investing in such equipment. ADAS has the opportunity both to interact and cooperate with this latter group to provide a range of valuable and efficient services to farmers, growers and others in the industry which will supplement or replace those provided "manually". It also has the opportunity of giving a more efficient service to MAFF.

2. Background - There is a long history of automatic data processing in the Ministry but as the range of available computer types has extended the different kinds of opportunity for employing them have been recognised. MAFF like most other organisations has had to keep under continual review its whole strategy for computing and information technology. Current thinking recognises a need for widely spread and individually targetted microcomputers; minicomputers at strategically sited centres distributed around the country, and a central bureau using both mainframe and minicomputers. Current strategy is for the whole to be connected in a network so as to allow direct access from many sites to the most appropriate machine for a particular job, and to allow for the extensive traffic of information between the various parts of the Ministry. This general strategy is being progressively implemented by a careful investigation of each type of user requirement and the design and installation of the facilities required to meet them. ADAS has been involved in all of this and has thought a great deal about the potential impact of information technology on its three principal

functions (statutory, advisory, R & D). It has successfully pioneered developments in several areas but it is now timely for a major new effort to be made.

3. Opportunities - ADAS is quintessentially an information trading organisation. It generates, collects, digests and passes on huge volumes of information. In certain of its functions the customer is the farmer, or a member of one of the support professions/industries. In others it is collecting information for statutory or regulatory purposes and the "customer" is a policy or executive arm of MAFF. Both types of customer require reliable data that have been carefully vetted, collated and stored in a conveniently accessible form. The customers also require to manipulate the data or to have it manipulated and interpreted for them.

4. Whilst the satisfaction of ADAS' customer requirements will continue to require human intervention at various stages, there will be an increasing fraction that can be met by providing for the customer to have direct access either to a computer database or to an integrated package which comprises both data and a guide to enable the customer to answer his own questions or to solve his own problems. With an interactive computer programme he will feed in data relating to his own circumstances, the computer will extract relevant pieces of information from the database, perform any necessary calculations and then offer up solutions. To those unfamiliar with computers this may all sound fanciful or futuristic; to the cognoscenti it is a present reality albeit in limited situations.

5. What is required to make such facilities generally available to all those in the agricultural industry who could make good use of them is for a major effort to be devoted to the compilation of the databases and the accompanying packages of software. This is not a task for ADAS alone. Other research and development agencies like AFRC will have an important part to play especially in the provision of new data. From a

different standpoint, there are commercial companies already involved and planning to expand the provision of hardware and other services. However, there is a distinct and separate role for ADAS and the following paragraphs spell out what that role is. There is also a continuing possibility for cooperation between private and public sectors, a possibility which ADAS has exploited in the past and should continue to exploit.

6. Integrated commodity packages and support services - ADAS generates and collects a great deal of detailed information from its laboratory and field work. This includes data on soils, fertilizers, spray chemicals, crops, livestock, buildings, machinery, pests and diseases, veterinary medicines, and so on. Most of this is the result of objective study and its unbiased nature makes it extremely valuable. However, what makes the ADAS advisory service of even greater value is the fact that it can also interpret and use the data in an unbiased fashion. To provide a full and necessary service via a computer requires not simply the assembly of the data but the construction of software packages to enable the customer to arrive at his own solutions to problems. In principle this presents no difficulty but it adds very significantly to the effort required to provide such a service.

7. A rough estimate has been made of the effort needed. The whole farming scene has been examined on a commodity/primary enterprise basis and the opportunity for generating some 130 desirable packages identified. These comprise Arable Crops (30), Horticulture (50), Livestock (20), Mechanisation (15), Farm Business/Socio Economics (15). To complete the construction of such a set would consume of the order of 350 man years of effort. Furthermore, to meet the anticipated market requirements it would be necessary to complete the work over a period of no more than 5 years. However, it would be fairly straightforward to assign different priority ratings based on anticipated demand so that the most important items could be created within the first one to two years.

8. There will be a growing commitment to update and maintain these integrated commodity packages and support services. During the initial five year period the staff requirement will peak because of the overlapping of the creation and maintenance work. However, the ultimate maintenance requirement is reckoned to be for about 80 persons and so there will need to be a permanent re-deployment of this number of staff. The main burden of this work will fall to multidisciplinary teams of existing staff drawn from the specialist disciplines such as agronomy, dairy husbandry, nutrition chemistry, etc. These people will need to dedicate themselves full-time to this work and consequently it will be necessary to withdraw them from their present duties. However difficult this proves to be in terms of the curtailment of present services, the creation of the database/software packages must be accorded a high priority at this time. Fortunately the development during recent years of special interest groups among the general agricultural/horticultural advisory officers has provided a resource which is available to plug the gap which will be created by the withdrawal of the discipline and commodity specialists.

9. Included in the estimates for setting up and maintaining the databases are 10 computer specialists to guide the construction and to develop the software systems. These posts will be found from staff savings elsewhere in ADAS.

10. There will be a requirement for an extra capital expenditure on computer and peripheral equipment over and above that which is already planned. It will not be possible to give a firm estimate of the cost of this until the study referred to in paragraph 14 has been carried out but it is anticipated that it will be of the order of £7.5m.

11. Customer access - Whilst the computer network and its associated databases and integrated software packages will be used by ADAS advisers to enable them the more effectively and efficiently to discharge their advisory and other duties, it is envisaged that farmers, agricultural suppliers, contractors and trade associations, professional practices and specialist consultants will increasingly want to gain direct access to the system from their own offices. There are several ways in which this access could be made available, for example via a viewdata terminal or a microcomputer, and they make possible an extremely convenient and simple way of invoicing the user for the service he obtains. Furthermore given that the system is designed to handle a large number of customers there is the possibility of each obtaining a convenient and valuable service at a modest cost, yet the total volume of revenue earning business could soon climb to £1m per annum and subsequently become self-financing.

12. Marketing of information - There is a growing realisation in our society that information no less than tangible commodities like land, labour and capital is a valuable, tradeable resource. ADAS should grasp the opportunity which this awakening realisation offers. It should investigate carefully what the customer wants by way of information and seek to provide and charge for it. This is a philosophy that should apply to the whole of ADAS advisory work but the IT approach offers the special advantages of giving a customer immediate access to what he wants and of enabling him to choose exactly the information which he requires and is prepared to pay for.

13. Of course, several organisations in the private sector have already recognised the possibility of trading information to the agricultural industry. ADAS need not be in direct competition with them for there is considerable scope for joint ventures. The current involvement with Prestel is a case in point.

14. Further study - The outline of opportunities given above is the result of a preliminary study carried out during the course of my overall review of ADAS. Before embarking on the couse of action which is recommended it will be necessary to conduct a detailed data flow analysis within the Service to provide reliable criteria for planning and investment purposes. Terms of reference for this analysis and study are being drawn up.