



NRA

*National Rivers Authority
Severn-Trent Region*

RURAL SEWAGE POLLUTION IN THE '90S

REPORT OF THE RURAL SEWERAGE PROJECT 1993/4

**LOWER SEVERN AREA
RIVERSMEET HOUSE
NEWTOWN INDUSTRIAL ESTATE
NORTHWAY LANE
TEWKESBURY
GLOS. GL20 8JG**



RURAL SEWAGE POLLUTION IN THE '90S

RURAL SEWAGE POLLUTION IN THE '90S

REPORT OF THE RURAL SEWERAGE PROJECT 1993/94

Charles Tucker (BA, MSc, MIWEM)

Julia Kimber (BSc, MSc)

(Project Leader & Project Officer respectively)

March 1994

National Rivers Authority
Riversmeet House
Newtown Industrial Estate
Northway Lane
Tewkesbury
Glos GL20 8JG

Environment Agency
Information Centre
Head Office

Class No

Accession No *BDOJ*

ENVIRONMENT AGENCY



099802

RURAL SEWAGE POLLUTION IN THE '90S

THE RURAL SEWERAGE PROJECT

This Project was set up in April 1993, as a 12 month initiative by Lower Severn Area of the National Rivers Authority, Severn Trent Region. Its aims were to:

- identify and survey pollution from rural drainage systems in the Lower Severn Area and assess the scale of the pollution caused
- assess the future consequences if no action is taken
- collate information from local authorities and other sources to document the extent of the problem
- analyse the current constraints on public sewerage
- investigate alternative methods of resolving the pollution (e.g. "private" community plants)
- generate discussion and debate on the problem within the communities concerned and rural authorities
- produce a Report for discussion in a broad forum
- prompt action to amend funding provision and legislation if necessary
- act as a focus for future reference.

THE PROJECT REPORT

This Report is the principal product of the Project. It is, by the nature of the rural sewerage problem, an interim statement. Many technical, legal and financial issues must be addressed before the problems can be resolved. The Report includes recommendations for further action by the National Rivers Authority to address these issues.

The views expressed are those of the authors and not necessarily those of the National Rivers Authority.

The Report is a National Rivers Authority internal document, but is not restricted to circulation within the Authority. Copies are being sent, free of charge, to all participants in the Rural Sewerage Forum and relevant Parish and District Councils.

Further copies of the Report may be obtained from the address below, price £9.00.

National Rivers Authority, Severn Trent Region
Lower Severn Area
Riversmeet House
Newtown Industrial Estate
Northway Lane
Tewkesbury
Glos GL20 8DG

Tel (0684) 850951
Fax (0684) 293599

CONTENTS	PAGE
1. SUMMARY, CONCLUSIONS & RECOMMENDATIONS	1
1.1 Summary	1
1.1.1 Context	1
1.1.2 The Investigations	1
1.1.3 The Rural Sewerage Forum	2
1.2 Conclusions	3
1.3 Recommendations	4
2. PROJECT RATIONALE	5
2.1 The Issues	5
2.2 The Approach to Sewerage Before 1973	6
2.3 1973 - the Root of the Funding Problem	6
2.4 The Water Companies - Washing Their Hands of the Problem	7
2.5 Development - Compounding the Problem	7
2.6 Typical Problems	7
3. HISTORICAL BACKGROUND	10
3.1 Public Sewerage Since 1936	10
3.1.1 The Public Health Act 1936	10
3.1.2 The Public Health Act 1961	10
3.1.3 The Water Act 1973	11
3.1.4 Paying for Sewerage 1936-73	11
3.1.5 Paying for Sewerage 1974-89	11
3.1.6 The Water Act 1989 / Water Industries Act 1991	11
3.2 Rural Drainage Systems	12
3.2.1 The Situation Before 1973	12
3.2.2 The Situation After 1973/4	13
3.2.3 Village Drains and Sewer Dykes	14
3.2.4 Septic Tanks and Cesspools	14
3.2.5 Private Sewage Treatment Plants	15
3.3 Development Pressures in Villages	16
3.4 Overview	16
4. PRIVATISATION AND THE POSITION POST-1989	17
4.1 The Water Act 1989	17
4.1.1 Sewerage Functions	17
4.2 Are Village Drains Public Sewers?	17
4.3 OFWAT	19
4.3.1 Information Note 10: "Competition in Water Services"	19
4.3.2 Information Note 11: "First Time Rural Sewerage"	20
4.4 Case Histories	22
4.4.1 Fulmer, Bucks	22

4.4.2 Wormley, Surrey	24
4.5 Doe Review of Rural Sewerage	25
4.6 Overview	25
5. RURAL SEWERAGE PROBLEMS IN LOWER SEVERN AREA	26
5.1 The Local Experience of Rural Sewage Problems	26
5.2 Effluent Loads From Village Drains	26
5.3 Earl's Common, Worcs	27
5.3.1 Development and Planning Pressure	27
5.4 Peopleton, Worcs	28
5.5 Flecknoe, Warks	29
5.6 Flyford Flavel, Worcs	30
5.7 Overview	31
6. THE PROJECT	32
6.1 Defining the Scope	32
6.1.1 Planning Field Investigations	32
6.2 Liaison with Parish & District Councils	32
6.3 Publicity	33
6.4 The Rural Sewerage Forum	33
6.5 Attitude Survey	34
6.5.1 Questionnaire Analysis	34
6.6 Impact Scoring System	35
6.6.1 "Scoring Point" Definition	35
6.6.2 Value of the Scoring System	37
6.7 Field Investigations and Data Collection	37
6.7.1 Field Investigations	37
6.7.2 Recording of Data	38
7. THE RESULTS	39
7.1 Glossary of Terms	39
7.2 Soil Types	41
7.3 Details of Villages	42
7.4 Questionnaire Analysis	44
7.5 Summary of Impact Scores	55
7.6 Correlation of Scores and Soil Types	57
7.7 Discussion	58
8. THE WAY FORWARD	59
8.1 The Implications of Doing Nothing	59
8.2 The Benefit of Communal Solutions	59
8.3 The Doe Review of First Time Rural Sewerage	59
8.4 Rural Sewerage Forum	60
8.5 The Future of "Public" Sewerage in Rural Areas	60
8.5.1 Inset Appointments	61
8.5.2 Local Authority Companies	62
8.5.3 Low Cost Treatment	62

8.6 Alternatives to Public Sewerage	62
8.6.1 Individual Private Systems	62
8.6.2 Communal Solutions	62
8.7 Planning Framework	63
8.8 The Future of the Project	64
8.9 Overview	64

9. SITES INVESTIGATED IN LOWER SEVERN AREA	65
---	-----------

9.1 Coventry City Council	66
9.1.1 Site 1: Corley Moor	67
9.1.2 Site 2: Hawkes Mill Lane, Coventry	69
9.1.3 Site 3: Oak Lane, Allesley	71
9.1.4 Site 4: Tamworth Road, Keresley	73
9.2 Daventry District Council	75
9.2.1 Site 5: Clay Coton	77
9.2.2 Site 6: Stanford-On-Avon	79
9.3 Forest of Dean District Council	81
9.3.1 Site 7: Awre	83
9.3.2 Site 8: Blaisdon	85
9.3.3 Site 9: Clifford's Mesne	87
9.3.4 Site 10: Loop Road, Beachley	89
9.3.5 Site 11: Mayhill, Glasshouse	91
9.3.6 Site 12: Rodley	93
9.4 Harborough District Council	95
9.4.1 Site 13: Catthorpe	97
9.5 Malvern Hills District Council	99
9.5.1 Site 14: Deblin's Green	101
9.5.2 Site 15: Green Street, Kempsey	103
9.5.3 Site 47: High Green	105
9.5.4 Site 16: Long Green	107
9.5.5 Site 17: Much Marcle	109
9.6 Rugby Borough Council	111
9.6.1 Site 18: Flecknoe	113
9.6.2 Site 19: Ryton on Dunsmore	115
9.7 Stratford District Council	117
9.7.1 Site 20: Barton	119
9.7.2 Site 21: Kineton	121
9.7.3 Site 22: Winderton	123
9.8 Stroud District Council	125
9.8.1 Site 23: Arlingham	127
9.8.2 Site 24: Claypits	129
9.8.3 Site 25: Harescombe	131
9.8.4 Site 26: Longney	133
9.8.5 Site 27: Oakridge	135
9.9 Tewkesbury Borough Council	137
9.9.1 Site 28: Bentham	139
9.9.2 Site 29: Coombe Hill	141
9.9.3 Site 30: Deerhurst	143
9.9.4 Site 31: Hasfield	145
9.9.5 Site 32: Minsterworth	147

9.9.6	Site 33: The Leigh	149
9.9.7	Site 34: Walton Cardiff	151
9.10	Warwick District Council	153
9.10.1	Site 35: Ashow	155
9.10.2	Site 36: Blackdown	157
9.10.3	Site 37: Wasperton	159
9.11	Wychavon District Council	161
9.11.1	Site 38: Abberton	163
9.11.2	Site 39: Birlingham	165
9.11.3	Site 40: Defford	167
9.11.4	Site 41: Drakes Broughton	169
9.11.5	Site 42: Earl's Common	171
9.11.6	Site 43: Flyford Flavel	173
9.11.7	Site 44: Grafton Flyford	175
9.11.8	Site 45: Hatfield	177
9.11.9	Site 46: Hadzor	179
9.11.10	Site 48: Himbleton	181
9.11.11	Site 49: Kington	183
9.11.12	Site 50: Littleworth	185
9.11.13	Site 51: Naunton Beauchamp	187
9.11.14	Site 52: Peopleton	189
9.11.15	Site 53: Sale Green	191
9.11.16	Site 54: Stock Green	193
9.11.17	Site 55: Upton Snodsbury	195
9.11.18	Site 56: White Ladies Aston	197
9.11.19	Site 57: Whittington	199

REFERENCES **200**

TABLES

1.	Effluent Quality From Village Drains in Lower Severn Area	26
2.	Effluent Quality From Peopleton Village Drains	29
3.	Impact Scoring System	36

FIGURES

1.	Rural Development, Water Consumption and Pollution	8
2.	Village Drains, Development and Pollution	9
3.	Soil Types and Problem Sites	57
4.	Lower Severn Catchment Area and Village Sites.	65

APPENDICES

1.	The Rural Sewerage Forum
2.	Project Newsletter, June 1993
3.	Project Outline and Draft Work Programme
4.	Survey Questionnaire

1. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**1.1 SUMMARY****1.1.1 CONTEXT**

Sewerage (i.e. the sewer pipes, pumping stations and other physical means used to convey sewage away from premises to a sewage treatment plant or point of discharge) is a service which is taken for granted by most of the population in Britain. Nationally, some 96% of households are connected to a public sewerage system (CIRIA 1993).

The 4% of households not connected to public sewers are nearly all in rural areas, where the unit cost of providing the sewers has always been greater than in urban areas. For this reason and the fact that rural sewage problems have been historically less acute than urban problems, sewerage in rural areas has always lagged behind the towns and cities. The legal and financial structure which made it possible to sewer rural areas came to an abrupt end in 1973, leaving many rural sewerage schemes "in the pipeline", but in reality "in the lurch", since most were later abandoned.

Twenty years on, modern lifestyles demand more water for household use. Rural areas have been typically slower to respond to change than urban areas, but the '70s and '80s have seen a "levelling-up", accelerated by the migration of people from town to country. The result is that many communities where the lack of public sewerage was a minor nuisance in 1973 now have significant pollution problems (and potential health hazard) from inadequate sewage disposal systems.

Housebuilding during the 1980s has added to the problems through failure in private sewage disposal facilities. There has been a lull in development pressure in the last few years but this pressure is likely to return in the 90s.

At the same time, the changes in the Water Industry and the legal framework governing it, together with the restrictions on capital spending of local authorities, have cut off any realistic prospect of public funding for sewerage on a broad scale.

These problems are found throughout Lower Severn Area and this was the spur which led to setting up the Rural Sewerage Project. Feedback from other areas suggested that our experience was matched throughout the country.

1.1.2 THE INVESTIGATIONS

57 villages with significant sewage related pollution problems have been investigated. The Report gives details of each village and its particular problems.

A significant part of the problem is associated with historic "village drains". There are some 30 of these old sewers in Lower Severn Area. Effluent quality is similar to weak settled sewage and it is estimated that the volume discharged is equivalent to a sewage works serving some 1000 people. However, the organic load discharged is five times greater than that from a typical

sewage treatment plant of this size.

New development has also contributed, from failure of private sewage disposal facilities.

The investigations show a strong relationship between the incidence of problems and the geology and soil type of the area. 86 % of the villages are located on poor draining soils, including all the Higher Impact sites (see below). But there can be problems even on relatively good soils.

Each village has, where possible, been allocated an Impact score, based on environmental impact at the time of the investigations. The resulting rank order gives a measure of the environmental priority for resolving the problems - though it must be remembered that the results are based on only one set of samples. The rank order has been divided into three categories - Higher, Middle and Lower Impact (see Chapter 7).

A Survey was carried out as part of the Project. 1635 questionnaires were distributed to households in the affected communities and 1034 were returned - a response rate of 63%. The analysis (see Chapters 7 & 9) shows:

- a large majority (76%) against further development
- a large proportion (49%) aware of the sewerage problems
- a majority (58%) wanting a mains drainage system
- a majority (60%) unwilling to pay anything extra for it

These results represent a snapshot of general attitudes rather than likely responses to any physical proposal. The responses reflect individual views of how tackling the sewerage problems would affect their village.

1.1.3 THE RURAL SEWERAGE FORUM

The Rural Sewerage Forum was set up as part of the Project as a means of

- gathering information on rural sewerage problems from a wide area and range of sources,
- informing participants of the work being carried out by the NRA,
- promoting discussion among professionals and others involved with the problems,
- acting as a focus for the development of new ideas and practical, affordable solutions to rural sewerage problems.

Two meetings have been held to date, the latest in December 1993. Proceedings from this meeting have been produced (NRA 1994). A shortened version is included in this Report (Appendix 1).

1.2 CONCLUSIONS

- 1) Pollution from inadequate rural sewerage systems has grown in the last two decades and will continue to increase unless ways are found to tackle it.
- 2) If the figures derived in this Project can be extrapolated more widely, there could be up to 2000 communities in England and Wales with similar pollution from inadequate sewerage, affecting a population of up to 500,000.
- 3) Inappropriate planning decisions have made the problems worse and new developments contribute as well as old.
- 4) Individual private sewage disposal systems cannot provide an acceptable solution in many cases.
- 5) Local communities are often well aware of the pollution problems and would welcome mains drainage, provided it does not lead to additional development.
- 6) The privatisation of water in 1989 has highlighted previous difficulties, particularly the status of old "village drains" and introduced a commercial approach which views the extension of sewerage systems as "loss-making".
- 7) The Duty imposed on Water Companies in Section 94 of the Water Industries Act 1991 to "provide...and extend...such a system of public sewers...as to ensure that the area is...effectually drained" has been interpreted in such a way as to nullify its effect. Legal rulings on this Duty do not carry conviction and there is a need to clarify the meaning of the legislation.
- 8) The requisitioning procedure for new sewerage used since 1973 is not effective in resolving existing problems. Capital spending of Local Authorities is increasingly constrained and many are unwilling to initiate and pay for new sewerage schemes as all income goes to the Water Companies.
- 9) The NRA has a clear interest in seeing the problems resolved, but is not directly concerned with "who pays". It has a clear interest in promoting solutions which minimise the medium and long term resource requirements of the Authority.
- 10) Communal systems are likely to be the most cost-effective solutions, for the environment, for individuals and for the NRA.
- 11) Opportunities exist for new routes to communal solutions, through Management Companies and Inset Appointments.
- 12) There is a need for the NRA to develop policy for addressing these issues and clear procedures for responding to development proposals in sensitive areas.

1.3 RECOMMENDATIONS

It is recommended that the NRA continue to sponsor work aimed at finding solutions for rural sewage pollution, both in the communities investigated during the Project and on a wider scale, in order to maintain the momentum generated by the Project. In particular, by

- acting in a facilitating role to assist the communities affected, local authorities and the water companies to resolve the problems
- promoting action by the councils and communities involved to address the problems identified in the Project, starting with the Higher Impact List of villages
- refining the scores for individual Higher Impact villages by further monitoring
- taking action to clarify, by means of test cases if necessary,
 - a) the legal effect of pre-'73 consents for "village drain" systems and
 - b) the legality of OFWAT's view on extending sewerage
- working with OFWAT and others to develop agreed mechanisms for Inset Appointments and "watertight" Management Company structures
- developing NRA Policy in this area and "best practice" approaches to the problem
- carrying out cost-benefit analysis of different options, including the impact on future NRA resources
- gathering and analysing information on the incidence of rural sewage pollution throughout the country.
- identifying priorities for action through the Catchment Management Plan Procedure

2. PROJECT RATIONALE

Many villages still lack adequate public sewerage - and poor ground conditions or other local constraints lead to complaints of sewage pollution. The scale of the problem has grown - as has public awareness of it - with rising rural prosperity and development pressure, but effective remedies are elusive and require funding beyond the means of most householders.

Rural Sewerage received little attention during the 15 years after re-organisation of water services in 1973 - being seen as a low priority both by the Water Authorities and by most Councils. The pollution problems stayed "on hold" but did not go away. In many cases, they continued to grow.

Water privatisation in 1989 has led to a hardened, commercial attitude to services on the part of the Water Companies. Recent interpretation by OFWAT of the legal duties of Water Companies now appears to absolve them of responsibility for financing new sewerage, while the continued pressure on Local Authority capital resources makes it difficult for Councils to justify sewerage projects benefitting limited numbers of people in relation to other priorities.

The result is an increase in sewage pollution - with potential public health, as well as pollution, implications - for which there appears to be no ready solution.

2.1 THE ISSUES

The following is an attempt to summarise the main issues.

1. Water Companies do not now accept financial responsibility for the provision of sewerage and are prepared to extend the sewerage system only if the work is requisitioned by another body and paid for under the financial formula laid down in the Water Act 1989 and Water Industries Act 1991. Water Companies have "disowned" old drainage systems which were treated as public by their predecessors.
2. Sewer requisitions by developers are designed to cater for the needs of the new development only and are unlikely to address existing problems.
3. Local Councils can requisition sewers and claim First Time Sewerage Grants from the DoE, but these grants only cover 35% of qualifying expenditure. Few Councils now have the ability (or in some cases the will) to finance schemes through locally raised revenues, so are increasingly unlikely to initiate new first time sewerage schemes.

This attitude is compounded in some councils by the preception that responsibility for sewerage was taken away from them in 1973 and is no longer their concern. This is in stark contrast to their active role in the 1950s and '60s, when they promoted rural area sewerage schemes with the help of DoE financing.

There is continuing resentment that local authority schemes which were in the pipeline on re-organisation in 1973 were shelved and then abandoned by the Water Authorities.

4. The vast majority of rural dwellings have been brought up to modern sanitary standards and rural and urban householders now consume similar quantities of water.
5. Many septic tanks and soakaways which worked successfully without causing pollution for years have now failed under the modern loadings imposed. This is compounded by development pressures leading to "infilling" between existing houses within villages and to attempts to dispose of ever greater volumes of effluent in ever smaller land areas.

The worst problems are usually associated with areas of low porosity clay subsoils, which cannot adequately absorb and disperse effluent.

6. The use of individual private sewage treatment plants has perhaps been seen as the solution but is only a partial remedy, since watercourses suitable for effluent disposal are not normally available in villages and there is always a potential public health risk from sewage effluent in close proximity to housing. Also, proliferation of private plants imposes an increasing - and disproportionate - monitoring and enforcement workload on the NRA if environmental standards are to be maintained.

Sealed cesspits are equally not an acceptable alternative, since the high cost of regular emptying (in excess of £1000 a year) is an incentive to their misuse by conversion into septic tank and soakaway systems - when unsuitable soakaway conditions would often have been the reason for use of a cesspit in the first place. The end result is often a connection, whether direct or indirect, to ditches or drains.

It is the view of some Estate Agents that the cost of sewage disposal using a cesspit makes a house almost unsaleable.

- 7) Pollution Control legislation requires the NRA to deal with dischargers individually and is not suited to tackling "communal" problems where responsibility is diffuse.

It is at least arguable that action against individuals is inappropriate to the nature of the problem and a misuse of resources, when a community based solution is possible.

2.2 THE APPROACH TO SEWERAGE BEFORE 1973

From the late 19th century until 1973, the philosophy underlying the provision of sewerage was that of a "public good", a philosophy which grew from the realisation of the direct links between sewage and disease. This was the reason why responsibility was given to Local Authorities to provide sewers and why they were encouraged to accept responsibility for dealing with existing drainage problems in the 1950s and '60s. Parallel to that responsibility was a central funding framework which ensured that sewerage schemes could be financed.

Now, a generation on, that philosophy and funding framework has disintegrated and there is the prospect of having to rehearse the entire public health and environmental quality debate once again if it is to be regenerated.

2.3 1973 - THE ROOT OF THE FUNDING PROBLEM

The old system of funding came to an end in 1973, through the Water Act 1973. This changed the rationale towards new sewerage, on the perception that there was no longer a general problem to be tackled and that the Requisitioning procedure defined in the new legislation would be adequate to "mop up" any remaining unresolved cases.

Twenty years on, many of these unresolved cases remain and have grown worse, while the commercial priorities of Water Companies discourage the extension of public sewerage, and the squeeze on local authority finances makes Requisitioning an unpalatable proposition. At the same time, fresh problems have been created by the pressures for growth in unsewered villages. The result is that many rural communities face entering the 21st century surrounded by sewage pollution unless a way is found to address the problem.

2.4 THE WATER COMPANIES - WASHING THEIR HANDS OF THE PROBLEM.

Section 94 of the Water Industry Act 1991 imposes the duty on Water Companies to "... provide ... and extend ... public sewers ..." so as to ensure that an area is "effectually drained". However, in cases where a DoE Inspector has judged that an area is NOT "effectually drained" the Secretary of State and Director General of OFWAT has ruled that this does not require Water Companies to provide sewers.

This argument is understandable on a purely commercial basis, as the Companies would have to justify the expenditure to their shareholders. However, if Section 94 does NOT impose a positive obligation on Water Companies in such cases its purpose is entirely unclear. There is, as yet, no case law to establish legal precedents in this area.

2.5 DEVELOPMENT - COMPOUNDING THE PROBLEM

Planning permission granted for new housing within affected communities has frequently added to existing problems - and Planning Authorities have been slow to accept that their decisions may lead to inevitable pollution. However, there have been significant changes since the NRA was formed and some Authorities have now incorporated policies in their Local Plan which recognise that sewage disposal will be a constraint on development in such cases.

The other side of this coin is the perception by some communities that provision of sewerage will lead to development. The positive arguments for sewerage can then be lost in the hostility to growth.

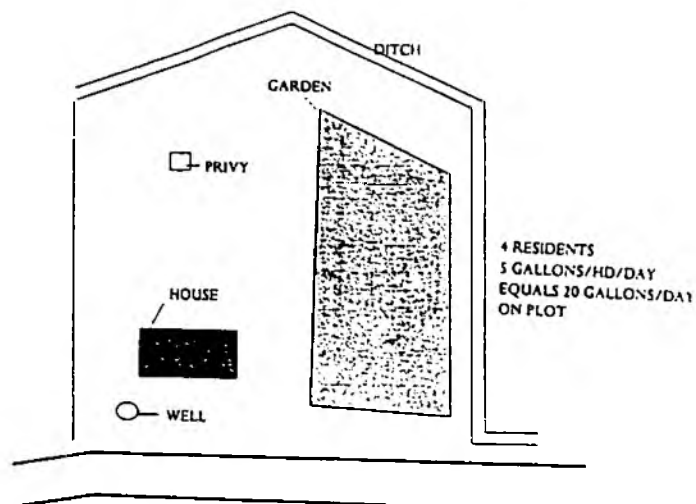
2.6 TYPICAL PROBLEMS

Typical examples of situations which lead to rural sewage pollution are shown in Figures 1-2.

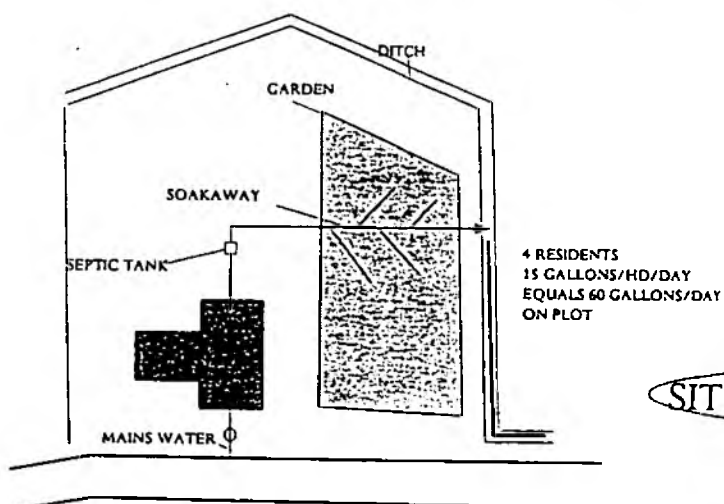
Figure 1. Rural Development, Water Consumption and Pollution

THE CLASSIC SCENARIO

SITUATION PRE 1960



SITUATION IN 1960



SITUATION IN 1990

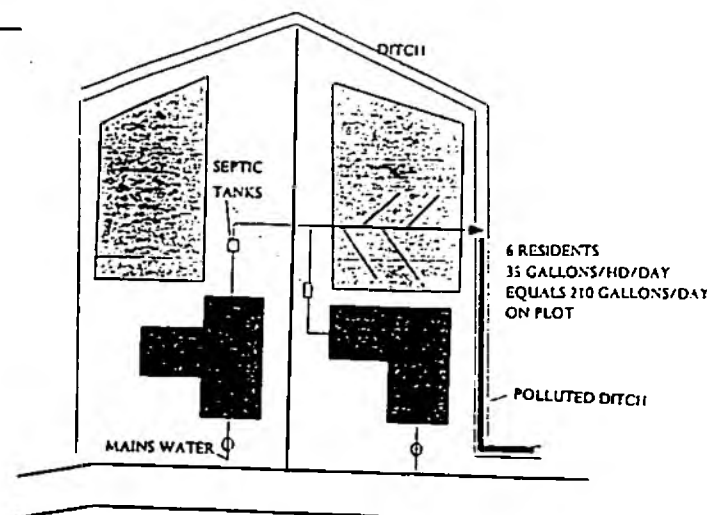
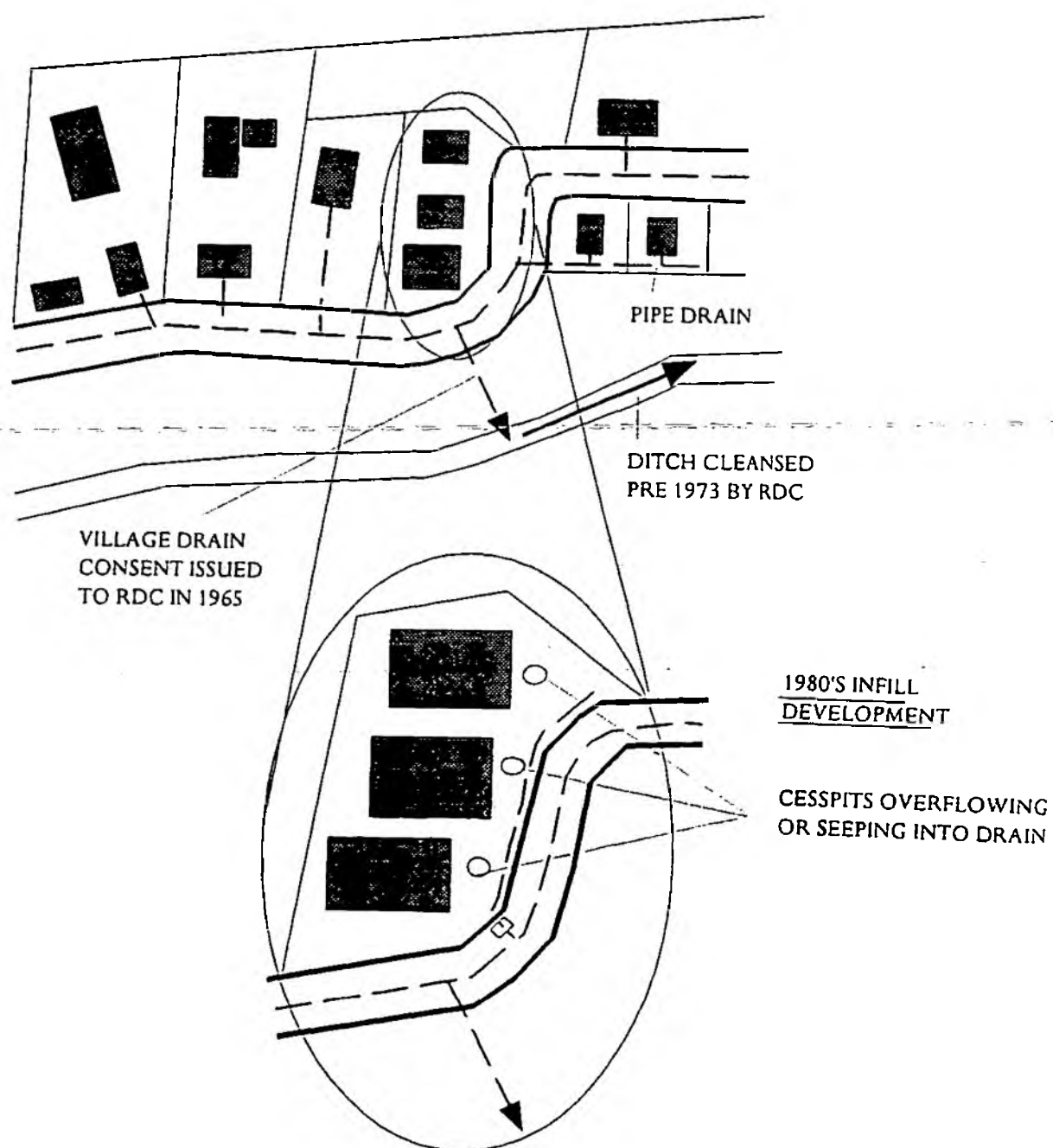


Figure 2. Village Drains, Development and Pollution

VILLAGE DRAIN SITUATION



3. *HISTORICAL BACKGROUND*

3.1 *PUBLIC SEWERAGE SINCE 1936*

The following is a short account of the legal, organisational and financial framework for provision of public sewerage since 1936. Sewage Treatment is not covered. A more detailed treatment of the legal framework can be found in "The Law of Sewers and Drains" (Garner 1991).

3.1.1 *THE PUBLIC HEALTH ACT 1936*

The Public Health Act 1936 is the bed-rock legislation for sewerage. It defined the duty of every Local Authority to "provide such public sewers as may be necessary for effectually draining their district ... and to make such provision, by means of sewage disposal works or otherwise, as may be necessary for effectually dealing with the contents of their sewers." (Section 14).

Local Authorities were given powers to construct public sewers (Section 15), to adopt new sewers as public sewers (Section 17), to enter agreements for adoption of sewers yet to be constructed (Section 18) and to require sewers to be constructed to form part of a general sewerage system (Section 19).

Section 20 required Local Authorities to accept older systems as public sewers, provided they could be shown to meet specified legal criteria. In particular, this included "All sewers within the meaning of the Public Health Act 1875 ..." vested in a local authority and "combined drains constructed before ... the Act, which, by virtue of the Public Health Act 1875, would have been vested in the local authority as sewers but for the provisions of some enactment ..."

These powers were exercised by Borough, Urban District and Rural District Councils from 1936 to 1974, when the Water Authorities were formed, following the Water Act 1973.

Section 34 gave the owner or occupier of any premises within the district of a local authority the right to connect his drains or sewers to the public sewers (at his own cost).

These powers enabled Local Authorities throughout the country to extend sewerage systems to towns and villages which had not had mains drainage before. After the Second World War there was a great expansion of public water supplies to rural areas and the resulting increase in water consumed was reflected in increased sewage flows.

The 1950s and 60s saw the construction of many major sewerage schemes, as well as local, village based systems.

3.1.2 *THE PUBLIC HEALTH ACT 1961*

This Act introduced a procedure which allowed local authorities to recover some of the costs of laying new sewers, in an attempt to reflect the increase in property values for the properties served - or to be served, if unbuilt.

3.1.3 THE WATER ACT 1973

The Water Act 1973 set up the Regional Water Authorities in England and Wales. Under Section 14, the sewerage powers and duties of Local Authorities passed to the Water Authorities, but Section 15 gave Local Authorities the right to control, operate and maintain sewerage systems under Agency arrangements.

A new "requisitioning" procedure for provision of sewers was defined in Section 16. Owners or occupiers of premises, or the Local Authority, were empowered to require the Water Authority to provide a public sewer, provided they paid the costs defined in the Act.

Significantly, Section 16 also specified that the general sewerage duties of Section 14 and 15 were subject to the financial provisions of Section 16. This meant that the Section 14 duty imposed on the Water Authorities "to provide ... such public sewers as may be necessary for effectually draining their area ..." was subject to the requirement that funding came from other sources.

So, although the Water Authorities had the duty to provide sewers, the Act said that it was not their responsibility to pay for them.

3.1.4 PAYING FOR SEWERAGE 1936-73

Prior to 1961, Local Authorities funded their new sewerage systems with borrowed capital and Government Grant under the Rural Water Supplies and Sewerage Grant Scheme. Ratepayers met the ongoing cost through their rates. Costs were therefore borne by the whole local community, supported by national taxpayers.

Although the 1961 Act gave power to Local Authorities to recover an element of any "planning gain" from sewerage, the procedure had limited impact.

3.1.5 PAYING FOR SEWERAGE 1973-89

The 1973 Act defined the financing requirements under the requisitioning procedure. The requisitioning party had to finance the deficit, over 12 years, between income from "sewerage rates" for the premises concerned and loan charges on the capital cost of the sewer. This was normally done via a commuted sum. Government Grant under the Rural Water Supply and Sewerage Grant Scheme contributed 35% of qualifying expenditure.

3.1.6 THE WATER ACT 1989 / WATER INDUSTRIES ACT 1991

The Water Act 1989 transferred sewerage powers to the new Water Companies and removed the right for Local Authorities to have Agency arrangements for sewerage. The Water Industries Act 1991 consolidated all legislation relevant to the Water Companies into a single Act.

Under S94 (Water Industries Act 1991), the Water Companies have the duty to "provide, improve and extend such a system of public sewers ... as to ensure the area is ... effectually drained".

Significantly, this duty is not qualified in the Act by reference to the requisitioning procedure. It appears to be an absolute duty. As will be seen later, however, OFWAT has interpreted this differently, linking it to a requirement that "those who benefit" should pay.

The 1989 and 1991 Acts continue the mechanism for requisitioning sewers but, as noted above, the Act does not link this mechanism (with its formula for external financing) to the general duty to provide sewers under S94.

As will be seen in Chapter 4, these Acts and their interpretation, together with the introduction of a commercial ethic for the first time, have introduced new confusion into the problems of rural sewerage.

3.2 RURAL DRAINAGE SYSTEMS

3.2.1 THE SITUATION BEFORE 1973

Few rural villages had a formal public sewerage system before the Second World War. With no public water supply, there were no water closets and water consumption was very limited. Houses had "privies" and the contents were removed by the householders and buried in the garden - in colloquial terms, the "bucket and chuck it" system.

Pipe drainage systems were constructed at various times in villages to convey road water and land drainage, plus the overflow from the village pump, private wells and troughs - and drainage from household wash-rooms, tubs, sinks and baths. These drains were constructed sometimes by the rural district council, sometimes by private landowners.

The 1936 Act, with its emphasis on improving public health and the ethos that local authorities were to act "pro bono publico", empowered councils to adopt these drains as public sewers where they served houses and they subsequently formed the core of many public sewerage systems.

With the provision of mains water supplies after the War, privies began to be replaced by water closets, usually draining to septic tanks. It was normal for the effluent from the tank to be discharged to a ditch or to the "village drain", perhaps via a length of soakaway pipe.

Household water consumption was still low by modern standards and the impact, in terms of public health nuisance as well as pollution, was initially limited and tolerated. The nuisance and pollution increased however and public reaction formed the spur to make local authorities use the powers given them in the 1936 Act.

As a result, many councils accepted responsibility for maintenance of the old systems and routinely cleansed the pipes and ditches affected.

Another spur came with the Rivers (Prevention of Pollution) Act 1961, which removed the immunity from prosecution for discharges which had been in existence before 1951. Local Authorities had to apply for "deemed consent" for existing discharges which were considered to be public sewers.

Many thousands of discharges were thus registered and given temporary immunity from prosecution, until such time as the Applications were disposed of, either by withdrawal (when a proper sewerage scheme was constructed) or by the River Authority granting full consent (with conditions) or refusing consent.

To assist local authorities and river authorities in dealing with these applications, the then Ministry of Housing & Local Government issued guidance establishing the "Royal Commission" effluent standard for treated sewage (30 mg/l suspended solids, 20 mg/l biochemical oxygen demand) as the norm for schemes. Standards less strict would have to be justified by the local authority and those more strict by the river authority (MHLG 1966).

Discussions and negotiations between River Authorities and Councils throughout the 1960s led to agreed programmes for capital expenditure to deal with these public sewers and many "post-dated" consents were issued, giving councils a number of years to put the situation right, by constructing sewerage systems and sewage treatment works. Some of these schemes served individual villages, some were area schemes involving a central works with satellite pumping stations delivering sewage from the individual villages.

When a scheme was drawn up, the then Minister of Housing and Local Government would hold a local Inquiry to consider the technical merit of the scheme, representations from local people and the views of the River Authority. A favourable decision led to grant approval and enabled the Council to proceed with construction.

3.2.2 THE SITUATION AFTER 1973/4

Most of the rural sewerage schemes were complete by 1973, but some had not commenced and were "passed on" to the Water Authorities. These new bodies drew up their own priorities and rural sewerage was low down the list, as it was argued that public investment (which was beginning to be restricted) must be targetted initially towards areas which generated the greatest improvement in environmental quality. Lower priorities, such as rural sewerage, would have to wait.

As pressure on public investment continued throughout the 1970s and 80s, schemes were shelved and eventually abandoned.

Social and demographic change has not stopped, however. The movement of population from towns into the country has continued and accelerated. Homes in small villages have become highly desirable and "exclusive". Development pressure has led to infilling, while increasing rural prosperity, mobility and contact with urban lifestyles has led to growth in the use of domestic appliances and water consumption (see Chapter 7).

The result is that rural sewerage problems considered insignificant 20 years ago are now significant and investment, whether private or public, is needed to address the implications for pollution and public health.

3.2.3 VILLAGE DRAINS AND SEWER DYKES

These are the rudimentary drainage systems which evolved as described above. A "village drain" is usually a pipe system with individual connections, while a "sewer dyke" is a ditch receiving direct discharges. Some "village drains" became established by a local authority piping an offensive ditch.

To be a public sewer, it is normally accepted that more than one house needs to be connected and there must be either a formal council resolution to adopt or evidence that two or more houses drained to the system prior to 1936. Years of effort have been expended to produce the necessary evidence where public status has been contested, involving extensive research into council records and local knowledge.

Naturally, this evidence becomes more difficult to collect as the years pass by and the longer the matter remains unresolved the less likely that public status can be demonstrated.

The fact that a village drain discharge was registered by means of an application under the 1961 Rivers (Prevention of Pollution) Act is evidence of public sewer status, as is the existence of a Consent issued by the River Authority (see below). This is not, however, accepted by at least one Water Company (see Chapter 4).

3.2.4 SEPTIC TANKS AND CESSPITS

The septic tank is the most commonly used private method of sewage disposal in areas with no public sewerage system (see Chapter 7). While almost magical abilities to consume sewage and "never to need emptying" is still sometimes claimed, the septic tank, with modern lifestyles, is not more than a settlement tank, with a degree of anaerobic biological digestion of sewage solids. Its primary functions are to remove solids and generate a liquid effluent which can be disposed of in a soakaway or sub-surface dispersal system.

Septic tanks will accumulate sludge and should be emptied at least once a year. Design capacities are given in British Standard BS6297:1983 (BSI 1983).

Soakaways and sub-surface dispersal systems are only effective if the soil is sufficiently permeable to allow lateral and vertical percolation at a sustainable rate under the volumetric loadings imposed. Soil characteristics are assessed by a standard percolation test defined in BS 6297:1983 and this is used to determine the extent of the necessary dispersal system.

If the soil is not sufficiently permeable, the soakaway will fail and effluent will break the surface or find its way to the nearest discharge point, whether a ditch, land drain or other pipe drain.

Poor soil conditions are a common feature of many "problem" villages. In these situations, diverting direct discharges to soakaways or relaying existing inadequate soakaways is likely to have a limited, temporary effect only. It may be possible to stop a discharge for a year or so, but the poor soil characteristics are likely to manifest themselves in due course.

Cesspits (also known as cesspools) are sealed tanks, designed to contain all sewage, to be emptied as and when full. Design capacities are given in British Standard BS6297:1983. Emptying frequency depends on water consumption, but is typically once a month.

Cesspits are an extremely expensive system for sewage disposal, costing at least £1000 a year to maintain. They would normally be specified as a last resort, where alternative methods are unacceptable. The high maintenance cost leads to pressure to allow them to be converted into septic tanks, when, in all probability, the use of a septic tank had already been ruled out on environmental grounds.

Cesspits have become an increasingly negative factor in house sales as Estate Agents and solicitors become more aware of their high running costs and some have said that a cesspit can make a house virtually unsaleable.

Many cesspits are known to have had illegal outlets added, to reduce the cost of emptying. This is the worst of all worlds, since unsuitable ground conditions, or the need to protect groundwater, would have been the reason for specifying a cesspit in the first place.

Policing individual installations is quite impracticable, so there are strong grounds to resist their use as far as possible. Certainly, they cannot be considered a practical method of sewage disposal, or a means to facilitate development where ground conditions are unsuitable for soakaways.

3.2.5 PRIVATE SEWAGE TREATMENT PLANTS

Many larger country houses, schools, etc. have had private sewage treatment plants for many years. These can be effective where the effluent discharges to a flowing watercourse, which provides the dilution needed to prevent nuisance. Conventional filter plants are almost always ineffective on an individual house scale because of poor design and high maintenance requirements.

Prefabricated glass fibre units have become widely available since 1980 and are sometimes seen as a panacea for drainage problems in unsewered villages. Their effectiveness depends entirely on adequate maintenance (frequently lacking) and on the availability of watercourses suitable to receive the treated effluent. They can be effective in individual cases, but do not offer a general solution to village sewerage problems.

A package plant for one or two houses is likely to cost £6-7000 over the first two years, taking into account the initial cost, installation, electricity and maintenance, plus the cost of obtaining the NRA's formal Consent.

Accepting sewage discharges to village ditches and drains risks adding to any existing problems, given the generally poor performance record of many of the plants available. Unlike a discharge to soakaway, any shortcomings in performance become all too rapidly evident.

Further information on small sewage treatment plants is given in the recent CIRIA report on private sewerage systems (CIRIA 1993).

3.3 DEVELOPMENT PRESSURES IN VILLAGES

Development pressures in villages have intensified over the last 20 years and particularly in the 1980s, with the boom in house building and prices. The high values placed on village building plots produce greater pressure to accept private drainage systems in unsuitable locations, particularly "infilling" within large plots. This not only means doubling the effluent load within the plot as a whole, but also reducing the land area available for effluent dispersal. Where ground conditions are unsuitable the results are often inevitable.

In some cases it has been possible to agree "planning embargoes" with local authorities, an approach which has been effective in deterring development where there were already pollution problems from private systems or "village drains". In other cases, planners have been unwilling to take account of drainage and have ignored pollution constraints.

The evidence of pollution and nuisance from inadequate attention to drainage as a Planning constraint has grown during the past decade and Planning Inspectors are now increasingly prepared to consider drainage difficulties and pollution as material factors and a genuine constraint on development. Equally, many local authorities have now incorporated policies into their Local Plans directed specifically at restricting development where there are risks of pollution from inadequate sewage disposal.

The DoE published a draft PPG on "Planning & Pollution Control" in May 1993 (DoE 1993). This stated that any pollution implication was a material factor in determining a development application. Planning Authorities would be required to take account of the views of pollution prevention authorities and could not substitute their own views for those of the relevant authority. This PPG has not yet been issued in final form.

Individual cases from Lower Severn Area are illustrated in Chapter 5.

3.4 OVERVIEW

This chapter has outlined the development of rural sewage systems and the legislative, procedural and financial framework for sewerage. Awareness of sewerage problems has lagged well behind housing development. Individual disposal systems cannot offer a satisfactory solution in all circumstances.

4. *PRIVATISATION AND THE POSITION POST-1989***4.1 *THE WATER ACT 1989***

Where the Water Act 1973 had brought all aspects of the water cycle together under the control of multi-purpose Water Authorities, the Water Act 1989 divided the industry once again. Water Supply, Sewerage and Sewage Treatment services were passed to privatised Water Companies while pollution control, river management, water resources and all environmental aspects became the responsibility of the new National Rivers Authority.

4.1.1 *SEWERAGE FUNCTIONS*

The Water Act 1989 and the transfer of functions to private companies has had an impact on rural sewerage in a number of ways.

It removed the automatic right of local authorities to act as Agents for sewerage. Tenders have to be submitted and assessed competitively in each case. Water Companies can reject tenders, terminate Agencies and choose to operate the sewerage function "in-house" or through contractors - as in Stroud District and Stratford-on-Avon District within Lower Severn Area.

This has had the effect that Agencies are governed much more closely by Company policies than by Council policies. The greater control exercised by the water company has considerably improved standards and consistency of service in some cases, but the corollary is that Agency staff are less able to respond flexibly to local needs, unless these accord with company policy and practice.

One of the actions taken since 1989 has been to review the Public Sewer records. There is a statutory requirement to maintain these records in the public interest. Records were, of course, maintained before privatisation (though probably in a less consistent manner), but in Severn Trent Water the review has resulted in sewers previously considered public, or whose legal status was not clear, being removed from the public sewer record.

Most of the sewers in question may truly not be public, but there is unease when a body (and particularly a private company) is acting as "Judge and Jury" on public interest questions with no external audit. The legal status of a sewer is of considerable financial consequence, both to the Water Company and to individuals connected to it, or able to connect. Once sewers have been removed from the Public Sewer record, there is no mechanism to query these judgements, or even to know what has happened.

4.2 *ARE "VILLAGE DRAINS" PUBLIC SEWERS?*

As described in Chapter 3, large numbers of "Village Drains" have been replaced over the years by new sewers, or the existing pipes accepted as public sewers and connected into a larger system. But many remained in 1973 and a number still exist unaltered.

In Severn Trent Region, a list of 136 "Village Drains" was submitted to the DoE at privatisation in 1989. Many of these drains had already been accepted as public sewers at that time and a

number have been resolved subsequently, bringing the total accepted as public sewers by the end of 1993 to 82. A further 10 were not located in the course of a STW investigation in 1993 (so have not been resolved), leaving 44 which have been judged by Severn Trent Water not to be public sewers.

Of the 44, 26 are in Lower Severn Area and, of these, 24 are the subject of actual or deemed Consents under the Rivers (Prevention of Pollution) Acts 1951-61.

The list submitted to the DoE in 1989 was not complete and there are a further 12 in Lower Severn Area which could possibly qualify as "public sewers".

There is no mechanism for anyone to "appeal" against Severn Trent's judgements on the sewers but, despite their views, there is evidence that predecessor rural authorities (i.e. pre 1974) considered these drains to be public sewers, not least by virtue of the fact that they applied to the Severn River Board for consent to discharge sewage from them and, in many cases, cleansed the ditches downstream.

It is considered that the process of applying for consent under the provisions of the Rivers (Prevention of Pollution) Act 1961 represented a conscious and public recognition by the local authorities that the discharges so registered were, or would become, public sewers. The ethos of the time was that local authorities should act "pro bono publico" and accept the responsibility for addressing sewerage problems.

It may be that, on a strict application of traditional criteria for determining whether a drain is, or is not, a public sewer, some of these would not have been accepted as such, but there is no doubt that local authorities were aware of the implications of the pollution prevention legislation and made their decisions to apply for consent in order to avoid the risk of prosecution.

They would not have done so if they did not believe they had a responsibility for pollution caused by the discharges and they could only have had this responsibility if the pipes were public sewers. Council officers in post at the time have stated that they would not have made the applications for consent if they did not believe the drains were public sewers.

It follows that the act of applying for consent under the provisions of the Rivers (Prevention of Pollution) Act 1961 should be taken as evidence that the discharge was (and is) from a public sewer.

The subsequent issuing - and acceptance by the local authority - of a formal consent (as opposed to the "deemed consent" conferred by the application under the 1961 Act) only strengthens the evidence that the local authority accepted the pipe or system as public.

The Water Authorities in 1973 assumed the sewerage powers of the predecessor local authorities and it therefore must follow that these consents carried forward and were inherited by the Water Authorities.

This view was widely held during the 1970s and Severn Trent Water Authority adopted the stance of registering formal objections to development in cases where a discharge could be made to a

recognised "village drain", on the basis that, as a public sewer, a right of connection would apply and further pollution would result.

It was also usually stated that there were no plans as yet to provide sewage treatment for the discharge. The view was that these schemes had to take low priority for capital investment in relation to other schemes.

Planning Appeals were fought on this basis and the Authority's view on the right of connection was routinely accepted.

Statutory responsibility for sewerage was transferred to the Water Companies at privatisation in 1989, so, by the same logic, responsibility must have passed to them for the Consents issued to their predecessors. The Water Companies have not queried the validity of other Consents issued before 1973.

This matter of law will have to be resolved, ultimately, by the Courts.

4.3 OFWAT

The 1989 Act established another new body - the Office of Water Services (OFWAT), headed by the Director General of Water Services - to regulate the financial and customer service aspects of the new Water Companies. Charge increases are controlled by OFWAT under the "RPI+K" formula, i.e. charges cannot increase by more than "K" percent above inflation during a defined period of years. The first review of "K" is taking place this year (1994).

Arising from its regulatory function, OFWAT has issued a number of policy guidance notes, which have a strong influence on the actions of the water companies, by indicating, effectively, what spending is allowed and what is not. Two of these are of particular relevance: Information Note 10 (on Competition in Water Services) and Information Note 11 (on First Time Rural Sewerage). These Notes are discussed in the following sections. The views expressed are those of the author and not necessarily those of the National Rivers Authority.

4.3.1 INFORMATION NOTE 10: "COMPETITION IN WATER SERVICES"

OFWAT has issued a Policy Note No 10 (OFWAT 1991) on Competition in Water Services.

The Director General has the duty to promote competition in water services. Considering the cost of infrastructure and the evolutionary way services have developed over many years, it is often argued that the water industry is a natural monopoly and no-one has seriously suggested the development of parallel infrastructure to compete with existing.

The greatest opportunity for Competition is in the provision of new services, where none exist now. It was with this in mind that the 1989 Act made provision for "Inset Appointments" within the areas of the main companies. OFWAT can licence any company to provide water or sewerage services (or both) within a defined area. The Licence to operate an "Inset Appointment" would cover the same aspects as Licences for the existing companies.

No "Inset Appointments" have been made up to now, partly, as OFWAT acknowledges (see Appendix 1) because they have not been able to produce a simplified Licence to accommodate simplified Appointments. It would appear discriminatory to burden a small company, providing (say) sewerage services to a single rural community, with the same Licence conditions as Severn Trent Water Ltd. The same issues would obviously need to be covered, but licences could be much simpler for small companies.

It appears that the problem of appropriate Licence conditions will have to be resolved if "Inset Appointments" are to be a realistic proposition. While not removing existing water companies' obligations they may well have a role to play in resolving rural sewerage problems.

4.3.2 INFORMATION NOTE 11: "FIRST TIME RURAL SEWERAGE"

In 1992 OFWAT issued "Information Note No 11" (OFWAT 1992) on the provision of First Time Rural Sewerage. This outlined the Director General's views on the interpretation of Section 94 of the Water Industries Act 1991 and is, in effect, Policy Guidance to the water companies. Its publication followed two challenges to water companies to comply with the duty defined in S.94 to "provide, improve and extend such a system of public sewers ... as to ensure that the area is, and continues to be, effectually drained."

The Note has caused concern among those seeking resolution of rural sewerage problems for the following reasons.

As stated in Chapter 3, the Section 94 Duty is not qualified in the Act by reference to a financial formula and, in particular, not to the requisitioning procedure. On a straightforward reading of the legislation, it appears to be an absolute duty.

In the Information Note, the Director General adds a number of qualifications to the Duty. Firstly, he states that requisitioning will be the main method by which companies will extend the current system of public sewers. Secondly, he states that "septic tanks and cesspools will usually provide effectual drainage" and that "compelling evidence would be needed ... before septic tanks and cesspools would not be regarded as effectual". Thirdly, he states that, where an area is found not to be "effectually drained" **and the company ought to have made it so** (my emphasis) - implying circumstances where the duty would not apply - he will conclude that a company was in breach of the duty, but will then "seek an arrangement that the costs are not borne by the general body of customers, but are properly levied on those who will benefit from the scheme". He further states that "charges must be properly levied on those who create the costs". He will not support "general charge increases to fund extensions to the system".

On the first point, there is no linkage in the Act to the Requisitioning procedure and it would appear incorrect in law to imply one. The Note does not appear to reflect ministerial statements in this area.

Speaking for the Government in the House of Lords on 18 May 1989 during the passage of the Water Act, Lord Hesketh (Junior Environment Minister) referred to the general Duty and said "In fulfilling this duty undertakers will be expected to plan and to carry out a continuous programme of works to maintain, improve and extend (my emphasis) their network of sewers".

He added "This does not mean that mains sewerage has to be provided everywhere. Private sewerage arrangements which operate satisfactorily are an effective means of drainage. As long as they are suitable for a particular locality, they may be considered to provide for that part of an undertaker's area to be effectually drained. ... In other localities the circumstances will be such that only mains drainage can provide a satisfactory solution. **It is likely therefore that each undertaker's programme of works will include plans for extending its system of public sewers at some stage to localities within its area where there are private arrangements**".

The tone and context of Lord Hesketh's statement strongly suggests that the water companies would be expected to have their own plans to extend the sewerage system.

Also, in the case of Fulmer (see 4.4.1 below) the Secretary of State did not accept Thames Water's argument that the Duty "can be discharged solely by responding to requisitions under S.98 of the 1991 Act".

Lord Hesketh, again in his statement of 18 May 1989, said "The purpose of the requisitioning arrangements is to offer a means of securing that a particular locality is provided with a public sewer **in advance of the time that the undertaker might be expected to extend its system to the locality under its general duty**" (my emphasis). This association of requisitioning with early provision is very different from the emphasis in the Note.

On the second point, there is widespread evidence from local authorities and the pre-'89 Water Authorities to demonstrate pollution from inadequate drainage in rural communities. The Rural Sewerage Project was established precisely because of the problems in Lower Severn Area and the acknowledged ineffectiveness of individual solutions in the majority of these cases. This experience has been echoed by technical staff from all NRA Regions through the Rural Sewerage Forum (see Chapter 6 & Appendix 1) and the recent CIRIA Technical Note 146 "Septic tanks and small sewage treatment works" (CIRIA 1993) provides further evidence that septic tanks and cesspools do not provide effectual drainage in many circumstances.

In this aspect particularly the OFWAT Note fails to carry technical conviction.

On the third point, once again, the qualification of the Section 94 Duty by financial limitations does not appear to be supported by the legislation.

Discussions with OFWAT staff have not established the source of the reasoning in the Note, but it is clearly intended primarily to prevent uncontrolled financial burdens falling on the water companies.

The question of who pays for extending the public sewerage system is not, in itself, a matter for the NRA, but the Authority has a statutory interest in seeing the pollution resolved and must be concerned by the implications of any interpretation which reduces the effectiveness of legislation in defining responsibility for addressing the problem.

The NRA also has a direct interest in any legal interpretation which implies the need for ongoing and increasing resources to deal with sewerage problems on an individual basis. Tackling problems using pollution legislation, by individual action against householders is enormously

time-consuming and, with present staffing, unjustifiable on a broad scale in relation to other priorities. Extending the data from the Project, there may be up to 0.5 Million people affected in England and Wales and possibly 50-100,000 individual discharges to bring under control. The resource implications of lengthy correspondence, issuing Prohibition Notices or Consents, monitoring compliance, taking enforcement action and possibly collecting charges in connection with this number of individuals is, I suggest, beyond the bounds of any future funding.

Financing sewerage schemes is invariably the primary obstacle to progress and, by placing responsibility purely on "those who will benefit from the scheme" and "those who create the costs" the Note not only leads to confusion over the meaning of the legislation but introduces new obstructions to resolving the undoubted pollution problems.

It may not be reasonable to expect the water companies to finance first time sewerage completely, but the OFWAT Note 11 represents an interpretation which appears to absolve the companies of any responsibility in this area.

4.4 CASE HISTORIES

Two case histories are particularly relevant, in that they have both involved reference to the Section 94 Duty. It is notable that the NRA was not involved in either case.

4.4.1 FULMER, BUCKS

The information on this case is drawn from the Secretary of State's judgement and correspondence with South Bucks District Council.

Fulmer is a village near Slough, west of London, with 144 unsewered dwellings. It was the largest remaining compact area without public sewers in Eden Rural District Council prior to reorganisation in 1974 and was then next on the Council's mains drainage programme. Work on the scheme ceased when Thames Water Authority was formed and took over responsibility for sewerage.

A partnership approach was considered in 1978, with the Water Authority financing strategic sewers and the local authority requisitioning local sewers, but Fulmer failed to qualify on financial grounds.

South Bucks District Council initiated a complaint to the DoE against Thames Water Utilities Ltd in March 1990, that the water company was in breach of their duty under Section 67 of the Water Act 1989 (S.94 of the Water Industries Act 1991) to ensure that the area is, and continues to be, effectually drained by refusing to provide mains sewerage for Fulmer. The Council sought enforcement by the Secretary of State under Section 20 of the 1989 Act (S.18 of the 1991 Act).

The Council maintained that requisitioning was inappropriate for existing dwellings and that the existence of the requisitioning procedure does not exclude the Section 94 (1991 Act) responsibility. They pointed out that Thames Water shareholders would benefit from the income generated by the new asset and should bear the costs, recovering them from their customers through the normal billing process.

The Council considered Thames Water's assertion that first time sewerage is an unattractive investment as very inward-looking; it should not pick and choose its activities, given its wide-ranging duties, and should not have excluded first time sewerage from its capital investment calculations at privatisation.

In response, Thames Water stated that they had, at privatisation, assumed that all subsequent first-time sewerage would be requisitioned. If it is unfair for an entire district to fund sewerage in a particular locality, it is equally unfair for Thames Water's customers to do so. Even with requisitioning, the provision of sewers is financially unattractive. Without it, it is a serious loss-maker.

The Inspector from the DoE stated that only a small number of septic tanks and cesspools had been drawn to his attention as deficient and concluded "it seems likely that cesspool and septic tanks are generally satisfactory in this location. ... However, the present situation with (some) units is unacceptable and likely to cause nuisance and some risk to public health. Because of the failure of some installations the village as a whole is not, in my opinion, adequately drained".

Commenting on the Report Fulmer Parish Council pointed out that the Inspector had not been able to advise on how the defective systems could be rectified and that private contractors and the District Council had frequently been consulted, but the problems remained.

In his judgement dated 18 December 1992, the Secretary of State stated that the section 94 Duty could not be considered in isolation. He referred to the local authority's duty under S.59 of the Building Act 1984 to require the rectification of any private drainage arrangement that is insufficient, or in such condition as to be prejudicial to health or a nuisance. He took the view that the S.94 Duty does not require a sewerage undertaker to provide public sewers to drain every single property in its area. However, he did not accept Thames Water's argument that the Duty "can be discharged solely by responding to requisitions under S.98 of the 1991 Act".

He took the view that "if all the buildings in an area that need to be drained are provided with satisfactory arrangements for drainage, and these arrangements are maintained in a satisfactory condition, then the area will be effectually drained".

He found "no evidence that the general situation of Fulmer is such that, inevitably, the only way to provide effectual drainage is by means of public sewers". He considered that identified problems of septic tanks and cesspools could be resolved without the need for a system of public sewers and recommended the Council to look to its powers under S.59 of the Building Act 1984.

Following this judgement, South Bucks District Council has resolved to requisition a sewerage system to serve 125 properties in Fulmer.

Commenting on rural sewerage problems, the District Engineer has said "Unless legislation is introduced to compel Water Companies to allocate a certain proportion of their turnover to First Time Sewerage, the situation will progressively worsen. The Government must ensure that the Water Companies accept their whole responsibility and not dissociate themselves from FTS in order to achieve a healthy balance sheet. The attitude of the Water Companies is morally wrong now, it must be legally wrong in the future".

4.4.2 WORMLEY, SURREY

The information on this case is drawn from notes provided by Mr Robin Gray of WADDA and OFWAT's judgement.

Wormley is a village near Guildford, south west of London. It has 450 unsewered properties, including two schools with a total of 630 boarding pupils and 180 staff, a factory with 70 employees, the Institute of Oceanographic Sciences with 250 staff, two retirement homes, public houses and restaurants, shops and other small businesses. Households are served by septic tanks, cesspools and private sewage treatment plants. Many of these systems are now in a poor state of repair, but some have had large amounts of money spent on them, e.g. in relaying soakaway systems, which local experience suggests will have little effect.

A sewerage scheme had been in preparation in 1973 but did not proceed after the formation of Southern Water Authority.

In 1985, as a result of local concern at the continuing and worsening sewage problems, Wormley and District Drainage Association (WADDA) was formed. They lobbied Southern Water Authority and, in 1986, the Authority acknowledged that it had abandoned the sewerage scheme. WADDA then approached Waverley District Council to see if the Council would sewer the village, but the Council said requisitioning was too expensive and in any case it was not their responsibility.

In 1989 WADDA wrote to the then Minister of State at the Environment Department (Mr Howard) to question the issue of responsibility. In his reply, the Minister referred to Lord Hesketh's statement of 18 May 1898 and WADDA considered that this was unequivocal assurance that the sewerage undertaker would have to extend the mains drain and not only through the requisitioning procedure. WADDA then referred the matter to OFWAT, making a complaint against Southern Water's failure to extend public sewers to Wormley.

In April 1992, OFWAT sent an Inspector to Wormley to assess the situation and he concluded that Wormley was not "effectually drained". Before giving a Ruling on the complaint, OFWAT issued Information Note 11 on First Time Rural Sewerage.

In the preamble to his subsequent Ruling the Director General stated (in relation to the S.94 duty) "In my judgement public sewers are only likely to be justified in areas of existing development where unsuitable geology, potential aquifer pollution risks, or other practical problems render existing or alternative systems impractical, or where requisitioners are prepared to bear the cost."

He noted that the Inspector had concluded that "the area as a whole is not effectually drained". While agreeing with that conclusion, he considered that "the crux of the problem is the lack of proper reconditioning and maintenance of the existing septic tanks and cesspools, **both of which are practicable**" (my emphasis).

"In the case of septic tanks, the Inspector refers to unsuitable ground porosity. If this is deemed by the local authority to be the case for the outflows from septic tanks, then cesspools are an

alternative solution". Despite the "difficulties and inadequacies" identified, he said "I do not conclude from this that such situations require the installation of mains drainage. Cesspools and septic tanks are perfectly acceptable systems of drainage".

He concluded "On the evidence available to me, the area is capable of being effectually drained by reconditioning and maintenance of the existing private systems. I do not believe that the need to replace some septic tanks with cesspools, a continuance of odour problems, or the costs of maintenance and emptying are reasons that would render the present arrangement, if properly refurbished, unsuitable. Only if I did would the question of Southern Water's duty to secure effectual drainage of the area arise."

In response, WADDA has stated that it believes that there is a public benefit from mains drainage and it is a very narrow definition to limit it to those whose properties are to be connected to the new system. They are at present contesting Information Note 11 and the decision that although Wormley is not "effectually drained", the residents would have to pay for the benefits of mains drainage.

4.5 THE DoE REVIEW OF RURAL SEWERAGE

Following these cases, the Department of the Environment announced in 1993 a Review of Grants for First Time Sewerage. This Review has included consideration of many of the questions raised above and is discussed in more detail in Chapter 8 and in Appendix 1.

4.6 OVERVIEW

This chapter has outlined the legal and organisational framework for sewerage since 1989 and illustrated the conflicts generated following privatisation. In particular, the interpretation by OFWAT of the S.94 duty appears, if it is correct, to have nullified that duty in any practical sense.

5. *RURAL SEWERAGE PROBLEMS IN LOWER SEVERN AREA*

5.1 *THE LOCAL EXPERIENCE OF RURAL SEWAGE PROBLEMS*

Pollution Control Officers come into contact with domestic drainage problems through complaints received, investigations in connection with development proposals, referrals from Environmental Health, or direct observation during field work. Investigations can lead to tit-for-tat complaints from people who themselves have been the subject of complaint. Sewerage problems are to be found in all nine pollution control districts in Lower Severn Area and over the years officers have collected much local knowledge on problem areas.

The common experience has been that it is not possible to devote the resources needed for effective action against the numbers of individuals contributing to a communal problem when set against shorter term priorities. It was the difficulty encountered in dealing with these problems - evidenced by the fact that so many remain (and are getting worse in some cases) - which formed the spur for this Project.

The examples in this chapter from Lower Severn Area illustrate some of the technical and legal issues involved. All have been included in the field investigation programme and analysis in Chapters 7 and 9.

5.2 *EFFLUENT LOADS FROM VILLAGE DRAINS*

Several of the "formal" village drains in Lower Severn Area are included in the routine monitoring programme. A total of 134 samples were taken in the period 1990-93. Mean and 95th percentile levels of BOD(ATU), Suspended Solids and Ammonia for these samples are given in Table 1. If this were a single discharge, the data shows it would have just failed to meet standards of 250mg/l BOD(ATU) and 250 mg/l Suspended Solids, while it would have just passed an Ammonia standard of 40 mg/l. Overall, the quality is similar to that of weak settled sewage.

There is no way to get an accurate estimate of the total discharge volume but it is likely to be equivalent to that from a sewage works with a combined drainage system, a dry weather sewage flow of about 100 m³/d and a contributing population of some 1000 people. However, the quality is much worse than from a typical sewage works - which could be expected to comply with a "Royal Commission" effluent standard (traditionally expressed as 20 mg/l BOD: 30 mg/l Suspended Solids, equivalent to 25 mg/l BOD(ATU): 45 mg/l Suspended Solids when expressed as a 95% compliance figure). As the results in Table 1 show, the quality is ten times worse than would be expected from the sewage works. The resulting organic load is some five times the sewage works load.

Table 1 Effluent quality from Village Drains in Lower Severn Area

	BOD(ATU)	Suspended Solids	Ammonia
Mean	74	102	14.4
95 %	257	252	39.8

5.3 EARL'S COMMON, WORCS

Earl's Common is a hamlet of some 30 houses in the Wychavon District of Worcestershire, some five miles from Droitwich. The drainage picture is typical of unsewered villages in the locality.

There are no public sewers and all properties, bar three, are served by septic tanks. The subsoil in the area is a heavy lias clay with very low permeability. Soakaways have little prospect of working satisfactorily and septic effluent inevitably percolates into ditches and road drains. The pollution and nuisance caused is evident at three main locations before the ditches combine and join a tributary of Bow Brook north east of the village.

The sewage pollution was recognised by the early 1970s and, from its inception in 1974, Severn Trent Water Authority adopted the stance of opposing further development on pollution control grounds.

Of the three exceptions to septic tank drainage, two are for houses built since 1980 where the systems were specified as conditions of planning permission. One property is served by a "bio-disc" sewage treatment plant while the other has a sealed cesspool.

It has been proposed that the cesspools be replaced by "biodisc" type plants with discharges to the road drain, in order to reduce costs to the householders. But, as this would add to and extend the pollution from other properties, it has not been agreed.

5.3.1 DEVELOPMENT AND PLANNING PRESSURE

The number of houses in Earl's Common has doubled in the last thirty years, with most of the new houses being built in the 1960s or early 70s. Several houses which were originally small cottages have had substantial extensions added. Once pollution was identified, the Planning Authority has, in the main, taken account of the pollution implications of development as an added reason for refusal, although open countryside policies have normally been the main factor driving refusal. Permission has been granted for only two dwellings since 1980, as mentioned above.

There have been several unsuccessful Appeals against Planning refusals, the most recent being three in 1989 and one in 1992. In the 1992 case, the Inspector took strong account of the drainage objection and the advice from the NRA in dismissing the Appeal. Specific instances of development include:

- Six houses built together in the 1960s, with septic tank drainage. All discharge to a common drain which then discharges to a roadside ditch.
- A large house built in the late '60s or early '70s, served by a cesspool. This is not sealed and effluent can seep into the road drain if not emptied regularly. It has been difficult to sell the house, because of the cost of emptying the cesspool. To stop the pollution a pumped system will be necessary and an extensive soakaway. While fortunate in having land available, its use for a soakaway will sterilise any development potential.
- A large bungalow built in 1983. The development was resisted on drainage grounds but was permitted as acceptable infilling, subject to the use of a "bio-disc" plant, which discharges to a road drain.

- A detached house built in 1984. The development was resisted on drainage grounds but was permitted subject to provision of a cesspool. The cost of emptying the cesspool is in excess of £1000 a year.

5.4 PEOPLETON, WORCS

Peopleton is a village of 220 houses in the Wychavon District of Worcestershire, three miles north of Pershore. 160 houses are connected to acknowledged public sewers. Sewage was treated originally in three small sewage treatment plants which were replaced by a single new plant in 1992. The older houses in the main street of the village (approximately 35 in all, including a shop and public house) drain north and south via two "village sewers". In addition, 10 houses discharge to another ditch which flows through the village.

The northern village sewer takes highway drainage and septic effluent from 8 properties before discharging into a ditch in a private garden, where it causes pollution and considerable smell nuisance. The southern village sewer takes highway drainage and septic effluent from 27 properties and discharges into a tributary of Bow Brook, where it causes obvious pollution. Both sewers have been the subject of routine sampling over a number of years. Average results are given in Table 2.

The history of the village sewers is significant. In 1963, Pershore Rural District Council made an application under the Rivers (Prevention of Pollution) Act 1961 to Severn River Board for consent to continue to discharge from both village sewers and from a small sewage treatment plant serving part of the village. The River Board issued formal consents to the Council for all three discharges in 1970 and those for the village sewers required that the discharges be brought up to "Royal Commission" standard by 1/4/76. The RDC prepared a sewerage scheme (the Drakes Broughton Area Sewerage Scheme) which included these sewers, but it was shelved when the Water Authority was set up.

The RDC continued to maintain the sewage works until re-organisation in 1974 and to cleanse the ditches below the two village sewers. The sewage treatment plant was taken over by Severn Trent Water Authority in 1974, while Wychavon District Council, successor to Pershore RDC, continued to cleanse the ditches below the village sewers, in their capacity as sewerage agent for the water authority. This practice continued until the early '80s.

From its inception in 1974 until privatisation in 1989, Severn Trent Water Authority adopted the stance of opposing further development which could connect to either village sewer on the basis that, as public sewers, a right of connection would exist. "Peopleton Village Sewer South" was included in the list of village drains submitted by STWA to the DoE in 1989, but Severn Trent Water Ltd has consistently refused to accept either sewer as public.

The Area Solicitor of Severn Trent Water Authority investigated a number of old sewerage systems in the early 1980s and turned up a reference to "Peopleton Village Sewer" in the Minutes of the Pershore RDC Highway Committee meeting of 20 July 1897!

The Minute reads: "The Surveyor brought to the notice of the Committee the bad state of the above sewer, which as a "drain" had previously been cleaned and repaired by the late Upton

Snodsbury District Highway Board. It was upon the proposition of the Chairman seconded by Mr Faulkner unanimously decided the Surveyor acquaint the Sanitary Inspector with its being a nuisance as this committee is not called upon to take further action in this matter."

The Minute does not identify the pipe referred to, but it is virtually certain to have been the Southern Village Drain, as this is still known locally as the "Old Peopleton Sewer". The Area Solicitor concluded, in a memo to the Senior Sewerage Engineer, "it (the Minute) clearly accepts that the pipe concerned is 'a village sewer' and doubtless the Sanitary Inspector would have undertaken his functions under the Public Health Act 1875. Whatever the pipe was and wherever it was laid, it seems pretty clear that as at 1897 it certainly was 'a public sewer'."

Despite this very clear statement, Severn Trent Water Ltd still maintains that the village drain is not a public sewer.

When STW Ltd designed the new sewage treatment works in 1990, allowance was made for the load from both village sewers, but refused to connect them, although the southern sewer runs within 20 metres of a sewage pumping station. A local pressure group (Peopleton Sewerage Action Group) which had been pressing for action on sewage problems in the village then challenged Severn Trent Water to meet their obligations under S.94 of the 1991 Act - and objected to the grant of Consent for the new works.

In an attempt to resolve the question the NRA included a condition in the Consent for the new sewage works requiring the two village sewers to be connected and treated from the end of 1994. STW Ltd has appealed against this condition of the consent and the matter is currently with the DoE. The NRA is also considering legal action against STW Ltd for the pollution caused.

Table 2 Effluent quality from Peopleton Village Drains

	BOD(ATU)		Suspended Solids		Ammonia	
	North	South	North	South	North	South
Mean	58	33	47	40	14.0	15.0
95 %	199	88	207	184	51.8	35.0

5.5 FLECKNOE, WARKS

Flecknoe is a village of 60 houses in the Rugby District of Warwickshire, some 6 miles south of Rugby. 12 of these (originally council housing) are served by a private sewage treatment plant, the rest have septic tanks, cesspools, or package treatment plants.

Prior to 1974, Rugby Rural District Council cleansed various ditches in the village on the basis that they were public sewers. However, after re-organisation, Severn Trent Water Authority claimed there were no public sewers in Flecknoe and withdrew funding for cleansing the ditches.

The village was, however, on the list for a mains sewerage scheme and a pragmatic approach was adopted to Planning. Infill development was permitted, provided a cesspool was installed which could be connected to a future sewer scheme. In recent years, package sewage treatment plants discharging to soakaway have also been allowed.

The proposal for a main sewer scheme was suspended at privatisation, because of increased capital costs brought about by Severn Trent Water's interpretation of the status of the old village drains, the introduction of infrastructure charges for the first time provision of drainage to properties and the withdrawal of the Water Authority's house connection grant. The cost of the scheme has now been estimated at £525,000, or £8600 per house.

Pollution from older properties continues and is evident at three main locations. The discharges enter ditches which flow to the Grand Union Canal. Rugby Borough Council has kept the scheme in its capital programme, but is also considering contesting the Water Company's view that the old village drains are not public. Evidence is being sought to show that two or more houses discharged sewage to the old "sewer dyke" prior to 1937, as this is believed to prove public sewer status.

5.6 FLYFORD FLAVEL, WORCS

Flyford Flavel is a village of about 100 houses in the Wychavon District of Worcestershire, five miles east of Worcester. Similar to Peopleton, the sewerage system originally consisted of two "village drains" which received the overflow from septic tanks in the historic core of the village. These have deemed consents via an application under the 1961 Act. About 80% of houses are connected to one or other of these old sewers.

Modern houses built in the 1960s to the north of the village also had septic tanks, but the heavy clay subsoil made soakaways ineffective and nuisance in a local ditch led the Pershore Rural District Council to pipe it, using their Public Health powers. The Council prepared a sewerage scheme (the Northern Parishes Area Sewerage Scheme) which included these sewers, but it was shelved when the Water Authority was set up. After reorganisation, Wychavon District Council, successor to Pershore RDC, continued to cleanse the ditches below the village drains, in their capacity as sewerage agent for the water authority. As at Peopleton, this practice continued until the early '80s.

In the early '80s Severn Trent Water Authority carried out a detailed investigation into the status of the village drains. The evidence hinged largely on sworn statements of a council employee (now dead) about the historic involvement of the RDC and STWA initially accepted this evidence. However, realisation of the financial implications of being connected to a public sewer created a backlash in the village, resulting in an opposing sworn statement being produced by a local resident in relation to the "north" village drain!

This statement emphasised the early function of the drain in taking highway water, so STWA then judged it to be a highway drain and persuaded the County Council to accept its maintenance. This meant, of course, that people connected to it did not have to pay sewerage rates!

A sewerage scheme was drawn up in 1986 and the argument was accepted that the north village drain should be included because of the pollution caused - it drains six houses and a public house and discharges beside a busy road junction. However, when completed in late 1993, the north village drain was not connected.

It is clear that the scheme included provision to connect the north village drain, the sewage load was included in treatment design and all parties believed it would be connected until mid-'93. The District Council, acting as Agent for Severn Trent, even cleaned out the ditch to reduce nuisance during construction of the sewer!

Requests to the Water Company to honour its previous commitments have, to date, fallen on stony ground and the NRA will have little option but to consider legal action against the company unless the issue is resolved by a connection being made to the new sewer.

It should be noted that it has been possible to construct this case history (and that of Peopleton) only because copy records from STWA were retained by the NRA in 1989. No details have been forthcoming from Severn Trent Water since then apart from statements that the village drains are not public sewers.

5.7 OVERVIEW

This chapter has illustrated some of the technical and legal issues involved, from examples in Lower Severn Area of Severn Trent Region. Staff from other NRA Regions report very similar experiences.

Access to information is now closely controlled by the water companies, so that independent judgement is unlikely to be possible in future.

6. PROJECT DEFINITION, METHOD AND ACHIEVEMENT

6.1 DEFINING THE SCOPE

The Rural Sewerage Project was funded as a local investigation of rural sewerage problems within the Lower Severn Area of Severn Trent Region. The Project Outline document is included as Appendix 3.

Although other Areas of the Region were known to have similar problems, investigations had to be restricted to Lower Severn Area to keep within resources and time available. A trawl of knowledge and information revealed that there were at least 50 villages in Lower Severn Area with a history of sewage pollution problems.

6.1.1 PLANNING FIELD INVESTIGATIONS

With the number of locations identified, it was clear that very detailed field investigations would not be possible with the resources available. The objectives for field work were therefore set as follows.

1. To identify the significant foul discharges and drainage systems in each case.
2. To identify by inspection, as far as possible, the houses or groups of houses involved and their individual sewerage facilities.
3. To carry out chemical and biological investigations in watercourses affected and assess the environmental impact of discharges.
4. To record the results, document the drainage systems and produce maps for future reference.

6.2 LIAISON WITH PARISH AND DISTRICT COUNCILS

Each problem is a changing quantity, resulting from development history and demographic change in village populations. Planning history and pressure for further development are important aspects as is the history of environmental health complaints. Local knowledge of the drainage system is vital.

For all these reasons it was essential to liaise with the District Councils and this was done at a very early stage by letter to each Chief Executive, followed up by visits to discuss the sites identified within that District with a officer designated by the Council.

As the investigations were to involve detailed work in small communities it was considered vital to inform the relevant Parish Councils and seek their co-operation. This was also done by letter at an early stage. The letters led to discussion at many Parish Council meetings and several Parishes responded with relevant information. Invitations to address the Council were received in a number of cases and were taken up.

6.3 PUBLICITY

Many communities and councils have been aware for many years of the problems and the need to tackle them, but have lost faith in the statutory bodies doing anything. This applies to the NRA as well. Publicity for the Project was therefore a key aim, both to tell people what the NRA was doing and to re-awaken interest in the subject. From renewed interest could come discussion, sharing of experience and new thoughts on how the problems could be tackled.

Media publicity started with a Press Launch in June. Follow up was good and several regional papers carried the story. The Gloucester Echo ran a feature article in July 1993 and BBC Midlands Today recorded a news feature which was transmitted in the main evening news on 1 December 1993. The January 1994 edition of "Water & Environment Management" (the news journal of the Institute of Water and Environmental Management) ran a report of the Rural Sewerage Forum meeting held on 8 December 1993 (see next section). Further media publicity is planned.

6.4 THE RURAL SEWERAGE FORUM

Restricting field work to the Lower Severn Area meant there was a risk that the information gathered would not be representative of other parts of the region, or of other NRA regions. There was also a need to gain as broad a perspective as possible, taking community views into account.

A key objective of the Project was therefore defined as the establishment of a forum to share information and experiences about rural sewerage problems and draw in rural community bodies as well as the statutory bodies. The decision was taken not to involve the water company directly, as their views would be represented by District Council sewerage agency staff. Also, it was felt that fresh views were needed.

Discussions with District Councils and other NRA regions produced a positive response to the idea of a Rural Sewerage Forum, so a meeting was held on 11 May 1993. Over 30 delegates attended - from 11 District Councils, 6 NRA regions, 2 Rural Community Councils, the CPRE and DoE. All delegates confirmed that the analysis given in Chapter 2 was valid and applicable to their situation. A fuller report of the meeting is given in the newsletter subsequently sent to delegates and others interested (see Appendix 2).

The second meeting of the Forum was held on 8 December 1993, attended by 48 delegates, from 17 District Councils, 9 NRA Regions and Head Office, OFWAT, DoE, British Water, Warks Rural Community Council, CPRE and WADDA. The Sessions were recorded and a summary has been produced (NRA 1994 & Appendix 2).

A further Forum meeting is proposed, to discuss the Project report and direction of any future work.

6.5 ATTITUDE SURVEY

Early in the Project it was decided that people in the communities affected must be informed of the work being carried out. As investigations involved visiting houses, there was a need to identify Project Staff, provide information and to leave a "calling card". These visits would also be an ideal opportunity to gain information for the Project, so it was decided to develop a Questionnaire Survey for people to fill in and return.

The Questionnaire asked for information about the properties and people concerned, in order to see if there were links with any aspect of the physical study. It covered aspects thought to influence attitudes to rural life and awareness of the drainage problems, as well as factual information on the individual drainage facilities employed and factors influencing water consumption. The Questionnaire form is reproduced in Appendix 4.

The Questionnaire made clear that personal information would be treated as confidential and no individuals would be identified in the analysis. This was an important aspect in securing a high response.

The survey was a successful means of informing people about what the NRA was doing and only one village reacted adversely to the investigations. The final number of questionnaires delivered was 1635 and the replies received totalled 1034, a response rate of 63%.

This response rate was unexpectedly high and has enabled statistically significant conclusions to be drawn. The questions sought to find the following information.

1. **The number of people living in the property** - a measure of the potential polluting load
2. **Length of residence in the village** - an important indicator of local knowledge and attitudes, linking to other aspects of the questionnaire
3. **Work location (if applicable)** - an indicator of lifestyle and attitudes
4. **Type of sewage facility** - if known
5. **Water consuming domestic appliances used** - an indicator of water consumption, lifestyle and prosperity
6. **Awareness of (and attitude to) drainage problems in the village** - perceptions of the situation from the residents' viewpoint
7. **Attitude to provision of mains drainage system** - general views, without reference to costs or other factors
8. **Willingness to pay for mains drainage** - attitude to paying, defined as broad sums, with statement that no commitment is implied
9. **Attitude to provision of more houses in the village** - often linked with provision of sewers; an indicator of attitude to community growth.

6.5.1 QUESTIONNAIRE ANALYSIS

The questionnaire data has been analysed statistically for correlations between the questions. The responses have been recorded in a computer database, but personal data (i.e. names and addresses) has been excluded. The analysis and conclusions are given in Chapter 7.

6.6 IMPACT SCORING SYSTEM

The scoring system used in this Report is designed to enable sewage pollution from the villages studied to be compared in a standardised way. It aims to provide a "semi-quantitative" measure of the problems - the scale, concentration and environmental impact. The scores derived have no absolute relevance and the system could certainly be refined, but it does help to indicate the relative environmental impact of pollution from each village during the survey.

The impact scoring system takes account of chemical and biological water quality, estimated loadings at individual locations, rapidity of dilution and public access to the watercourses affected. The score is built up by allocating a value to each of nine factors which are then added together to arrive at the total score. Details are given in Table 3. The factors are as follows.

1. **Total number of houses discharging** - a measure of the total sewage load escaping from the village.
2. **Number of discharge points** - the distribution of the total loading.
3. **Number of houses discharging at worst location** - the loading at the critical location (normally the site of worst pollution).
4. **Distance to 10:1 dilution below worst discharge** - a measure of how rapidly the pollution is dispersed.
5. **BOD(ATU) 10m below worst discharge** - the degree of organic pollution in the receiving watercourse.
6. **Ammonia 10m below worst discharge** - the degree of toxic pollution likely to affect fish in the receiving watercourse.
7. **Dissolved Oxygen 10m below worst discharge** - the potential for smell nuisance and a measure of impact on organisms in the stream bed.
8. **Extent of "sewage fungus" at worst location** - a measure of biological and aesthetic pollution.
9. **Public accessibility** - a measure of likely awareness in the community.

The values for factors 1-3 are "banded" to give weight only to significant increases. Values for factor 4 are given greater weighting to avoid high scores in locations where discharges are rapidly diluted (e.g. the Severn Estuary), or soak away. Values for factors 5,6 and 7 follow the NWC Water Quality Classification, with a top category for grossly polluted conditions.

Factor 8 is again banded to give weight to significant impact. Factor 9 gives a simple measure of public contact with the problem.

The possible scores range from 9-58. Actual scores for the villages surveyed are found to range from 12-45. The rank order is given in Chapter 7 and the individual elements for each village are given in Chapter 9.

6.6.1 "SCORING POINT" DEFINITION

The scoring point in each village was determined from the initial survey. It was the worst location in terms of pollution, based on visual as well as chemical criteria. Where there was doubt, samples were taken at each location and the scoring point was determined from analytical data.

Table 3. Impact Scoring System

IMPACT SCORING SYSTEM					
1. Number of houses discharging					
Houses	1-5	6-10	11-20	21-40	>40
Score	1	2	3	4	5
2. Number of Discharge Points					
Discharges	1-2	3-4	5-8	9-16	>16
Score	1	2	3	4	5
3. Maximum number of houses discharging to any one point					
Houses	1-2	3-4	5-8	9-16	>16
Score	1	2	3	4	5
4. Distance to 10:1 dilution D/S of worst discharge					
Distance	100m/soakaway	100-200m	>200-400m	>400-800m	>800m
Score	1	5	10	15	20
5. B.O.D 10m D/S of worst discharge (mg/l)					
BOD	<5	5-9	10-17	18-40	>40
Score	1	2	3	4	5
6. AMMONIA 10m D/S of worst discharge (mg/l)					
Ammonia	<0.7	0.7-2.5	2.6-5.0	5.1-20	>20
Score	1	2	3	4	5
7. Dissolved oxygen 10m d/s of worst location (%)					
D.O.	>60	60-41	40-21	20-10	<20
Score	1	2	3	4	5
8. Extent of sewage fungus D/S of worst location (m)					
Distance	Outlet	10	11-25	26-50	>50
Score	1	2	3	4	5
9. Public Accessibility					
Public Access	Low	Medium			High
Score	1	2			3

6.6.2 VALUE OF THE SCORING SYSTEM

The scoring system does not claim to be more than a crude measure of environmental impact, but its value lies in placing the villages in a rough order of priority from the NRA's viewpoint. The absolute score is not important in itself, nor the precise rank order of the villages.

The scores are probably best used to divide the villages into priority categories, i.e. Higher, Middle and Lower Impact. The breakpoints chosen are as follows:

HIGHER IMPACT:	30 and above
MIDDLE IMPACT:	20-29
LOWER IMPACT:	less than 20

It should be remembered that the scores are based on conditions found on only one or two visits to each village and so would be refined by further sampling. However, they do reflect fairly well the subjective impression gained of the relative scale of the problems.

6.7 FIELD INVESTIGATIONS AND DATA COLLECTION

NRA Pollution Control staff were asked to identify known rural communities with potential sewage related pollution problems and to supply any background information. District Councils were also asked for their views, and a list of fifty-seven villages was finally identified. The list is far from exhaustive and many more instances could have been chosen. Emphasis was given to those with a history of complaints and identified pollution.

Historic information was gathered from the office files, as well as information about consented discharges.

6.7.1 FIELD INVESTIGATIONS

The field investigations were carried out over a seven month period from May 1993 to November 1993. In each case, an initial investigation was undertaken in order to gain a 'feel' of the village - the lie of the land, approximate number of properties etc. Most of the houses in the village were then visited in turn, in order to establish which properties were contributing to pollution problems.

The Survey Questionnaire was delivered to each property and the occupants were asked for information about their sewage disposal facilities and knowledge of sewage pollution related problems in the village. It was stressed that the investigation was a survey and the information would not be used against the householders. The visit usually included an inspection of the sewerage disposal facility to confirm whether there was a direct overflow to the ditch/watercourse, but it was not possible to carry out any dye tracing.

A great deal of information about the foul drainage facilities in each village was gleaned from talking to the occupants and land owners. All discharges and suspected discharges were then marked on a field working map.

A number of water quality samples were taken in each of the villages visited. Having established, as far as possible, an overall picture of the foul drainage system, water samples were taken at the more polluted sites. Samples were taken of the discharge and of the watercourse 10 metres downstream of the discharge. Dissolved oxygen and water temperature readings were also taken.

In situations when there was more than one discharge to a short length of ditch/watercourse, samples were taken below the series of inputs. The ditch/ watercourse was inspected to establish the persistence of sewage fungus downstream of the discharge and the degree of dilution. All sample sites were marked on the field working map.

6.7.2 *RECORDING OF DATA*

The data was recorded on a summary sheet and a reference map. These were then used in preparing the descriptions and maps given in Chapter 9.

7. THE RESULTS

7.1 GLOSSARY OF TERMS

BOD - Biochemical Oxygen Demand. The depletion of oxygen brought about by the biological breakdown of organic matter by micro-organisms over a period of 5 days at a constant temperature of 20 C.

BOD (ATU) - BOD with nitrification suppressed.

Suspended Solids Solids carried in suspension in a river or effluent.

Ammonia The product of protein breakdown: toxic to fish. E.C Fisheries Directive Standard: 1.0mg/l (as ammonium ion)

Dissolved Oxygen The proportion of the maximum possible oxygen concentration (saturation value) at the relevant temperature.

Royal Commission Sewage Effluent Standard

Defined by the Royal Commission on Sewage Disposal 1908. 20 mg/l BOD: 30mg/l Suspended Solids

Chemical Classification of River Quality

The Chemical Classification is based on a 95th percentile compliance with the figures shown:

Class 1A

Quality Criteria: Dissolved oxygen saturation greater than 80%.

BOD not greater than 3mg/l.

Ammonia not greater than 0.4 mg/l.

Potential Uses: Water of high quality suitable for potable supply abstractions and for all other abstractions.

Game of other high class fisheries.

High amenity value.

Class 1B

Quality Criteria: Dissolved oxygen saturation greater than 60%.

BOD not greater than 5 mg/l.

Ammonia not greater than 0.9 mg/l.

Potential Uses: Water of less high quality than Class 1A but usable for substantially the same purposes.

Class 2

Quality Criteria: Dissolved oxygen saturation greater than 40%.

BOD not greater than 9 mg/l.

Ammonia not greater than 2.5 mg/l (*)

Potential Uses: Water suitable for potable supply after advanced treatment.
Supporting reasonably good coarse fisheries.

Class 3

Quality Criteria: Dissolved oxygen saturation greater than 10%.
Not likely to be anaerobic.
BOD not greater than 17 mg/l.

Potential Uses

Waters that are polluted to an extent that fish are absent or only sporadically present. May be used for low grade industrial abstraction purposes.

Class 4

Quality Criteria: Dissolved oxygen saturation level less than 10% saturation.
Likely to be aerobic at times.

Potential Uses

Waters which are grossly polluted and are likely to cause nuisance.

(*) This is not part of the general classification.

Groundwater Vulnerability Classification

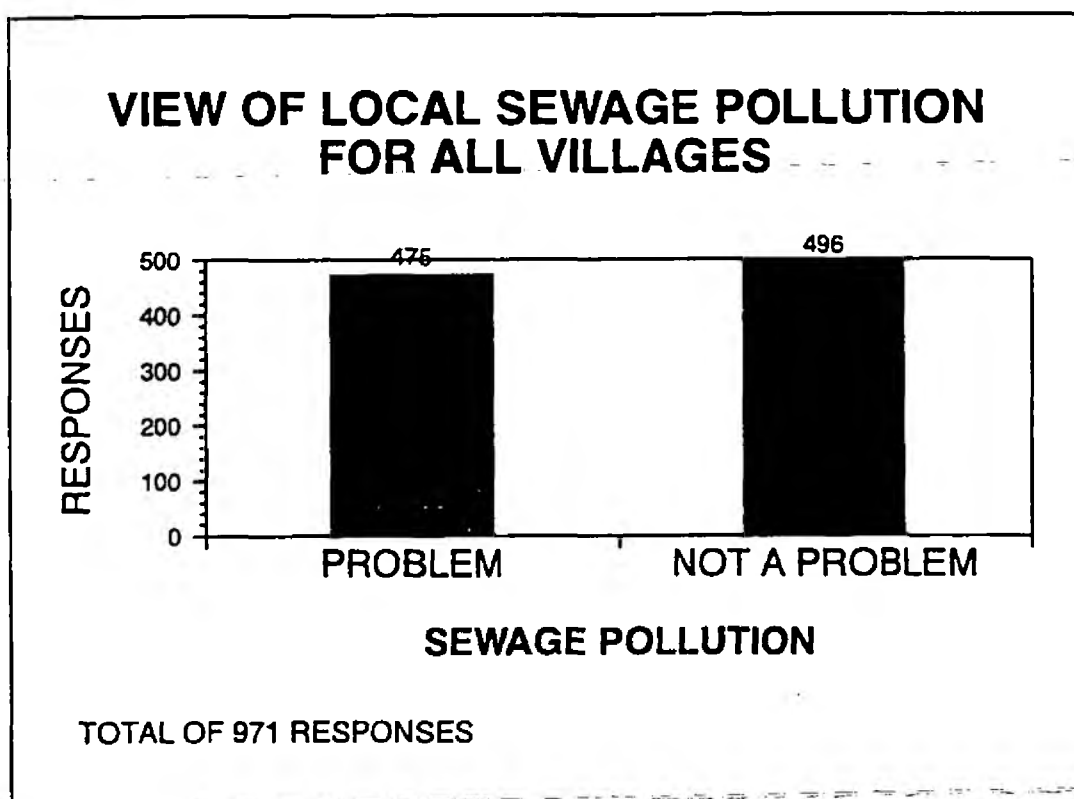
Geological strata which contain groundwater in exploitable quantities are termed Aquifers, whereas rocks which are largely impermeable and do not readily transmit water are termed Non-Aquifers. Aquifers vary in their general and hydraulic characteristics (fissures, fissure-porous and porous) and in the unsaturated zone this variation determines the vulnerability of the groundwater to pollution.

Major Aquifers These are highly permeable strata used for strategic water supplies.

Minor Aquifers These can be fractured or potentially fractured rocks which do not have primary permeability of other formation of variable permeability.

Non-Aquifer These are formations with negligible permeability that are generally regarded as containing insignificant quantities of groundwater.

Qu. 8. Do you feel that sewage disposal is a problem in the village?



Sewage is a problem	49%
Sewage is not a problem	51%

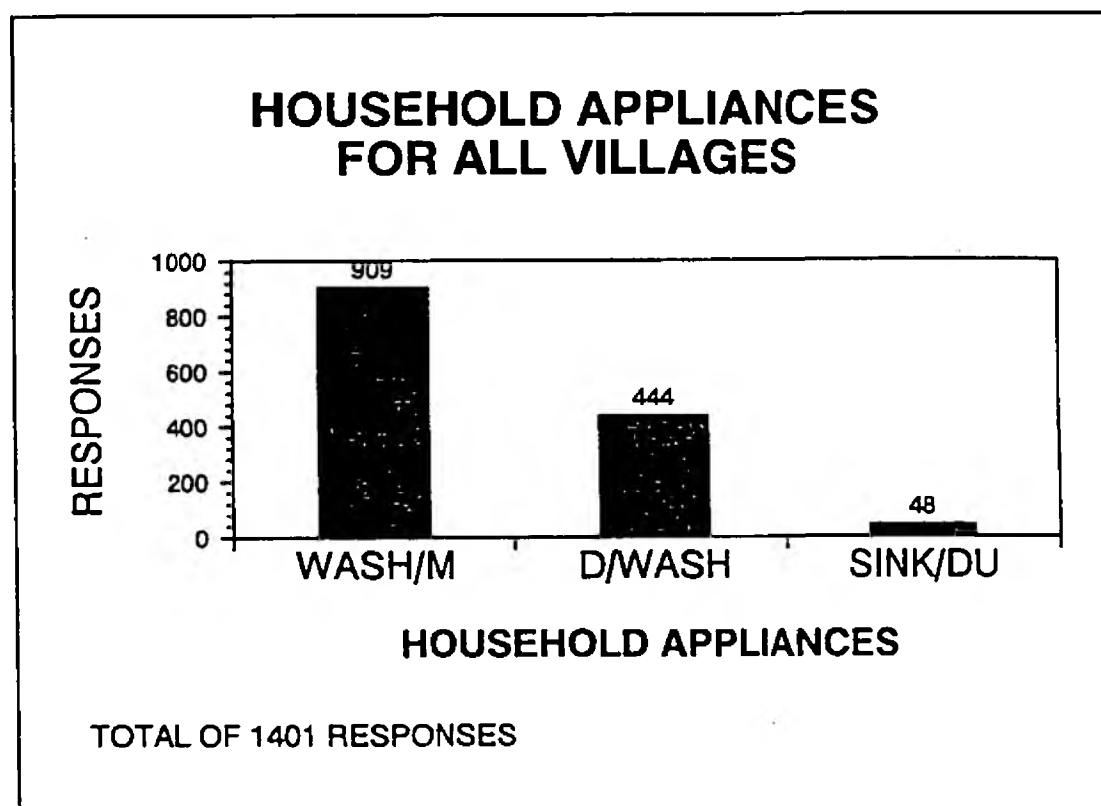
A very strong positive correlation was found between considering that sewage pollution was a problem, and wanting mains drainage (correlation = 0.566).

Similarly, there was a weak positive correlation (correlation = 0.175) between the perception of sewage pollution and the wish to see more houses in the village.

Several of the individual village statistics differ markedly from these cumulative statistics. For example, Corely Moor, Much Marcle, Long Green, Clay Coton, Hawkes End, Stock Green considered that sewage disposal was definitely a problem in their villages, with percentages of 96%, 80%, 90%, 100% (sample size 5), 86%, and 84% respectively.

On the other hand, villages such as Coombe Hill, Earls Common, Rodley, Abberton, Oakridge, Harecombe, Longney and Flecknoe considered sewage disposal not to be a problem, with percentage figures of 14%, 25%, 29%, 10%, 24%, 87%, 63% and 75% respectively.

*Qu. 7. Do you have an automatic washing machine?
a dishwasher?
a sink disposal unit?*



Automatic washing machine	65%
Dishwasher	32%
Sink disposal unit	3%

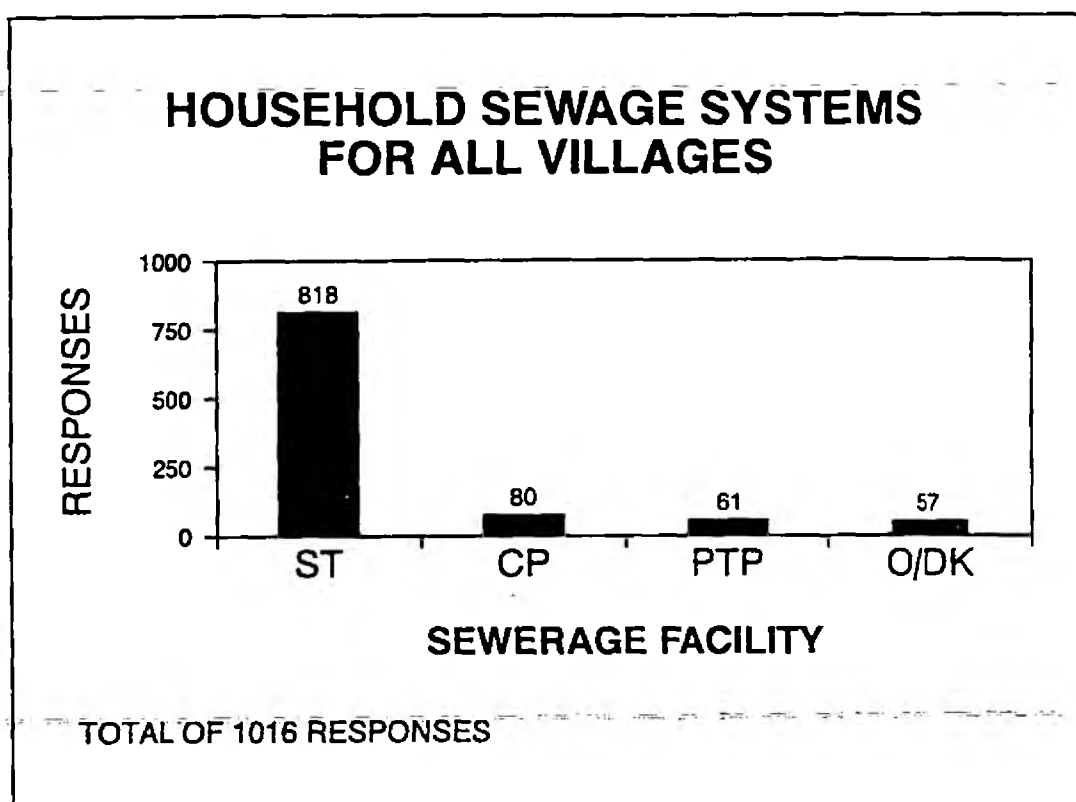
People who do not work (Qu.5) were less likely to own an automatic washing machine (correlation = -0.274), or a dishwasher (correlation = -0.239).

The above percentages reflect ownership of more than one appliance in many households. Expressed as a proportion of the total number of questionnaires returned (1034) the figures are as follows:

Households owning -

Automatic washing machine	88%
Dishwasher	43%
Sink disposal unit	5%

Qu. 6. Do you have
 a septic tank and soakaway?
 a sealed cesspit (no discharge)?
 a package treatment plant?
 other/don't know?

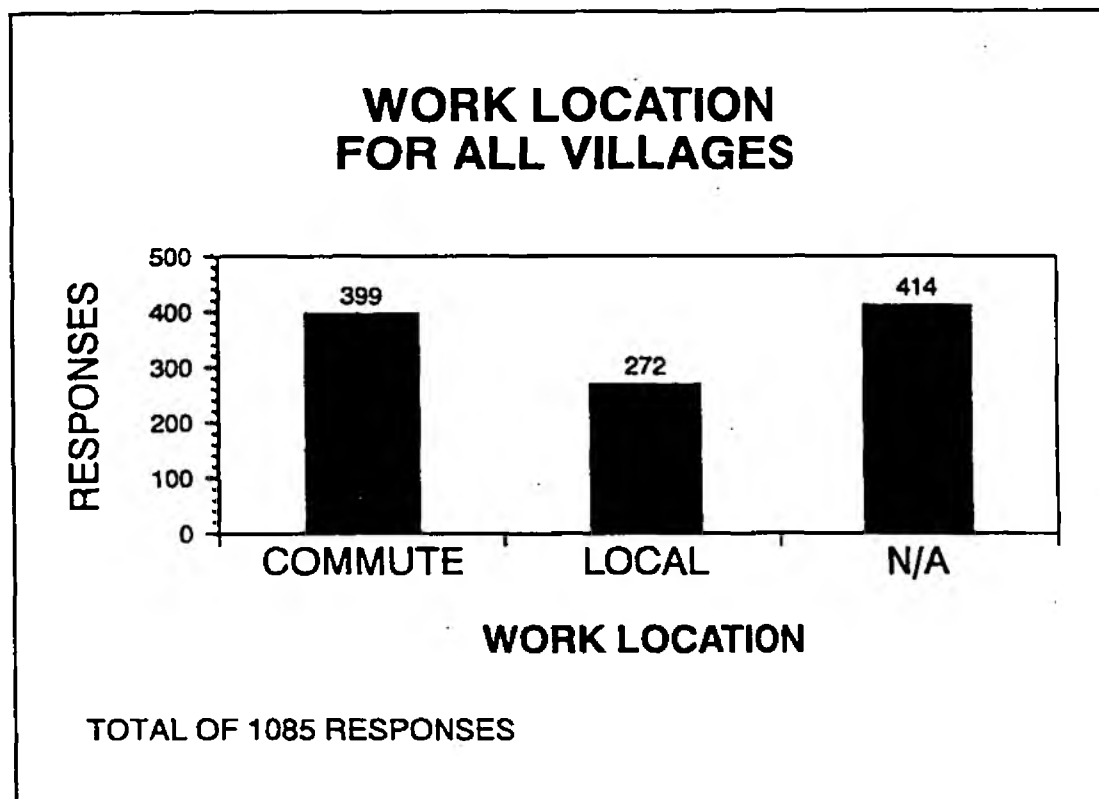


Septic tank and soakaway	80%
sealed cesspit	8%
Package treatment plant	6%
Other/don't know	6%

Certain individual villages differ from these cumulative statistics.

Percentage figures for cesspits at Corley Moor, Walton Cardiff and Hawkes End were 62%, 36%, and 66% respectively. Percentage figures for package treatment plants at Grafton Fyford, Birlingham, Ahow, Much Marcle, Green Street, Catthorpe, Stock Green, and Littleworth were 31%, 29%, 31%, 19%, 18%, 26%, 12% and 42% respectively.

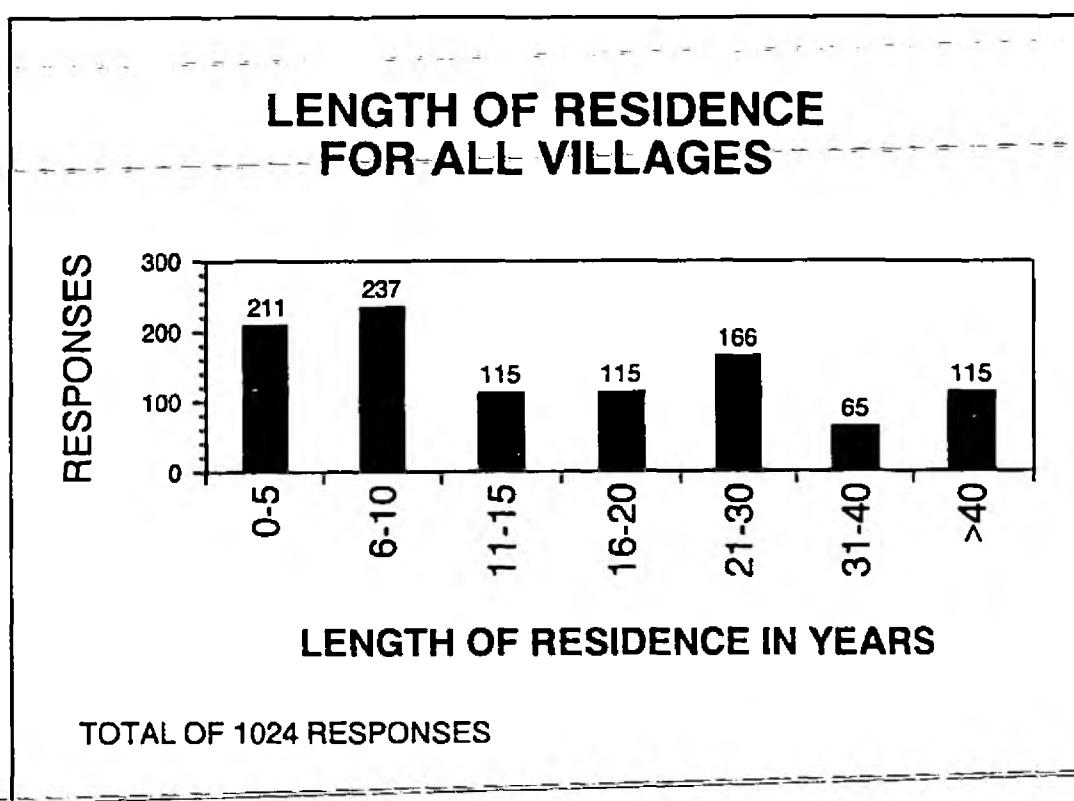
Qu. 5. Do you : *commute to work?*
 work in the vicinity?
 not applicable?



Commute to work : 37%
work in the vicinity : 25%
Not applicable : 38%

No correlations were found.

Qu. 4. How long have you lived in the village?



0-5 years	21%
6-10 years	23%
11-15 years	11%
16-20 years	11%
21-30 years	16%
31-40 years	6%
>40 years	11%

Several correlations were found with length of residence.

Length of residence was found to correlate negatively with ownership of an automatic washing machine (correlation = -0.301), and with ownership of a dishwasher (correlation = -0.261), that is, people who have lived in the village for shorter periods of time are more likely to own an automatic washing machine or dishwasher.

Household size was found to influence other factors in the questionnaire.

Household size has a weak positive correlation with ownership of an automatic washing machine (correlation = 0.218); and of a dishwasher (correlation = 0.209), that is, larger households are more likely to own an automatic washing machine and a dishwasher.

A weak negative correlation was found between household size and the length of residence (correlation = -0.209). That is, larger households have shorter length of residence.

A weak positive correlation was found between household size and "commuting to work" (correlation = 0.244), that is, larger households are more likely to commute to work. However, a similar weak positive correlation was found between household size and "working locally" (correlation = 0.223).

Household size was found to be negatively correlated (correlation = -0.381) with those people who do not work, that is, the smaller the household the less likely they are to work. An obvious reason for this will be that the household consists of elderly people.

7.4 QUESTIONNAIRE ANALYSIS

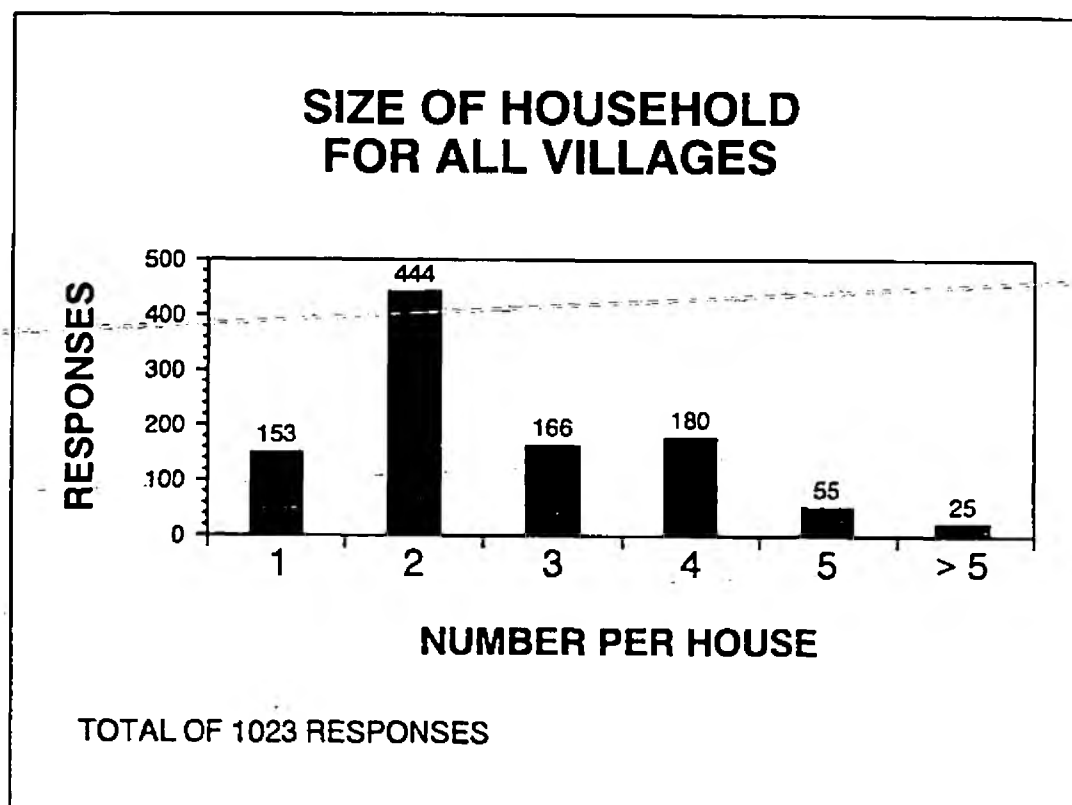
Critical values for correlation coefficients have been analysed at $p=0.05$. For a sample number greater than 1000, values greater than correlation = 0.139 are significant.

Total number of questionnaires sent out: 1635

Total number of questionnaires returned: 1034

Percentage of questionnaires returned: 63%

Qu. 3. How many people live in the property?



1 person	15%
2 people	43%
3 people	16%
4 people	18%
5 people	5%
>5 people	2%

- ***Pollution***

Details of the number of points in the village where polluted conditions were detected, as well as an estimate of the number of properties contributing to this pollution. Water quality details are given for the scoring point, and an indication of the Chemical Classification.

- ***Environmental Health Complaints***

The relevant District/Borough Council was asked to categorize the villages according to the incidence of environmental health complaints.

- ***Map***

The village area, polluting inputs, sampling points and scoring point.

- ***Details of the Impact Score***

A breakdown of how the Impact Score was derived, including the number of questionnaires sent out, the number returned, the percentage of people considering that sewage pollution is a problem and the percentage of people wanting mains drainage.

- ***Questionnaire Analysis***

Histograms are given for responses to each of the survey questions. Any exceptional aspects of the village responses are discussed.

Category 8: Ground-water Gley Soils

These are soils, normally developed within of over permeable materials, that have predominantly mottled or uniformly gley subsoils resulting from periodic waterlogging by a fluctuating groundwater table. Ground-water Gley Soils are divided into groups.

8.1 Alluvial gley soils are developed in loamy or clayey alluvium at least 30cm thick.

8.13 Pelo-alluvial gley soils.

The above soil types can be put into an approximate ranking order according to their absorption characteristics, and drainage capabilities.

Group 1: Fairly good absorption capabilities.

5.1 Brown calcareous earths

5.4 Brown earths

Group 2: Poor absorption capabilities.

5.7 Argillic brown earths

Group 3: Bad absorption capabilities.

4.1 Calcareous pelosols

4.3 Argillic pelosols

7.1 Stagnogley soils

8.1 Pelo-alluvial gley soils

7.3 DETAILS OF VILLAGES

Fifty-seven villages were investigated. The individual findings from these investigations are documented in Chapter 9.

All the villages have been documented under the following headings:

- **Priority Rating Score**
- **Village Description**
A general description of the village, its geographic location and a six-figure grid reference.
- **Drainage**
The soil drainage characteristics of the area obtained from the British Geological Survey 1:50,000 series map and the Soil Survey of Great Britain: the river catchment and Groundwater Vulnerability Classification details.
- **Development**
Where information is available, the number of applications for development in the village over the last ten year period is stated, as well as the number of properties built over the past ten years.
- **Foul Drainage**
Details of the sewerage facilities in the village.

7.2 SOIL TYPES

Soil characteristics determine the success or failure of soakaway systems as a result of their varying ability to disperse and absorb effluent. This property is commonly known as permeability and is measured using the standard porosity test in BS6297:1983.

Two critical factors are the amount of clay material in the soil, and the water table particularly in winter. The higher the proportion of clay, the lower the permeability. The higher the water table, the lower the porosity.

Classification of Soil Types (Soil Survey of Great Britain)

Category 4: Pelosols

These are slowly permeable clayey soils with no prominently mottled (gleyed) subsurface horizon at or above 40cm depth. They crack deeply in dry seasons and have a coarse blocky or prismatic structure. Pelosols are divided into groups:

4.1 Calcareous pelosols have a calcareous subsurface horizon and no clay-enriched subsoil.

4.11 Typical calcareous pelosols.

4.3 Argillic pelosols have a clay-enriched subsoil.

4.31 Typical argillic pelosols.

Category 5: Brown Soils

These are soils in which pedogenic processes have produced dominantly brownish or reddish subsurface horizons with no prominent mottling or greyish colours (gleying) above 40cm depth. Brown soils are divided into groups:

5.1 Brown calcareous earths are non-alluvial loamy or clayey soils with watered calcareous subsoils.

5.11 Typical brown calcareous earths.

5.4 Brown earths are non-alluvial loamy soils with non-calcareous subsoils without significant clay enrichment.

5.41 Typical brown earths.

5.7 Argillic brown earths are loamy or loamy over clayey soils with a subsurface horizon showing significant clay enrichment.

5.71 Typical argillic brown earths.

5.72 Stagnogleyic argillic brown earths.

Category 7: Surface-water Gley Soils

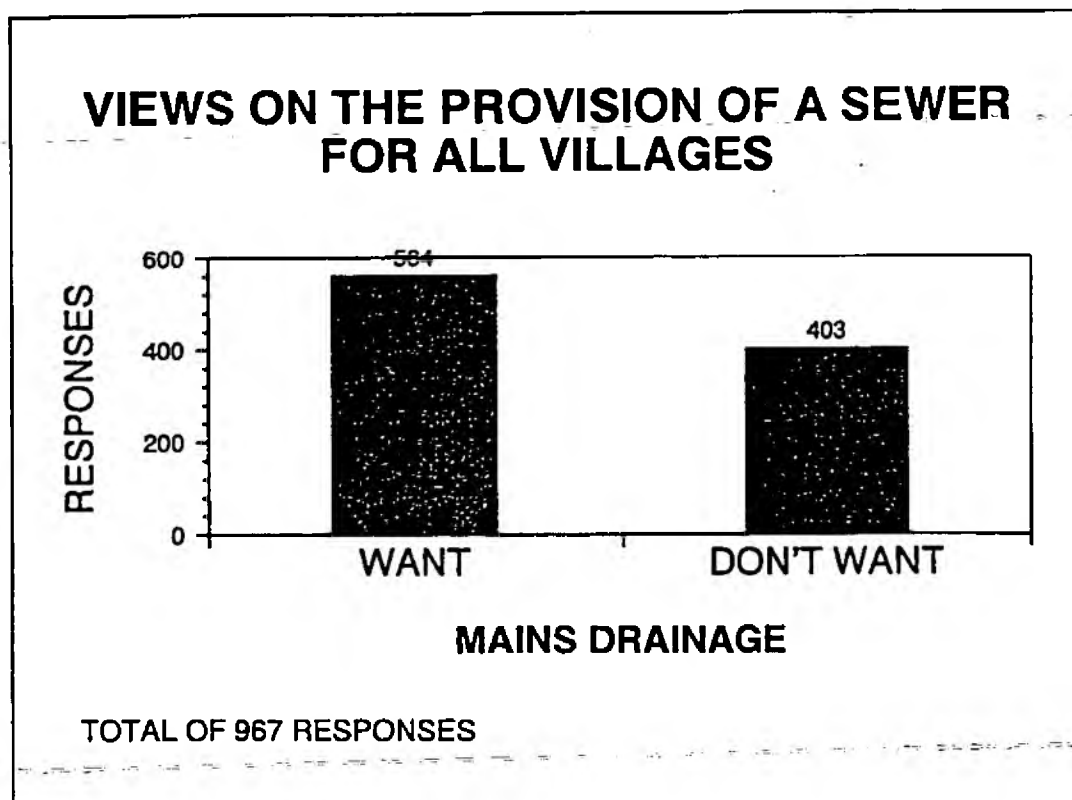
These are seasonally waterlogged slowly permeable soils, prominently mottled above 40cm depth. Surface-water Gley Soils are divided into groups.

7.1 Stagnogley soils have a distinct topsoil. They occur widely in lowland Britain, on tills and soft argillaceous rocks.

7.11 Typical stagnogley soils.

7.12 Pelo-stagnogley soils.

Qu. 9. Would you like to see a mains drainage system provided for the village?



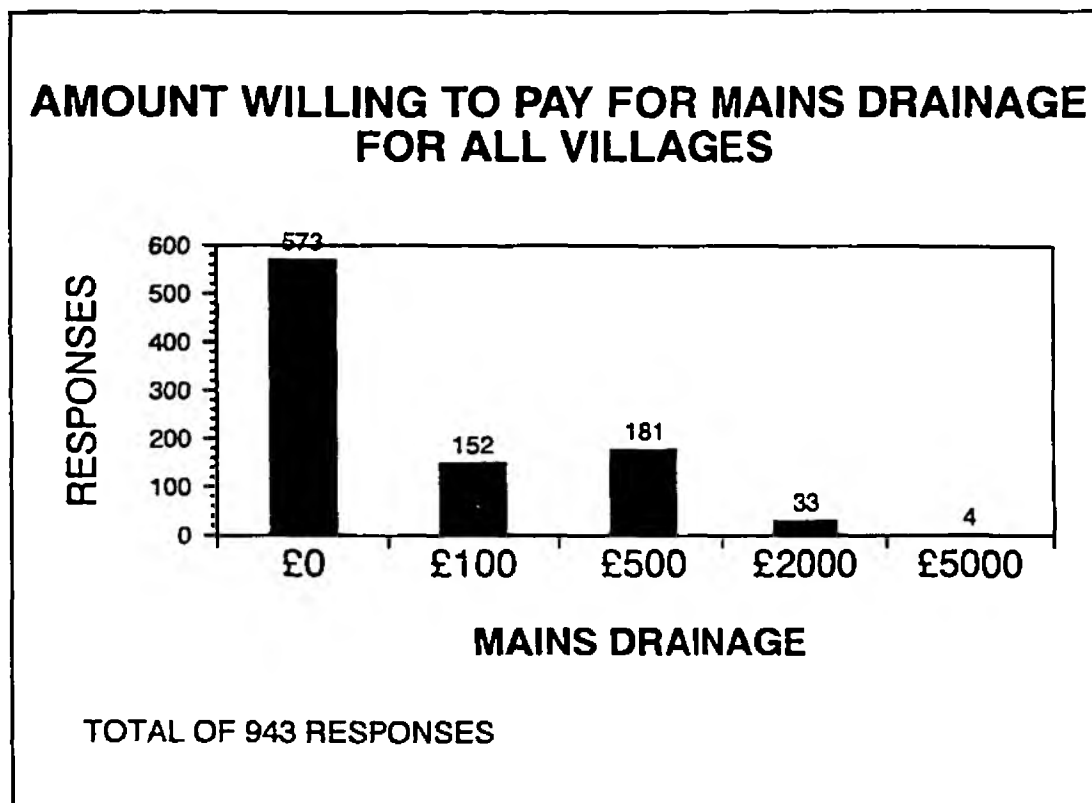
Yes 58%
No 42%

A weak positive correlation was found between those people wanting mains drainage and the wish to see more houses in the village (correlation = 0.214).

Several of the individual village statistics differed markedly from these cumulative statistics. Responses from Corely Moor, Defford, Much Marcle, Peopleton, Loop Road, Ryton on Dunsmore, Claypits, Deerhurst, Deblins Green, Tamworth Road, Hawkes End, Blackdown and Stock Green were very strongly in favour of a mains drainage system, with percentages of 93%, 74%, 89%, 76%, 78%, 100% (sample size 7), 100% (sample size 7), 80%, 100% (sample size 6), 100%, 100%, 100% (sample size 6) and 84% respectively.

Other villages were strongly against a mains drainage system (i.e. they had low "yes" figures), for example, Coombe Hill (24%), Ashow (27%), Rodley (29%), Green Street (40%), White Ladies Aston (29%), The Leigh (20%) and Longney (34%).

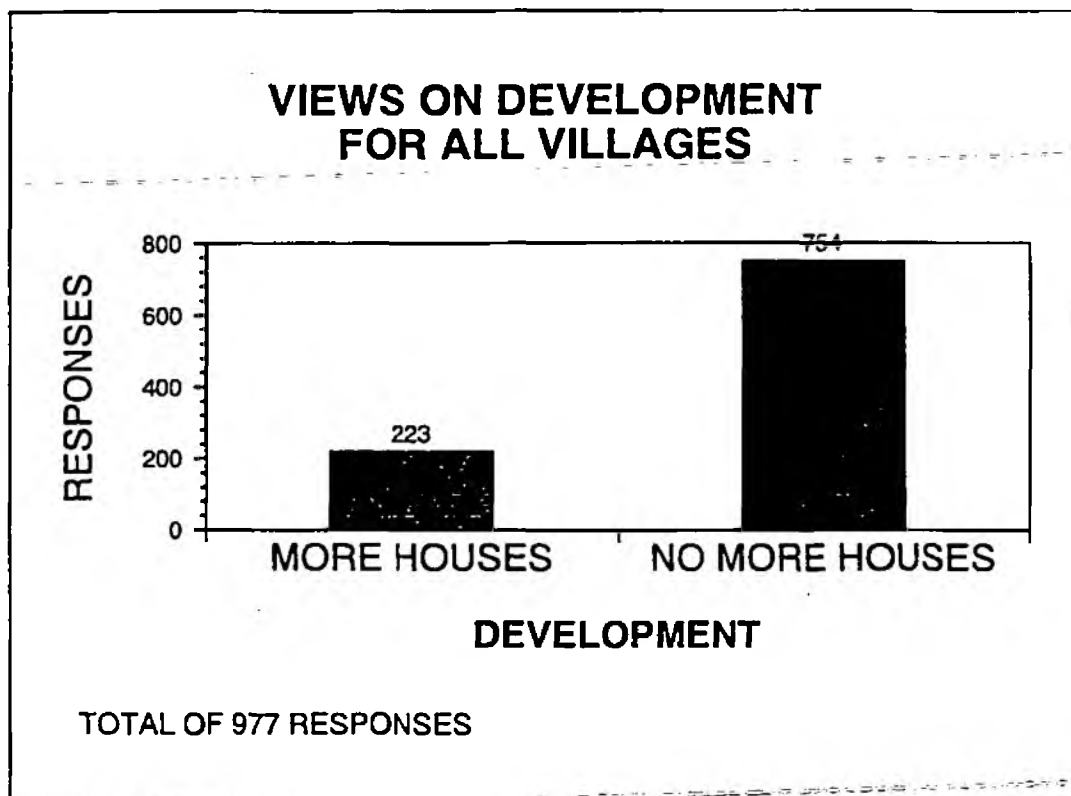
Qu. 10. How much would you be prepared to pay for the benefit of mains drainage?



£ 0.00	61%
£ 100.00	16%
£ 500.00	19%
£2000.00	3%
£5000.00	0.4%

A few of the individual villages differed from these cumulative statistics. In Corely Moor 53% of people were prepared to pay £500 for the benefit of mains drainage. Similarly, 25% of people in Much Marcle and 38% of people in Hawkes End were prepared to pay £500.

Qu. 11. Do you think there should be more houses in the village?



Development	22%
No development	78%

The villages of Winderton, Deerhurst, Hawkes End, Hasfield, High Green and Littleworth were 100% against any development.

Examples of Replies to the Questionnaire

Qu. 8. Do you feel that sewage disposal is a problem in your village? If so, why?

"Yes. Many septic tanks and soakaways are outdated and unable to cope with the quantity of water that is used by most households nowadays; plus this area is very low lying with clay soil making soakaways almost useless."

"Yes. An urgent problem. The smell in the village is at times atrocious and unhygienic."

"Yes. I have to share my septic tank with my neighbours. When the arrangement was made ten years ago, my neighbours house was half the size and inhabited by two. Now it is double the size and has four occupants plus four visiting children. My house was owned by one man now there are three of us."

also:

"No."

Qu. 9. Would you like to see a mains drainage system provided for the village? If not, why not?

"Yes."

also:

"No. The provision of mains drainage could lead to more housing. This village is of similar size to the village here in the sixteenth century. However it is important that the lack of a system does not endanger the environment. We understand that properly installed septic tanks ensure clean waste water."

"Definitely not! It is nonsense to spend thousands on converting a simple local and effective system into a centralised monopolised bureaucratic water board system. Raw sewage outflows from councils and industry should be stopped officially before even considering pollution from private septic tanks."

"No. Unnecessary extra cost. Might encourage further development."

Qu. 10. How much would you be prepared to pay for the benefit of mains drainage?

"Nothing. We pay enough council tax."

Qu. 11. Do you think there should be more houses in the village?

"Yes. This village is dying. Only two houses have been allowed in the last 20 years, mainly because of drainage."

"Yes. This will help to get on mains drainage."

"Yes. Limited, for pensioners and young people."

"No. More houses will destroy the rural character of the village and increase the pressure to urbanize."

"No! No! No! Definitely not."

7.5 SUMMARY OF IMPACT SCORES

The Impact Scores found range from 12-45. To assist in interpretation, a line can be arbitrarily drawn between the 20-30 range and similarly to separate the 10-20 range.

Villages with scores of 30 and above are of higher importance, as they cause greater environmental impact. Those in the 20-30 range are of middle impact, while those with scores below 20 have lower environmental impact. This is mostly due to high initial dilution at the point of discharge.

HIGHER IMPACT

			SOIL TYPE
Site 24:	Claypits(Stroud D.C.)	45	4.1
Site 57:	Whittington(Wychavon D.C.)	42	5.7
Site 43:	Flyford Flavell(Wychavon D.C.)	41	4.1
Site 23:	Arlingham(Stroud D.C.)	38	5.7
Site 34:	Walton Cardiff(Tewkesbury B.C.)	37	8.1
Site 26:	Longney(Stroud D.C.)	37	4.1
Site 52:	Peopleton (Wychavon DC)	37	4.1
Site 56:	White Ladies Aston(Wychavon D.C.)	36	5.7
Site 38:	Abberton(Wychavon D.C.)	36	4.1
Site 44:	Grafton Flyford(Wychavon D.C.)	33	4.1
Site 13:	Catthorpe(Harborough D.C.)	33	7.1
Site 16:	Long Green(Malvern Hills D.C.)	33	7.1
Site 42:	Earl's Common(Wychavon D.C.)	32	7.1
Site 10:	Loop Road, Beachley(F.O.D. D.C.)	31	5.7
Site 17:	Much Marcle(Malvern Hill D.C.)	31	5.7
Site 41:	Drakes Broughton(Wychavon D.C.)	30	5.7
Site 54:	Stock Green (Wychavon DC)	30	7.1

Total number of Higher Impact Sites

17

MIDDLE IMPACT

Site 47:	High Green(Malvern Hills D.C.)	29	5.7
Site 1:	Green St., Corley(Coventry C.C.)	29	5.4
Site 45:	Hatfield (Wychavon DC)	28	5.7
Site 14:	Deblins Green(Malvern Hills D.C.)	26	5.7
Site 4:	Tamworth Road(Covnetry C.C.)	26	7.1
Site 18:	Flecknoe(Rugby B.C.)	25	7.1
Site 37:	Wasperton(Warwick D.C.)	25	5.4
Site 3:	Oak Lane(Coventry C.C.)	25	5.4
Site 53:	Sale Green(Wychavon D.C.)	24	7.1
Site 28:	Bentham(Tewkesbury B.C.)	23	5.1

MIDDLE IMPACT (contd)**SOIL TYPE**

Site 32:	Minsterworth(Tewkesbury B.C.)	23	4.1
Site 29:	Coombe Hill(Tewkesbury B.C.)	23	8.1
Site 46:	Hadzor(Wychavon D.C.)	23	7.1
Site 39:	Birlingham(Wychavon D.C.)	22	5.4
Site 22:	Winderton(Stratford on Avon D.C.)	22	7.1
Site 25:	Harescombe(Stroud D.C.)	21	7.1
Site 31:	Hasfield(Tewkesbury B.C.)	21	8.1
Site 8:	Blaisdon(F.O.D. D.C.)	21	5.7
Site 33:	The Leigh(Tewkesbury B.C.)	20	8.1
Site 15:	Green St.,Kempsey(Malvern Hills D.C)	20	5.7

Total number of Middle Impact Sites**20****LOWER IMPACT**

Site 51:	Naunton Beauchamp(Wychavon D.C)	18	5.7
Site 40:	Defford(Wychavon D.C)	16	4.1
Site 21:	Kineton(Stratford on Avon D.C.)	16	7.1
Site 55:	Upton Snodsbury(Wychavon D.C.)	15	5.7
Site 2:	Hawkes End(Coventry C.C.)	14	7.1
Site 49:	Kington(Wychavon D.C.)	14	5.7
Site 48:	Himbleton(Wychavon D.C)	13	5.7
Site 20:	Barton(Stratford on Avon D.C.)	12	5.7

Total number of Lower Impact Sites**8****NO SCORE OBTAINED**

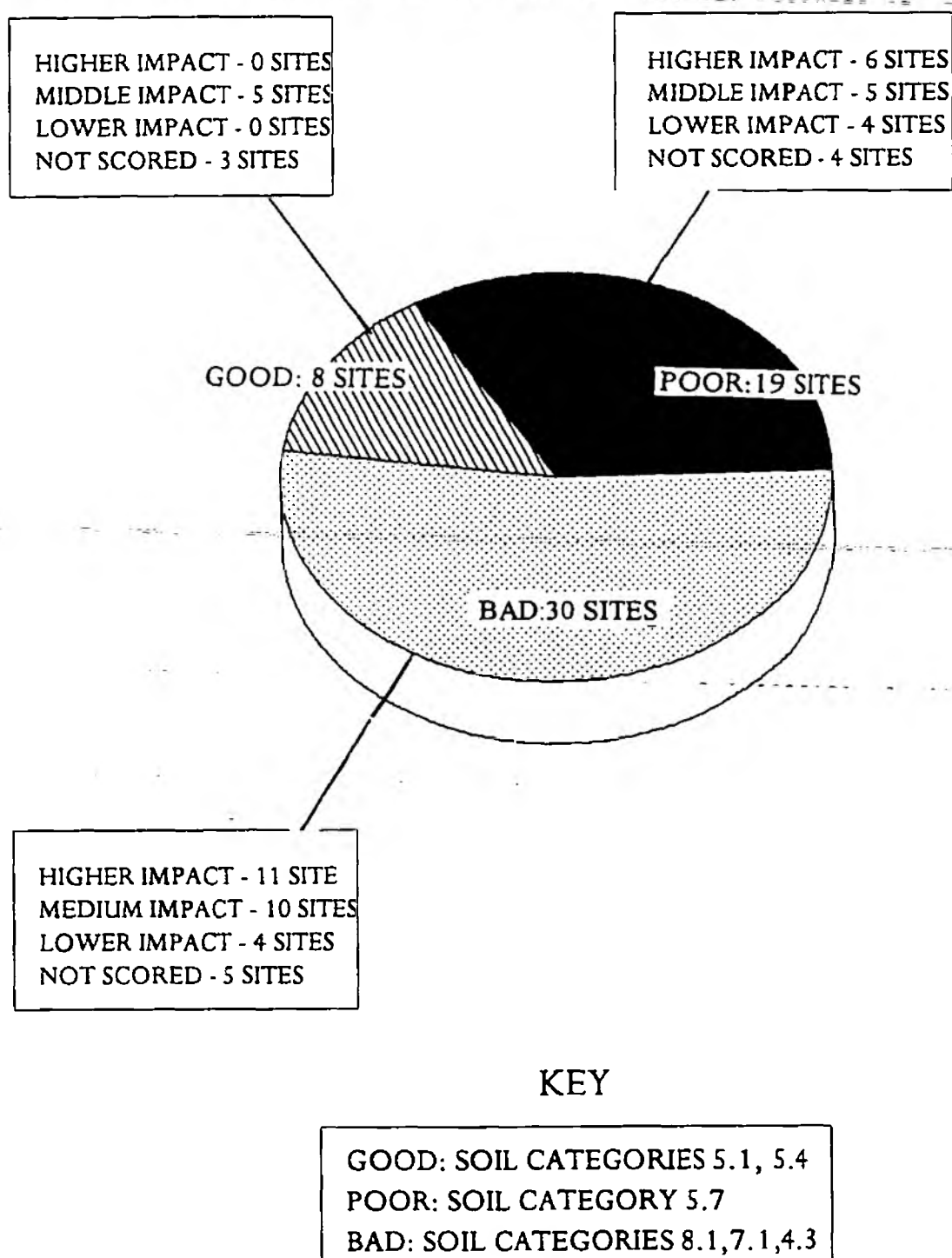
Site 35:	Ashow(Warwick D.C.)	5.4
Site 7:	Awre(F.O.D. D.C.)	4.1
Site 36:	Blackdown(Warwick D.C.)	5.4
Site 9:	Clifford's Mesne(F.O.D. D.C.)	5.7
Site 5:	Clay Coton(Daventry D.C.)	8.1
Site 30:	Deerhurst(Tewkesbury B.C.)	5.7
Site 50:	Littleworth(Wychavon D.C.)	5.7
Site 11:	Mayhill(F.O.D. D.C.)	5.7
Site 27:	Oakridge(Stroud D.C.)	4.1
Site 12:	Rodley(F.O.D. D.C.)	4.1
Site 19:	Ryton on Dunsmore(Rugby B.C.)	5.4
Site 6:	Stanford on Avon(Daventry D.C)	7.1

Total number of Sites for which no Score obtained**12****Total number of Sites****57**

7.6 CORRELATION OF SCORES AND SOIL TYPES

The incidence of problems is known to relate to soil permeability. This is confirmed by the analysis of the 57 villages 30 are situated on "bad" soils, 19 on "poor" soils and 8 on "good" soils. All the Higher Impact sites are on "bad" or "poor" soils. This is illustrated in figure 3.

Figure 3. Correlation of Scores and Soil Types



7.7 DISCUSSION

As stated above, the Impact Scores must be treated with caution, but they do give an initial indication of the scale of environmental impact.

Impact scores for two of the villages - Abberton (Wychavon DC) and Long Green (Malvern Hills DC) may have been influenced by the presence of farm drainage. If this is the case, action will be pursued under the Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991 and the Code of Good Agricultural Practice for the Protection of Water.

Villages in the Lower Impact score category may have significant discharges (e.g. Hawkes End, Naunton Beauchamp, Barton, Himbleton etc) but the impact is reduced because of rapid dilution in a sizeable watercourse.

Villages for which no score was obtainable are not necessarily of lower impact throughout the year - for example, groundwater gley soils (type 8.1) may only be waterlogged in winter, so that the polluting effect would be hidden during the summer when these investigations were carried out.

The individual scores could be refined by further sampling. Equally, the scoring system itself could be refined.

Costs are not considered in deriving the Impact Scores, but they would have to be taken into account in translating the scores into priorities for action.

8. THE WAY FORWARD

8.1 THE IMPLICATIONS OF DOING NOTHING

Doing nothing is always an option, but the consequences have to be considered. The rural sewerage problem is one which has existed for many years, so can action be justified to tackle it? Can action be justified to tackle it NOW and against other priorities?

The implications of doing nothing are:

- increased local pollution in at least the medium term
- the need for "planning embargoes" in the villages affected and problems of sustaining them
- increased pressure on the NRA to prosecute individuals
- the resource implications for the NRA of dealing with the problems on an individual basis
- poor public image for the NRA if seen to be ineffective in resolving the problems and seen as "persecuting" individuals rather than requiring the water companies to provide sewers.

In reality, doing nothing means continuing to deal with the problems on an ad-hoc basis, taking action against individuals where they can be identified and persuaded to improve their drainage systems and continuing to pressure councils and the water companies to take action.

But it is the widespread experience of failure using this approach which led to the Project in the first place!

Doing nothing has a cost - to the water environment, to the individual households and the community in affected villages and to the NRA as an organisation. Pollution will continue and is likely to increase: householders will be required to bear the high costs of satisfactory individual solutions: and the NRA will need to fund ongoing monitoring and policing at higher levels.

The question which should be posed is "How can the total costs be minimised?"

8.2 THE BENEFIT OF COMMUNAL SOLUTIONS

Communal solutions can reduce costs to the community as a whole

- to the water environment by reducing pollution
- to individuals by spreading costs and achieving economies of scale
- to the NRA by reducing the need for future enforcement and policing

There will be a general benefit if ways can be found to make communal solutions possible. Cost benefit comparisons - for the environment, for individuals and for the NRA - need to be pursued, to enable full conclusions to be drawn.

8.3 THE DoE REVIEW OF FIRST-TIME RURAL SEWERAGE

The DoE Review of First Time Rural Sewerage and the Grants scheme has been running

concurrently with the Project. Project staff have had a significant input on behalf of the NRA and the DoE official charged with the Review attended both meetings of the Rural Sewerage Forum to hear views from delegates and present his developing conclusions. This co-operation has been a most valuable aspect of the Project, as it both helped direct the thinking of Project staff and ensured a detailed NRA input into the Review.

While this report does not touch on external financial and administrative aspects in any detail, they have a vital influence in making schemes "achievable". The Review offers a major opportunity to find a way through the cobweb of legislation and procedure surrounding grants and charges for sewerage schemes, assisting both the provider of the scheme and individuals connecting to it. It is possible that the Review will require the NRA, in future, to act as an arbiter on the need for sewerage schemes and the priority to be afforded to them.

The conclusions of the Review will be announced by the Minister and the outcome cannot be assumed. However, the options likely to be considered were previewed at the Rural Sewerage Forum in December 1993. The paper presented by Michael Williams at the Forum is included in Appendix 1.

In essence, two procedural options were proposed for dealing with existing problems.

- 1) To require individuals to pay for extending the system
- 2) To require the Water Companies to draw up and implement a structured programme to do so, with priorities decided between the NRA and OFWAT.

It is not known when the Minister's decision will be made, but everyone involved in this subject awaits it with interest. The NRA will need to analyse the detail of the decision and its implications.

8.4 THE RURAL SEWERAGE FORUM

The Rural Sewerage Forum has been welcomed by those taking part and the number attending the last meeting (48) indicates that it has raised an issue which affects many people. At present, only one further meeting is planned, primarily to discuss the Project Report. The outcome of the DoE Review will inevitably require discussion and the Forum would seem an ideal place for this.

Equally, any progress with "Inset Appointments" and clarification of the legislation will benefit from a broad discussion. The Forum will therefore have a continuing role to play and it is hoped that the NRA will continue to promote the meetings.

8.5 THE FUTURE OF "PUBLIC" SEWERAGE IN RURAL AREAS

The mechanisms for extending public sewerage and the associated difficulties have been discussed in previous chapters. With commercial priorities which see new sewerage as a "loss maker", and backed by the OFWAT interpretation of their duty, there is no prospect of the water companies taking any action to extend the sewerage system other than by requisition. However, the legality of OFWAT's interpretation is questionable, as is their technical judgement on "effectual drainage".

Both may be clarified by the outcome of the DoE Review, or by legal challenge, which may lead to a change in the water companies' stance. The NRA should be prepared to initiate such a challenge, if necessary.

The problem remains of a rigid approach to sewerage system design and water company policies which aim to minimise the companies' future operating costs. This does not necessarily minimise total costs and discourages local, "low-tech", solutions. Creating a monument to engineering does not solve a problem if no-one can afford it!

8.5.1 INSET APPOINTMENTS

"Inset Appointments" are companies licensed by OFWAT to provide sewerage or water supply services within part of an existing water company's area. The concept is discussed in Chapter 4 and in the paper presented by David Walker of OFWAT to the Rural Sewerage Forum in December 1993 (Appendix 1).

Inset Appointments are, in all respects, statutory undertakers for the defined "inset" area and would have exactly the same powers, duties and responsibilities as the present water companies. The difference and great potential benefit of the concept is the flexibility which small companies could bring to dealing with local problems.

An Inset Appointment could, in theory, be made which covered the whole of a Water Company's area, on the basis that it would compete to provide new services, but the likelihood of this is remote.

At the other extreme, an Inset Appointment could cover a single village and this has possibly the greatest relevance to rural sewerage problems. The opportunity then exists to create a sewerage company, possibly part funded by the local authority, probably with all participants being shareholders, certainly controlled locally and therefore responsive first and foremost to local needs. Design standards and details of the scheme would be determined locally by the Inset Company, in consultation with the NRA.

Such a company would probably contract out the design, construction and management of the system, but would retain control and legal responsibility for compliance with effluent standards.

One of the greatest fears identified from the Survey (see Chapter 7) is that the provision of sewerage will lead to development. As shareholders in an Inset sewerage company, local residents would have a greater say in how that system is operated than they do at present and could possibly influence development which required extensions to the system (though this would be subject to the right of connection to a public sewer). They would have a significant input to future Local Plans.

As noted in Chapter 4, OFWAT has not yet licenced any Inset Appointments (probably because of the complexity of present licences for water companies) but the concept offers great possibilities for new sewerage in rural areas. The NRA can be a catalyst by helping OFWAT develop the environmental aspects of simplified licences.

8.5.2 LOCAL AUTHORITY COMPANIES

How far a Local Authority could go in promoting and financing an Inset Appointment is a matter of conjecture at the moment. Local Authority "arms-length" companies are now commonplace. Examples include Waste Disposal Companies set up under the Environment Protection Act 1990, some of which are still wholly owned by County Councils.

There is no specific legislation allowing a local authority to set up a sewerage company, however, so further legal investigation will be needed to establish the position. It seems probable that a council could fund a company using its general powers, but perhaps not to the extent of being the majority shareholder.

8.5.3 LOW COST TREATMENT

Inset Appointments would be in an ideal situation to adopt low-cost, low-tech solutions designed to minimise total costs.

Minimum cost systems could, for example, be a communal septic tank and reed-bed installed at the end of a polluted ditch or drain, or a bio-disc type plant situated adjacent to the village. Cost savings would come from appropriate design standards and a realistic design horizon, aimed to serve the local need rather than water company policy.

8.6 ALTERNATIVES TO PUBLIC SEWERAGE

8.6.1 INDIVIDUAL PRIVATE SYSTEMS

It needs to be stated that individual systems for individual properties are entirely effective in many locations and it is not the intention of the Project to suggest that all rural properties need to be served by communal systems.

But septic tanks require adequate land of sufficient porosity for effective dispersal; cesspools are extremely expensive to operate correctly and produce obnoxious odours when emptied; and individual private treatment plants are both expensive and demand standards of maintenance which are often beyond the means and awareness of householders.

The problems are most noticeable in village situations where development is concentrated. The Project data show that approximately 10% of the "unsewered" population in Lower Severn Area, i.e. 1% of the total population, lives in villages affected.

The recent CIRIA report (CIRIA 1993) also describes the problems affecting individual systems.

8.6.2 COMMUNAL SOLUTIONS

There is no technical difficulty in engineering communal solutions: the difficulty lies in creating structures to secure the necessary agreement to carry out the scheme, to secure funding and to secure long term maintenance of the system. In a "green field" situation, such as a housing development or barn conversion, there is normally only one party in control of the development,

but this obviously does not apply to existing properties.

The rural building boom of the 1980s has produced many instances of ill-planned mechanisms for long term maintenance of plant, or none at all. This has left a legacy of problems, both for the householders concerned and for the NRA as environmental regulator. The challenge is now to find structures which avoid these problems and give a degree of certainty to all concerned.

An Inset Appointment will provide such a structure, but will not be suitable for very small numbers of houses (unless the Appointment covers more than one community). A simpler method is the so-called "Management Company", set up to own and/or operate a sewage plant.

Management Companies have gained a bad reputation because, in practice, a number have been allowed to lapse or have been dissolved by their shareholders. This leaves a situation where it is extremely difficult to enforce Consent standards as there is no single party with a clear responsibility. Taking legal action against individuals in this situation is almost certain to fail, as none will have a clear individual responsibility. Equally, a Management Company is worthless if it has no funds to carry out maintenance or plant replacement when needed.

It is possible to establish effective management companies, provided they are set up properly to start with. One way is to make the management company a necessary party to any house sale or purchase, with each householder a compulsory shareholder of the company. The company must also have a mechanism for raising the funds needed to fulfil its obligations - either by charges on users of the system, or by calling on a bond set up in advance.

Although not current practice, it should be a condition of the NRA granting consent that the management company structure is vetted and approved in advance. This means, of course, that the NRA must have a clear view on what minimum safeguards the structure should contain. This is an area where OFWAT's work on simplifying licences for Inset Appointments could be beneficial in defining proper management company structures as well. A management company should offer its shareholders similar assurances to an Inset Appointment, but does not carry the statutory duties and responsibilities of a water undertaker.

Being essentially a "club" arrangement, it may be attractive for small communities wishing to solve their sewerage problem while remaining totally free of the risk of encouraging further development. The other side of this coin is that there would be no prospect of government grant and little chance of local authority funding.

8.7 PLANNING FRAMEWORK

The DoE Review of Rural Sewerage has highlighted the importance of the NRA adopting clear procedures for commenting on Planning Applications in sensitive areas (see M Williams' presentation in Appendix 1).

Good progress has been made in Lower Severn Area in persuading some District Councils (notably Wychavon DC) to incorporate NRA inspired policies into district-wide Local Plans. These policies become the council's policies and can be cited in planning decisions. Planning

Policy guidance has made clear that the DoE will place very strong emphasis on adopted Local Plan policies in determining Appeals against planning refusal. The 1993 draft PPG "Planning and Pollution Control" (DoE 1993), if confirmed, will give greater weight to the NRA's views on the environmental impact of development.

We can now expect that environmental constraints will have a higher profile in planning decisions, giving the NRA the opportunity for greater influence where the water environment is threatened. It is important that this new influence is used effectively, but doing so will also expose the authority to greater potential conflict with developers. A structured approach and consistency of application will be needed if the new influence is not to be eroded.

"Planning embargoes" have been effective on an individual basis in villages with a record of sewage pollution and will continue to be needed for some years until the problems are resolved. But they are always controversial, subject to challenge and may not be supported when it counts. A clear and pro-active NRA policy for areas of inadequate sewerage needs to be developed, with structured responses to identified pollution, to action being taken to resolve the problems and to timescales.

The NRA's Catchment Planning Process will play an important part in identifying priorities for action to a wider public.

8.8 THE FUTURE OF THE PROJECT

The Project has documented instances of rural sewerage pollution from a large number of villages in Lower Severn Area. The results can be extrapolated to give an indication of the extent of problems throughout the country, but the accuracy of this estimate needs to be established for other regions of the NRA.

The Project has also identified a number of new lines of approach to the problem which need to be pursued in order to establish their practicality, subjected to cost benefit analysis and developed into policy and mechanisms for best practice within the NRA. These aspects are now to be pursued within Lower Severn Area and also through National Head Office.

8.9 OVERVIEW

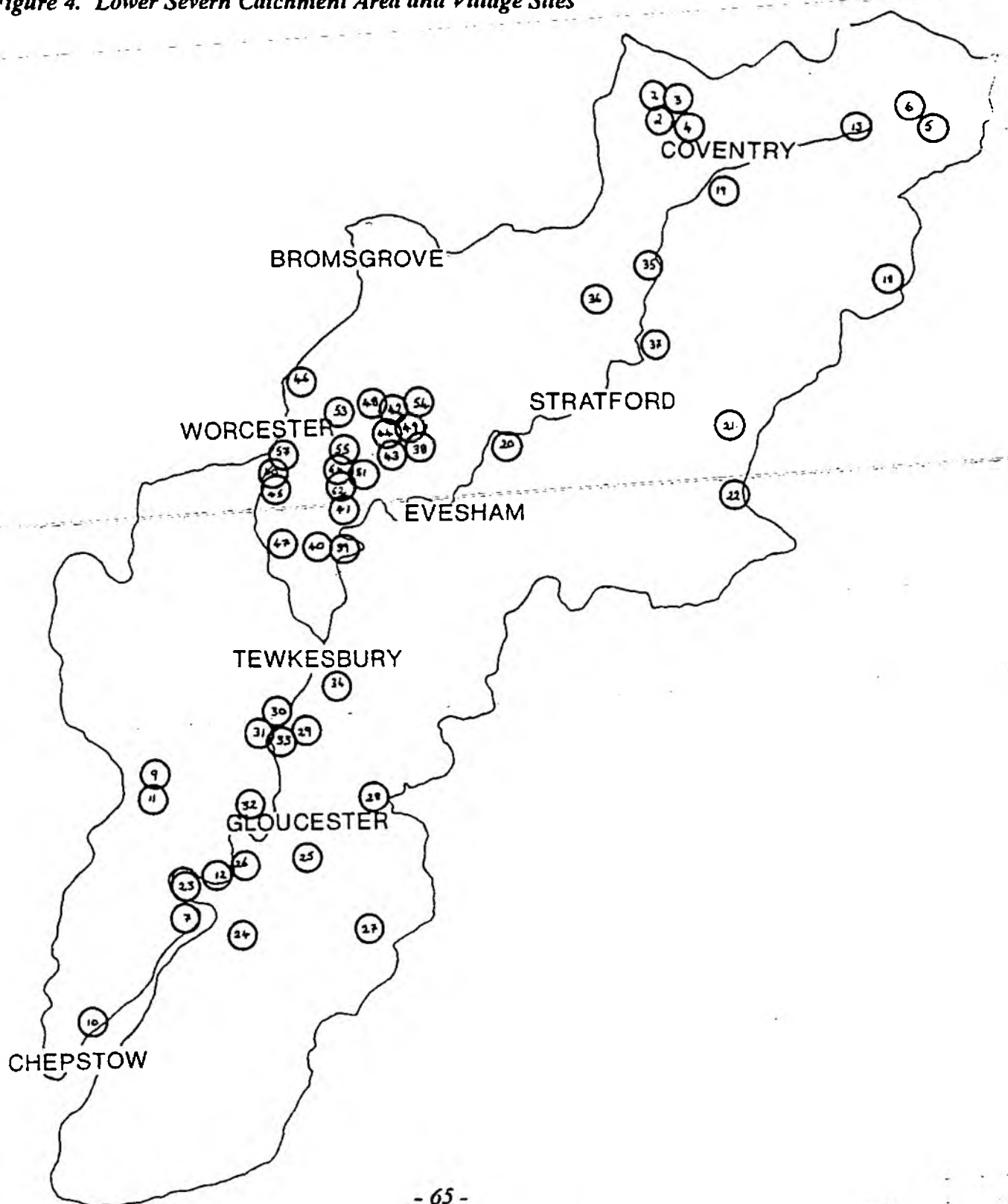
This chapter has discussed the avenues which have been generated by the Project for further progress towards resolving the problem of rural sewage pollution. The momentum of the work needs to be maintained, but its focus should now shift towards:

- clarifying, and if necessary challenging, the legality of OFWAT's view on extending sewerage and the status conferred by historic Consents for "Village Drains"
- working with OFWAT to develop agreed mechanisms for Inset Appointments and "watertight" Management Company structures
- facilitating action by communities and local authorities to address rural sewerage problems, and
- developing NRA policy in this area and "best practice" approaches to the problem.

9. SITES INVESTIGATED IN LOWER SEVERN AREA.

The 57 sites investigated span 11 District Councils. The concentration of sites in particular areas relates both to local history and to the incidence of poor soil types and are found on the outskirts of a city (Coventry) as well as in the deepest rural countryside. Locations are shown below.

Figure 4. Lower Severn Catchment Area and Village Sites



9.1 COVENTRY CITY COUNCIL

Response to Questionnaire

- **Population of district:** 302,500
- **Population connected to the public sewerage system:** 301,500
- **Policy towards provision of sewerage:**
The Local Authority is unwilling to accept any liability towards the cost of any requisition made.
- **Does your Council have an on-going programme of first time sewerage schemes?**
No.
- **Total value of first time sewerage schemes constructed in the last ten years?**
None.
- **Does the council own/maintain sewage plants/ sewerage systems in its own right?**
(Not as sewerage agents)
No.

Impact Ranking Order of Villages Covered in the Survey		
Site 1.	Corley Moor, Green Street	29
Site 4.	Tamworth Road, Keresley	26
Site 3.	Oak Lane, Allesley	25
Site 2.	Hawkes Mill Lane, Coventry	14

9.1.1

Site 1: CORLEY MOOR, COVENTRY

IMPACT SCORE: 29

Description

Corley Moor is situated to the north west of Coventry, just to the south of the M6 (NGR: SP 280 850).

Soil Drainage Characteristics

The area lies on heavy boulder clay. The soil type is brown earth (5.41). Under the Groundwater Vulnerability Classification this area has been designated as a Minor Aquifer site. There is a groundwater abstraction point at Brownhill Green, less than one and a half miles away.

Development

No information available.

Foul Drainage

The area is unsewered, and the majority of properties are served by septic tank/soakaway systems. Many of these malfunction due to the impervious nature of the clay subsoil, and effluent escapes to the ditchcourses. A few properties have installed package treatment plants, but these cause concern due to the lack of dilution.

Pollution

Polluted conditions were found in the ditchcourses all the way along Green Lane. Many of the surface water drains along Wall Hill Road were also found to be contaminated with sewage effluent. At the scoring point, water quality samples were indicative of a Class 3 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
3.4	12.5	36	73

Environmental Health Complaints

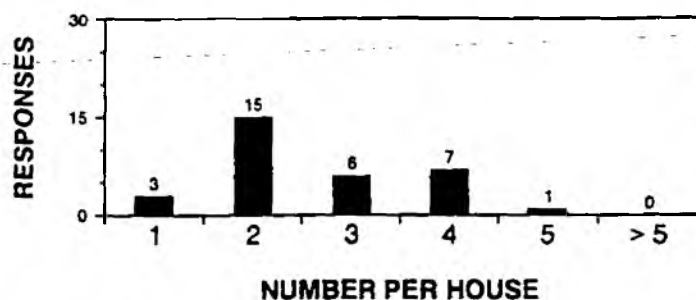
No information available.

VILLAGE NAME: CORLEY MOOR

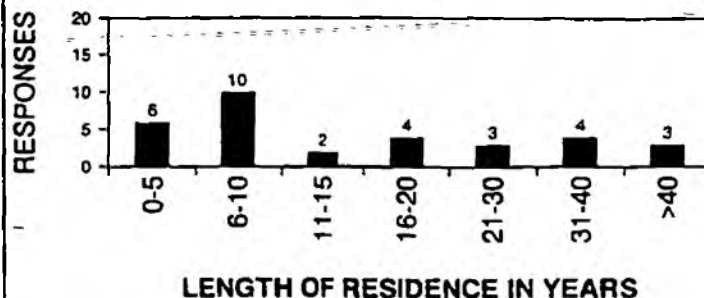
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	6 - 10	2
NO OF DISCHARGE POINTS	3 - 4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	5 - 8	3
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>200M	10
B.O.D. 10M D/S OF SCORING POINT	10 - 17	3
AMMONIA 10M D/S OF SCORING POINT	2.6 - 5.0	3
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	>60	1
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	10M	2
PUBLIC ACCESSIBILITY	HIGH	3
TOTAL SCORE		29

NUMBER OF QUESTIONNAIRES SENT OUT:	43
NUMBER OF QUESTIONNAIRES RETURNED:	33
PERCENTAGE OF QUESTIONNAIRES RETURNED:	76%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	96%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	93%

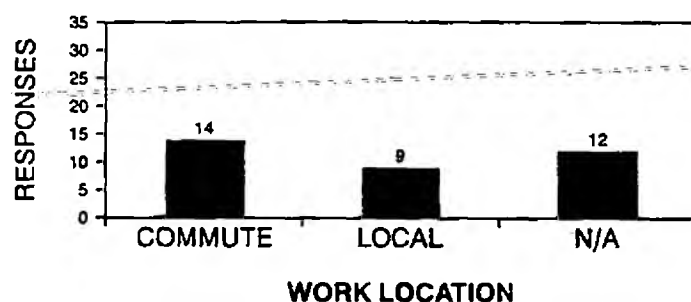
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property**Qu.4: Length of Residence in the Village*SIZE OF HOUSEHOLD
FOR CORLEY MOORLENGTH OF RESIDENCE
FOR CORLEY MOOR

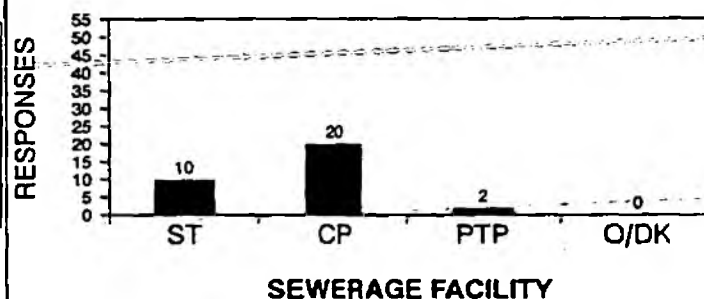
TOTAL OF 32 RESPONSES



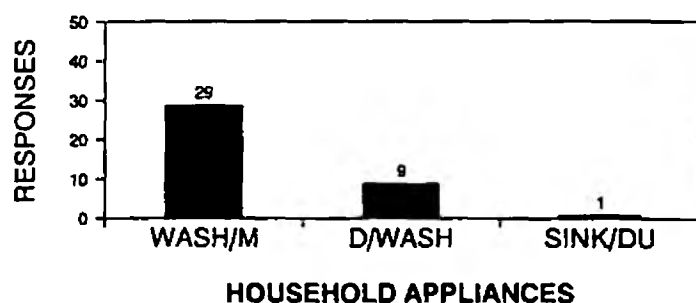
TOTAL OF 32 RESPONSES

*Qu.5: Work Location (if applicable)**Qu.6: Type of Sewerage Facility*WORK LOCATION
FOR CORLEY MOORHOUSEHOLD SEWAGE SYSTEMS
FOR CORLEY MOOR

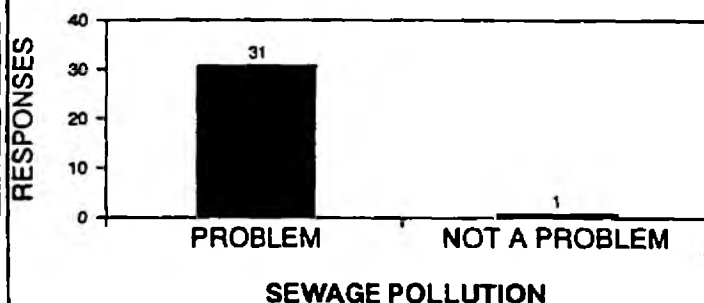
TOTAL OF 35 RESPONSES



TOTAL OF 32 RESPONSES

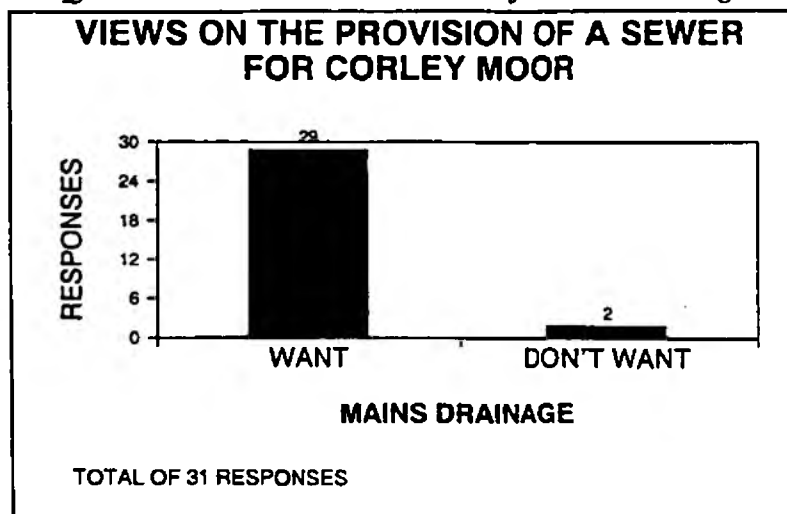
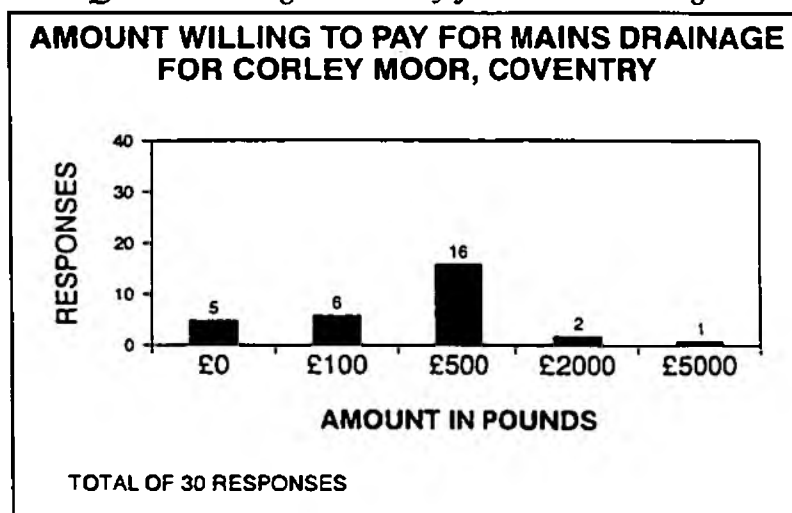
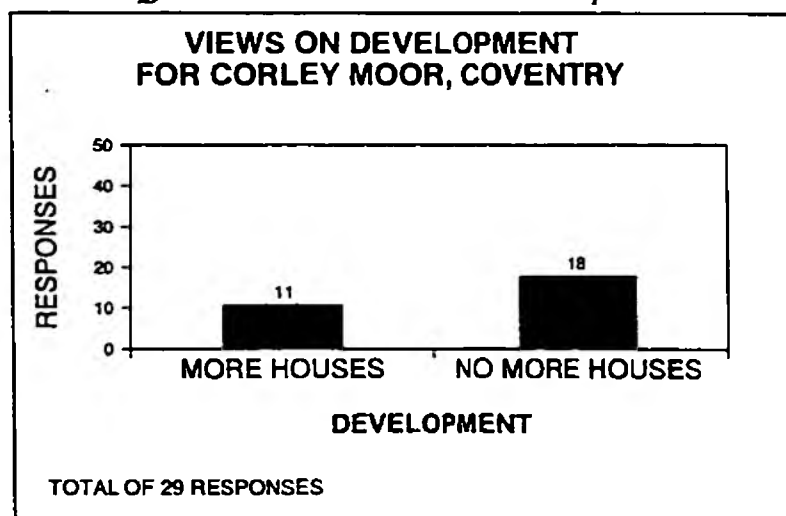
*Qu.7: Water Consuming Appliances Used**Qu.8: Attitude to Drainage Problems*HOUSEHOLD APPLIANCES
FOR CORLEY MOORVIEW OF LOCAL SEWAGE POLLUTION
FOR CORLEY MOOR

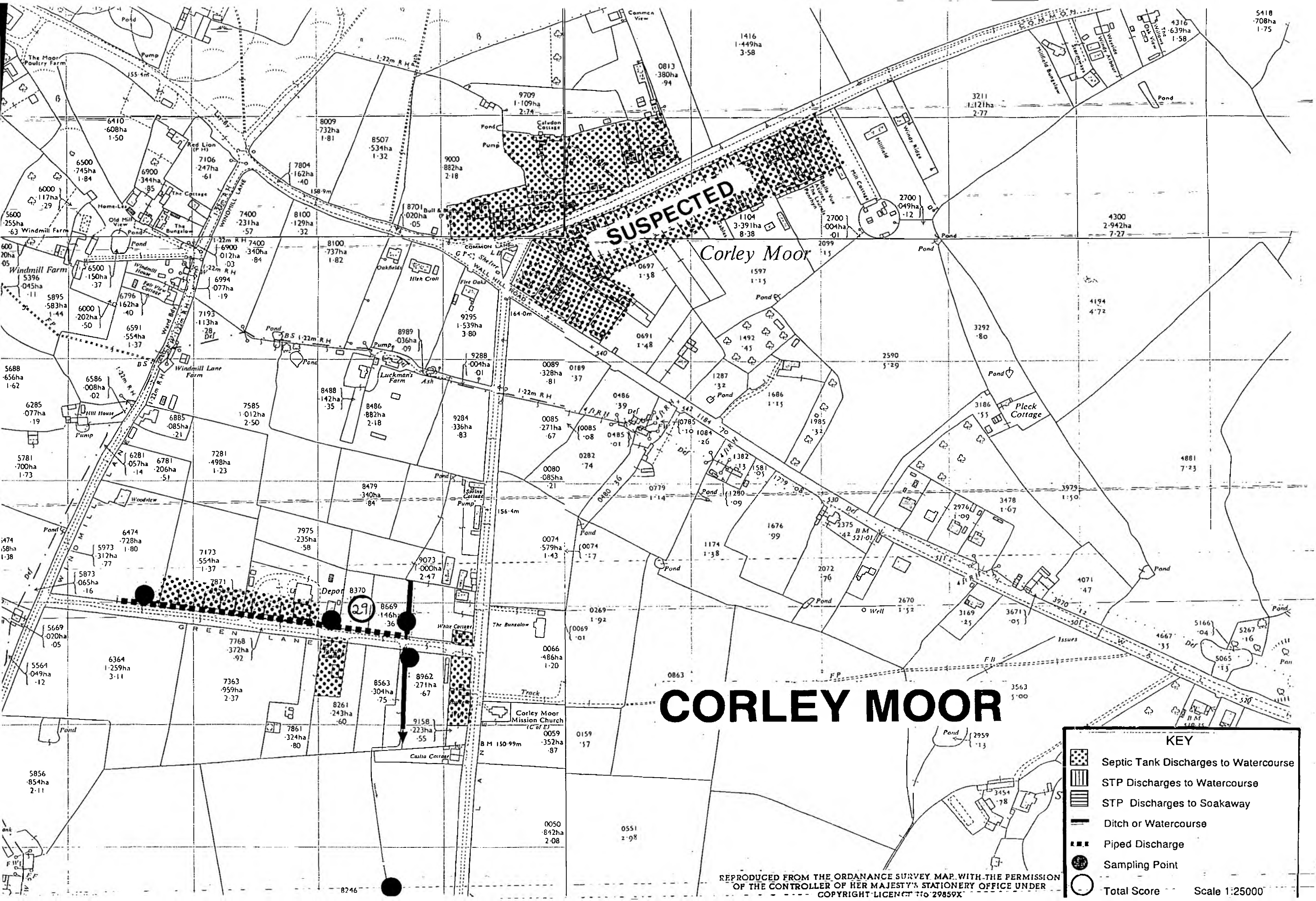
TOTAL OF 39 RESPONSES



TOTAL OF 32 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



SUSPECTED

Corley Moor

CORLEY MOOR

KEY

Septic Tank Discharges to Watercourse

STP Discharges to Watercourse

STP Discharges to Soakaway

Ditch or Watercourse

Piped Discharge

Sampling Point

Total Score

Scale 1:25000

REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER COPYRIGHT LICENCE NO. 29859X

9.1.2**Site 2: HAWKES MILL LANE, HAWKES END****IMPACT SCORE: 14*****Description***

Hawkes End is located to the north west of Coventry on the River Sherbourne (NGR: SP 295 827).

Soil Drainage Characteristics

The area lies on sand and gravel, and drains to the river Sherbourne. The soil type is a typical stagnogley soil (7.11). Under the Groundwater Vulnerability Classification this area has been defined as a Minor Aquifer site. There is a Groundwater Abstraction point at Brownhill Green, less than half a mile away.

Development

Over the last ten year period no properties have been built in Hawkes End.

Foul Drainage

All properties along Hawkes Mill Lane are served by septic tank/soakaways. Overflows from some these septic tanks, as well as direct foul sewage connections, discharge to a highways drain that leads to the River Sherbourne.

Pollution

Polluted conditions were detected at one point in the village, with a contribution from at least seven properties. At the scoring point water quality samples were indicative of a Class 2 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
2	7	7	69

Environmental Health Complaints

Rugby Borough Council receive occasional environmental health complaints from this area.

VILLAGE NAME: HAWKES MILL LANE, HAWKES END

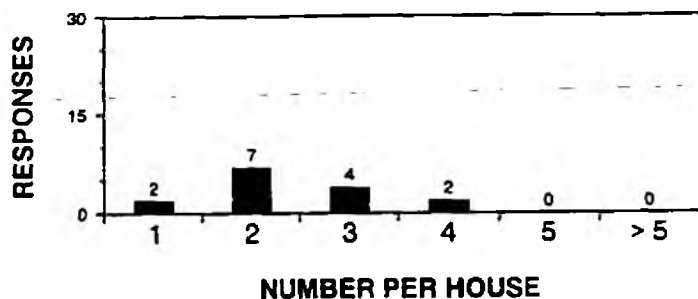
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	6 - 10	2
NO OF DISCHARGE POINTS	1 - 2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	5 - 8	3
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100M	1
B.O.D. 10M D/S OF SCORING POINT	5 - 9	2
AMMONIA 10M D/S OF SCORING POINT	0.7 - 2.5	2
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	>60	1
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		14

NUMBER OF QUESTIONNAIRES SENT OUT:	30
NUMBER OF QUESTIONNAIRES RETURNED:	15
PERCENTAGE OF QUESTIONNAIRES RETURNED:	50%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	86%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	100%

ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

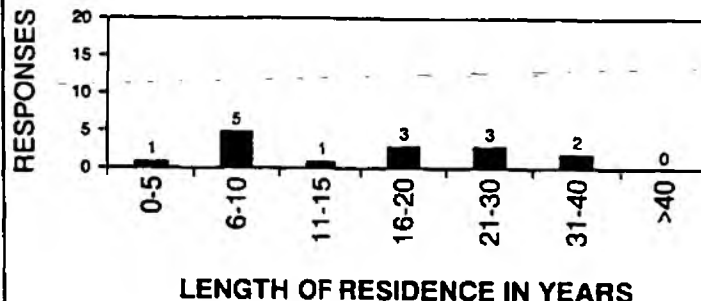
SIZE OF HOUSEHOLD FOR HAWKES MILL LANE, COVENTRY



TOTAL OF 15 RESPONSES

Qu.4: Length of Residence in the Village

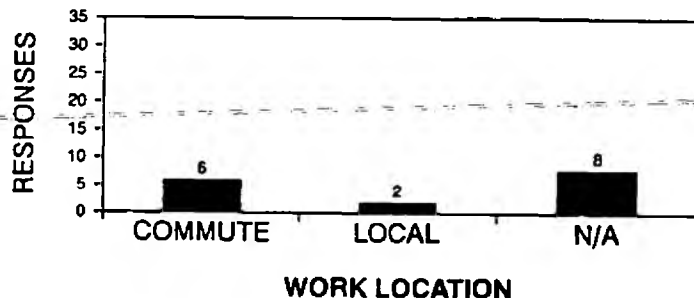
LENGTH OF RESIDENCE FOR HAWKES MILL LANE, COVENTRY



TOTAL OF 15 RESPONSES

Qu.5: Work Location (if applicable)

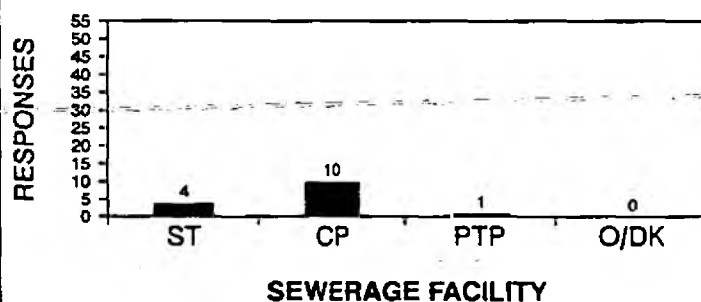
WORK LOCATION FOR HAWKES MILL LANE, COVENTRY



TOTAL OF 16 RESPONSES

Qu.6: Type of Sewerage Facility

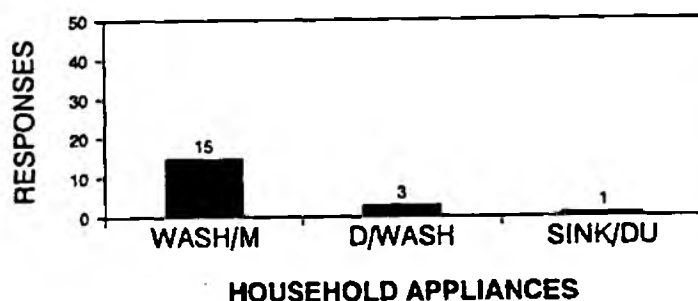
HOUSEHOLD SEWAGE SYSTEMS FOR HAWKES MILL LANE



TOTAL OF 15 RESPONSES

Qu.7: Water Consuming Appliances Used

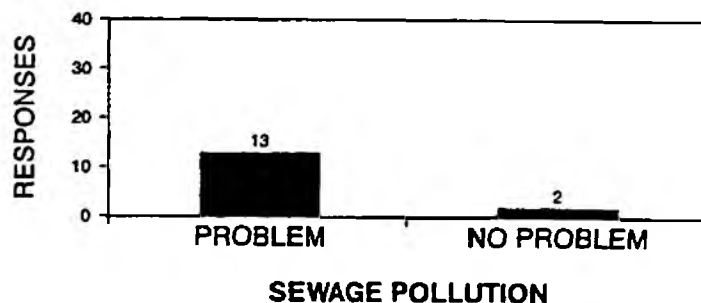
HOUSEHOLD APPLIANCES FOR HAWKES MILL LANE, COVENTRY



TOTAL OF 19 RESPONSES

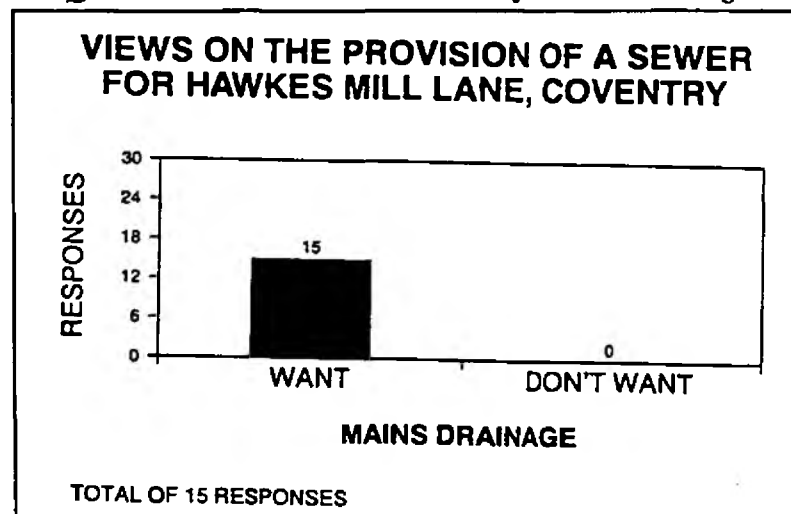
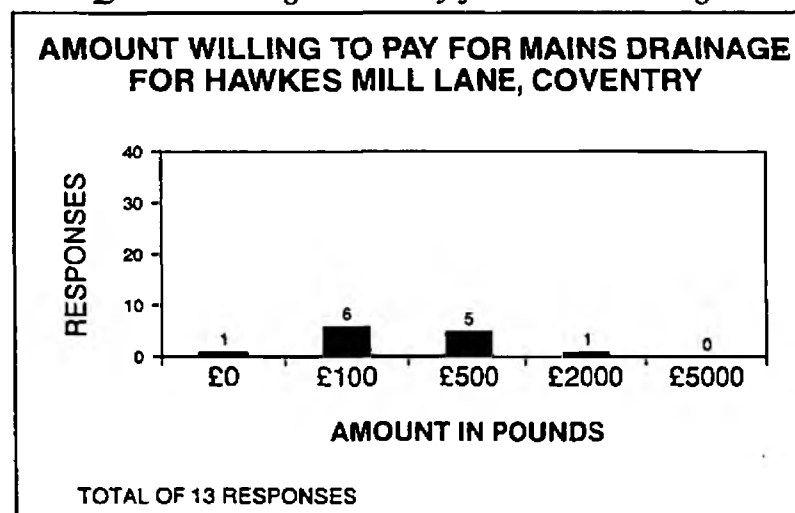
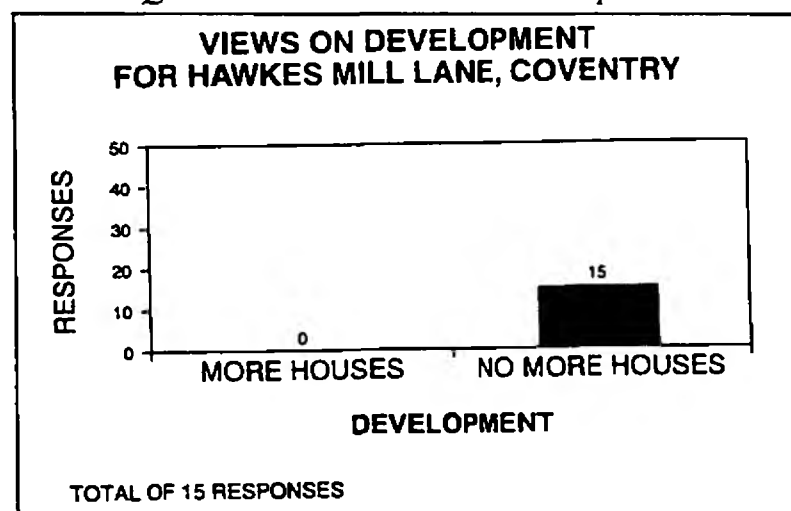
Qu.8: Attitude to Drainage Problems

VIEW OF LOCAL SEWAGE POLLUTION FOR HAWKES MILL LANE, COVENTRY

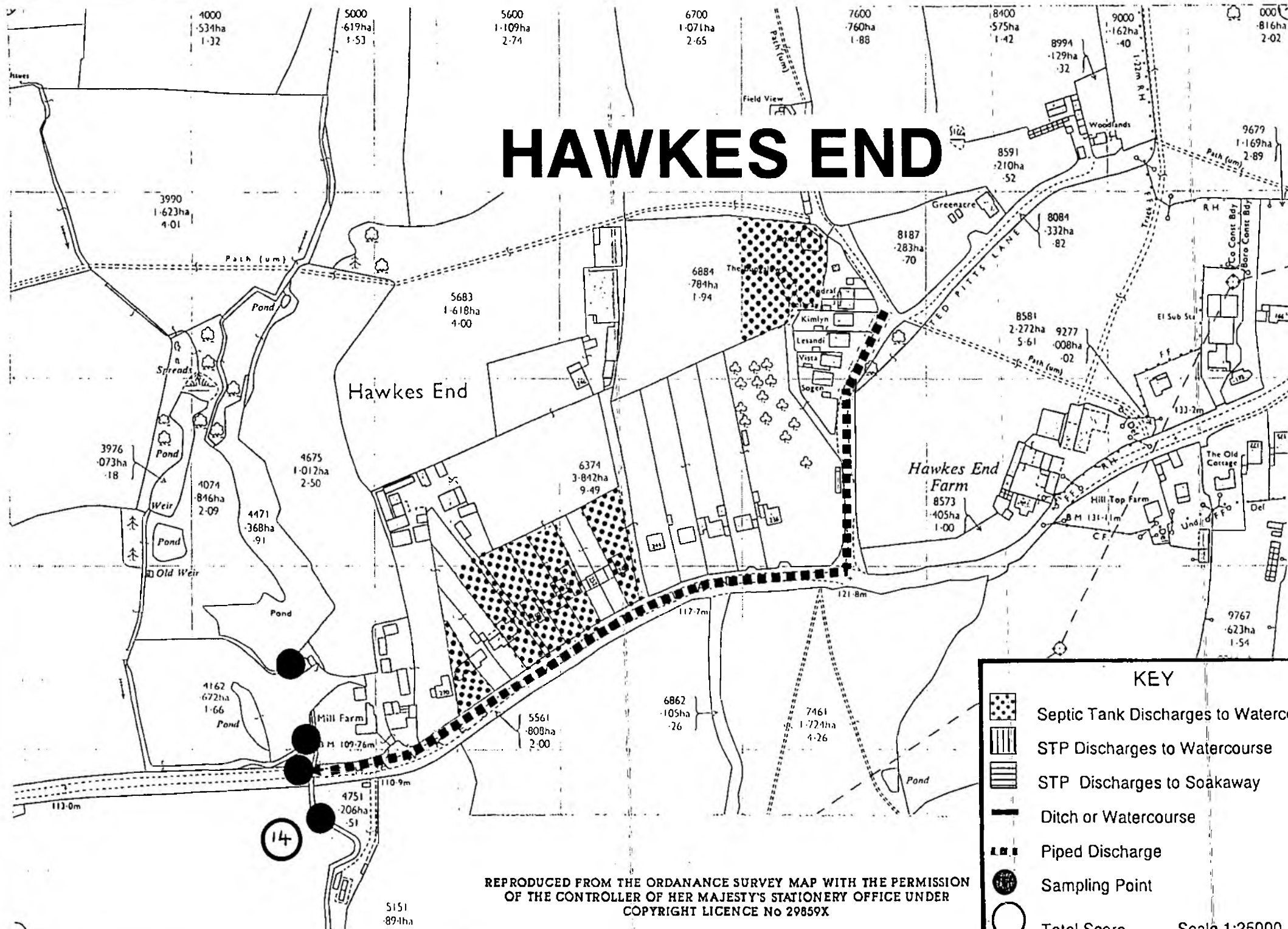


TOTAL OF 15 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

HAWKES END



9.1.3

Site 3: OAK LANE, ALLESLEY, COVENTRY

IMPACT SCORE: 25

Description

Oak Lane is located two miles to the south of Corley Moor (NGR: SP 280 824).

Soil Drainage Characteristics

Oak Lane lies on heavy boulder clay, and drains to the Pickford Brook. The soil type is a brown earth (5.41). Under the Groundwater Vulnerability Classification this area has been given Minor Aquifer status.

Development

No information available.

Foul Drainage

All properties in this area have septic tank/soakaway facilities. Some of the overflows from these septic tanks, as well as some direct connections, discharge to a ditchcourse leading to the Pickford Brook.

Pollution

Polluted conditions were detected all the way along the ditchcourse running behind the properties bordering Oak Lane, with a contribution from five properties. At the scoring point water quality samples were indicative of a Class 4 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
27.4	58	115	53

Environmental Health Complaints

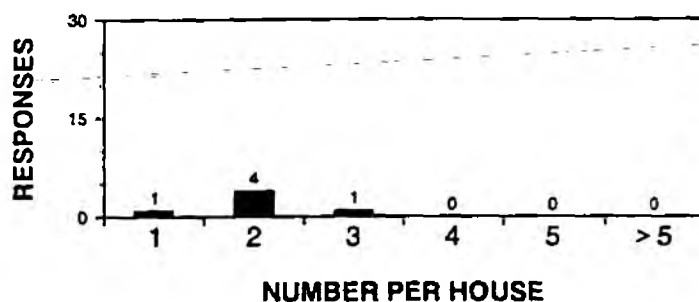
No information available.

VILLAGE NAME: OAK LANE, ALLESLEY

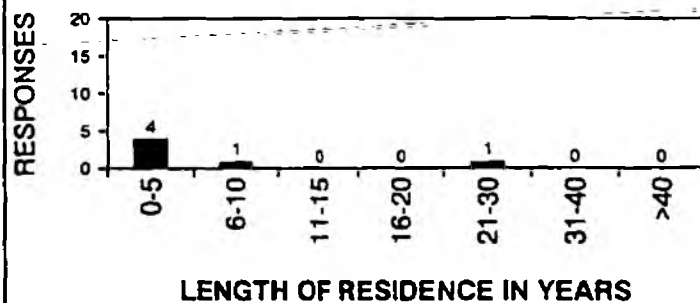
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	1 - 5	1
NO OF DISCHARGE POINTS	3 - 4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	5 - 8	3
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100-200M	5
B.O.D. 10M D/S OF SCORING POINT	>40	5
AMMONIA 10M D/S OF SCORING POINT	>20	5
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	60 - 41	2
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		25

NUMBER OF QUESTIONNAIRES SENT OUT:	14
NUMBER OF QUESTIONNAIRES RETURNED:	6
PERCENTAGE OF QUESTIONNAIRES RETURNED:	42%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	40%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	80%

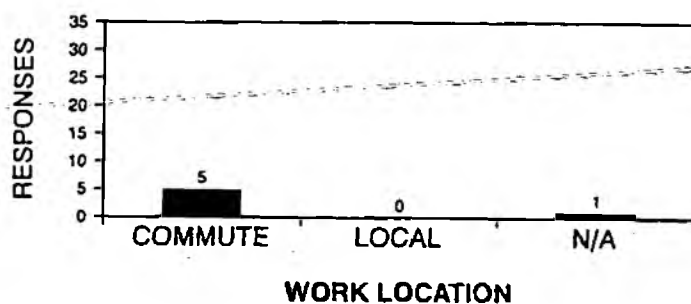
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property***SIZE OF HOUSEHOLD
FOR OAK LANE, COVENTRY**

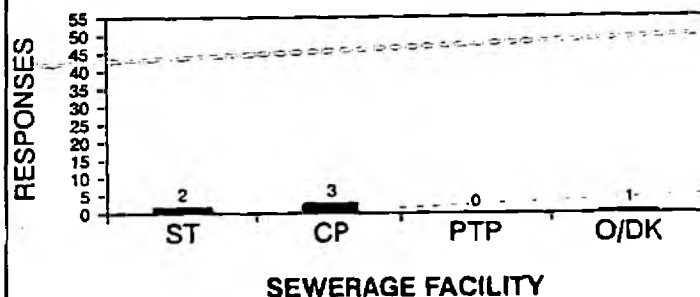
TOTAL OF 6 RESPONSES

*Qu.4: Length of Residence in the Village***LENGTH OF RESIDENCE
FOR OAK LANE, COVENTRY**

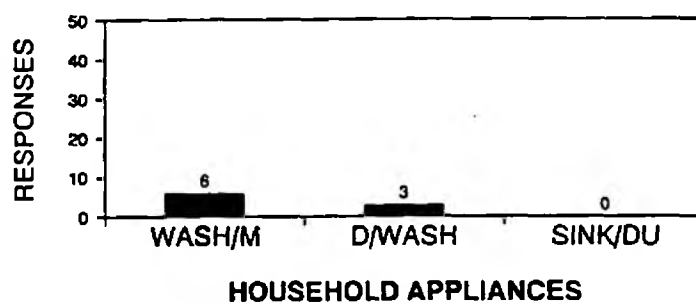
TOTAL OF 6 RESPONSES

*Qu.5: Work Location (if applicable)***WORK LOCATION
FOR OAK LANE, COVENTRY**

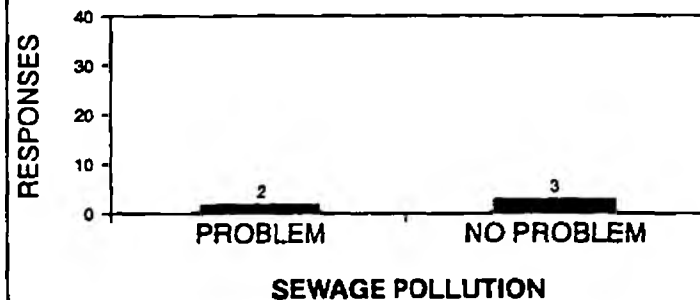
TOTAL OF 6 RESPONSES

*Qu.6: Type of Sewerage Facility***HOUSEHOLD SEWAGE SYSTEMS
FOR OAK LANE, COVENTRY**

TOTAL OF 6 RESPONSES

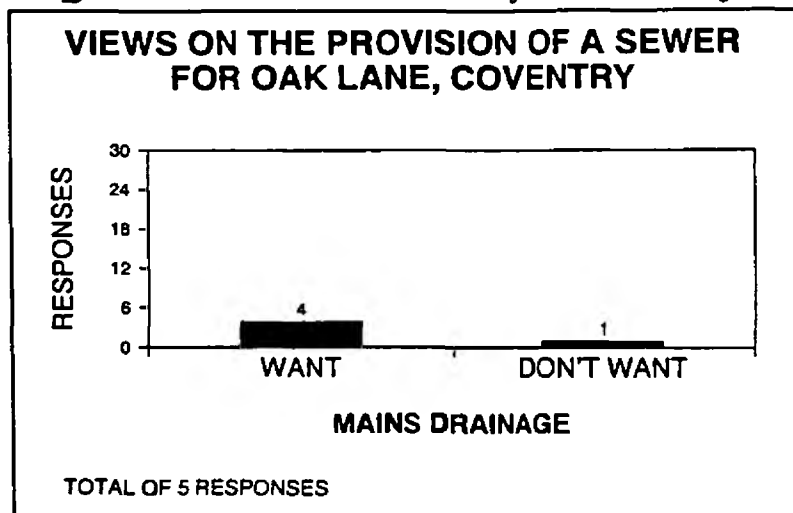
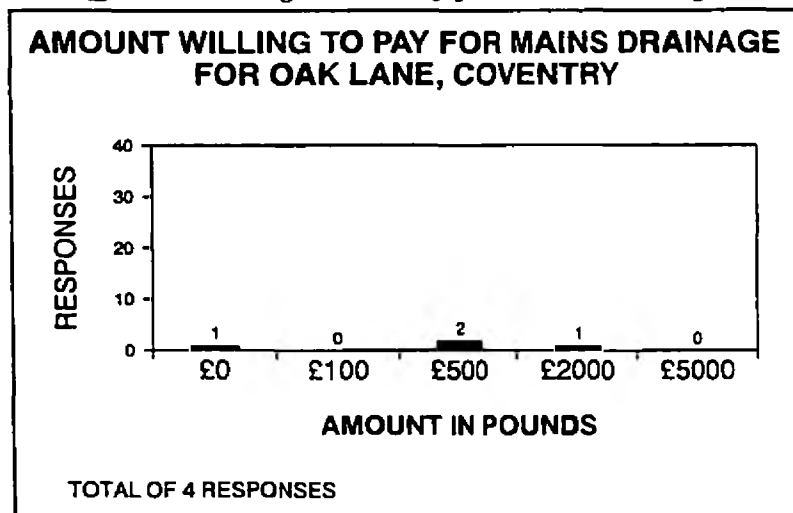
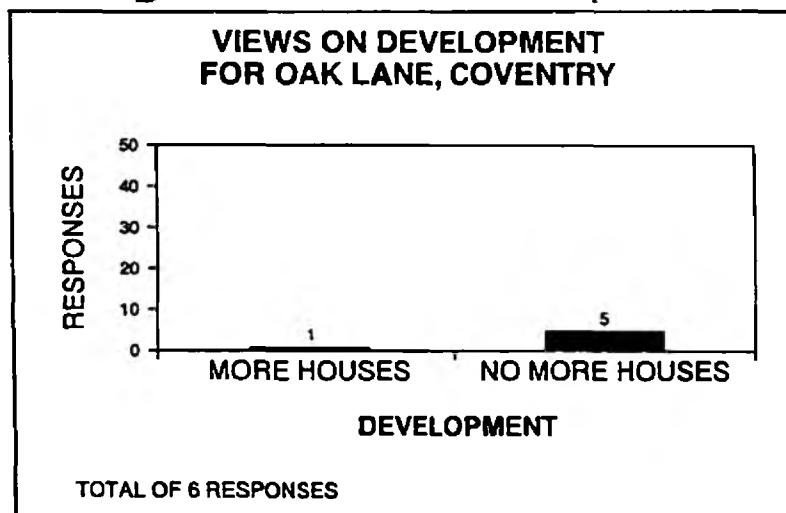
*Qu.7: Water Consuming Appliances Used***HOUSEHOLD APPLIANCES
FOR OAK LANE, COVENTRY**

TOTAL OF 9 RESPONSES

*Qu.8: Attitude to Drainage Problems***VIEW OF LOCAL SEWAGE POLLUTION
FOR OAK LANE, COVENTRY**

TOTAL OF 5 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*








OAK LANE

Map showing various land parcels, roads, and water features. The map includes a grid with coordinates and a key for interpreting symbols.

KEY

- Septic Tank Discharges to Watercourse
- STP Discharges to Watercourse
- STP Discharges to Spokaway

KEY

	Septic Tank Discharges to Watercourse
	STP Discharges to Watercourse
	STP Discharges to Soakaway
	Ditch or Watercourse
	Piped Discharge
	Sampling Point
	Total Score

Scale 1:25000

9.1.4**Site 4: TAMWORTH ROAD, KERESLEY****IMPACT SCORE: 26*****Description***

Tamworth Road is the B 4098 running from Coventry in a north easterly direction towards Fillongley (NGR: SP 305 843).

Soil Drainage Characteristics

The area lies on clay. The soil type is a typical stagnogley soil (7.11). Under the Groundwater Vulnerability Classification this area has been designated as a Minor Aquifer site. There is a groundwater abstraction point at Brownhill Green, less than a mile away.

Development

Over the past ten years no properties have been built.

Foul Drainage

The properties along the Tamworth Road are not provided with public sewerage. The majority of properties are served by septic tank/soakaway systems. Twenty-six properties were connected to a private sewage treatment works in 1938 to serve houses erected in Tamworth Road and Hollyfast Lane. By 1958, the filter mechanism was not functioning well, and effluent started flooding into adjoining land in Pikehorne Wood. This is still the situation.

Pollution

Polluted conditions were detected at one point along the Tamworth Road, with a contribution from twenty-six properties.

At the scoring point water quality samples were indicative of a Class 4 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
24.5	62	117	43

Environmental Health Complaints

Coventry City council receive occasional environmental health complaints from this village.

VILLAGE NAME: TAMWORTH ROAD

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	21 - 40	4
NO OF DISCHARGE POINTS	1 - 2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	>16	5
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100M	1
B.O.D. 10M D/S OF SCORING POINT	>40	5
AMMONIA 10M D/S OF SCORING POINT	>20	5
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	60 - 41	2
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	10M	2
PUBLIC ACCESSIBILITY	LOW	1
TOTAL SCORE		26

NUMBER OF QUESTIONNAIRES SENT OUT: 32

NUMBER OF QUESTIONNAIRES RETURNED: 9

PERCENTAGE OF QUESTIONNAIRES RETURNED: 28%

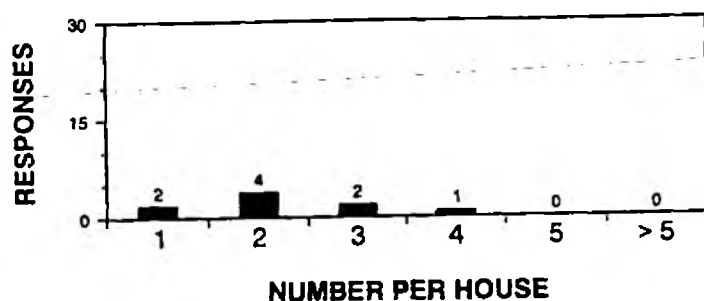
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE
POLLUTION IS A PROBLEM: 77%

PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE: 100%

ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

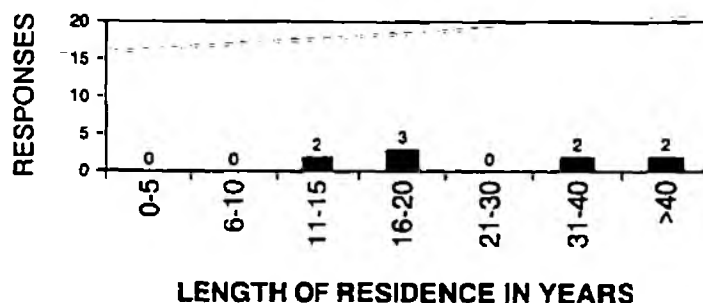
SIZE OF HOUSEHOLD FOR TAMWORTH ROAD



TOTAL OF 9 RESPONSES

Qu.4: Length of Residence in the Village

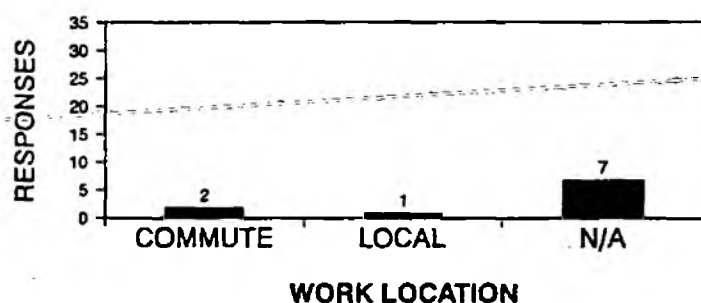
LENGTH OF RESIDENCE FOR TAMWORTH ROAD, COVENTRY



TOTAL OF 9 RESPONSES

Qu.5: Work Location (if applicable)

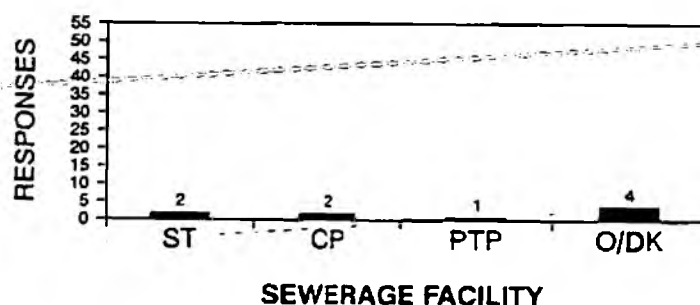
WORK LOCATION FOR TAMWORTH ROAD, COVENTRY



TOTAL OF 10 RESPONSES

Qu.6: Type of Sewerage Facility

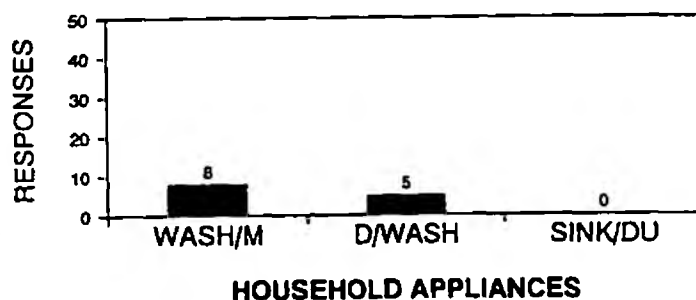
HOUSEHOLD SEWAGE SYSTEMS FOR TAMWORTH ROAD, COVENTRY



TOTAL OF 9 RESPONSES

Qu.7: Water Consuming Appliances Used

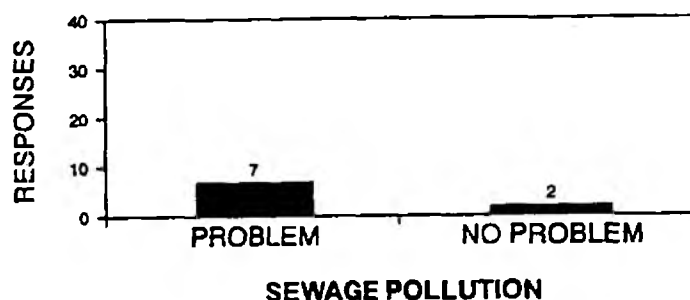
HOUSEHOLD APPLIANCES FOR TAMWORTH ROAD, COVENTRY



TOTAL OF 13 RESPONSES

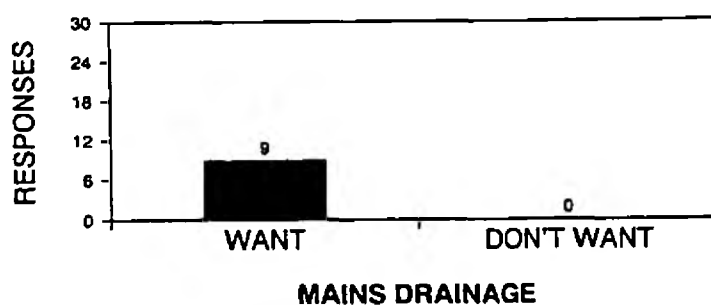
Qu.8: Attitude to Drainage Problems

VIEW OF LOCAL SEWAGE POLLUTION FOR TAMWORTH ROAD, COVENTRY

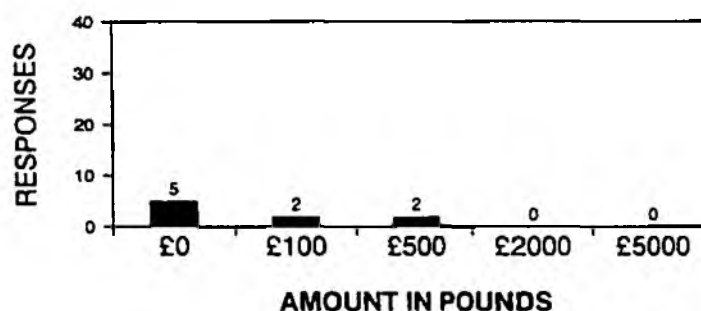


TOTAL OF 9 RESPONSES

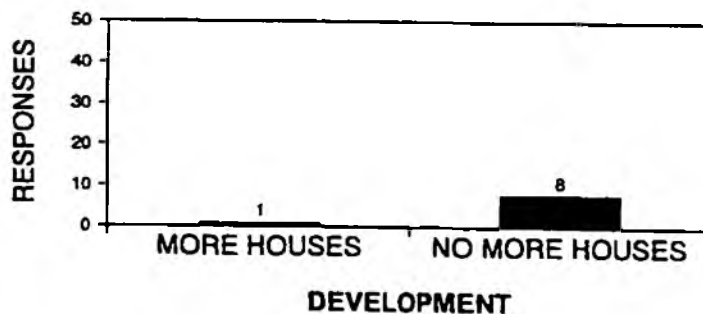
ANALYSIS OF QUESTIONNAIRE

*Qu. 9. Attitude to the Provision of Mains Drainage***VIEWS ON THE PROVISION OF A SEWER
FOR TAMWORTH ROAD, COVENTRY**

TOTAL OF 9 RESPONSES

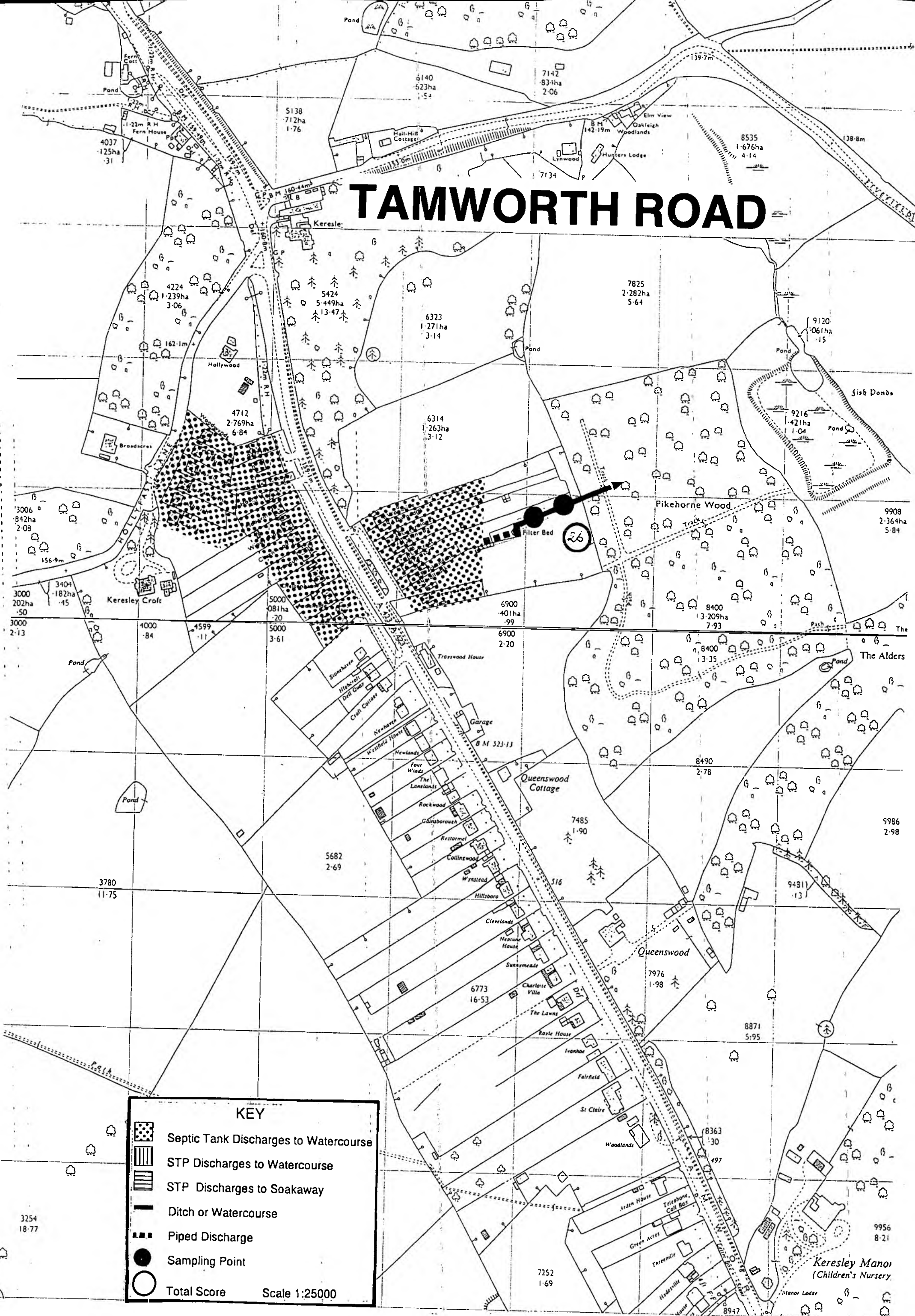
*Qu. 10. Willingness to Pay for Mains Drainage***AMOUNT WILLING TO PAY FOR MAINS DRAINAGE
FOR TAMWORTH ROAD, COVENTRY**

TOTAL OF 9 RESPONSES

*Qu. 11. Attitude to Further Development***VIEWS ON DEVELOPMENT
FOR TAMWORTH ROAD, COVENTRY**

TOTAL OF 9 RESPONSES

TAMWORTH ROAD



9.2 DAVENTRY DISTRICT COUNCIL

Response to Questionnaire

- **Population of district:**
9,127 in the Severn Trent part of the District.
- **Population connected to the public sewerage system:**
Estimate 8,700
- **Policy towards provision sewerage?**
The Council has a policy of requisitioning.
- **Does the council have an on-going programme of first time sewerage schemes?**
Yes.
Church Sowe (Anglian Region) 1996-97 £300,000.
- **Total value of first time sewerage schemes constructed in the last ten years.**
None in the Severn Trent area.
- **Does the council own/maintain sewage plants/ sewerage systems in its own right?**
(Not as sewerage agents)
Drainage systems for council-house-stock-and-for-unit-factories.

Impact Ranking Order of Villages Covered in the Survey		
Site 5.	Clay Coton	-
Site 6.	Stanford-on-Avon	-

THIS PAGE IS BLANK

9.2.1**Site 5: CLAY COTON****IMPACT SCORE: -*****Description***

Clay Coton is a small village situated one mile north of Yelvertoft on a tributary of the River Avon, the Clay Coton Brook (NGR: SP 595 771).

Soil Drainage Characteristics

The village lies on alluvium gravel, and drains to a tributary of the River Avon. The soil type is a pelo-alluvial gley (8.13). Under the Groundwater Vulnerability Classification the area has been given Minor Aquifer status.

Development

Over the past ten years there have been three applications for development in this village but no building has been permitted.

Foul Drainage

Three properties in the village are served by package treatment plants which have consented discharges. All other properties, including the public house, are served by septic tank systems. Due to the impervious nature of the clay subsoil some of these malfunction and discharge to the Clay Coton Brook.

Pollution

It was not possible to obtain water quality samples for this village at the time of the visit due to low flow conditions.

Environmental Health Complaints

Daventry District Council have not received any environmental health complaints from this village.

VILLAGE NAME: CLAY COTON

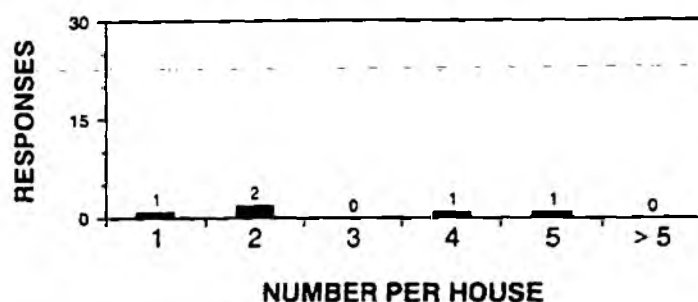
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING		
NO OF DISCHARGE POINTS		
NO OF HOUSES DISCHARGING AT SCORING POINT		
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT		
B.O.D. 10M D/S OF SCORING POINT		
AMMONIA 10M D/S OF SCORING POINT		
DISSOLVED OXYGEN 10M D/S OF SCORING POINT		
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT		
PUBLIC ACCESSIBILITY		
TOTAL SCORE		--

NUMBER OF QUESTIONNAIRES SENT OUT:	11
NUMBER OF QUESTIONNAIRES RETURNED:	5
PERCENTAGE OF QUESTIONNAIRES RETURNED:	45%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	100%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	83%

ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

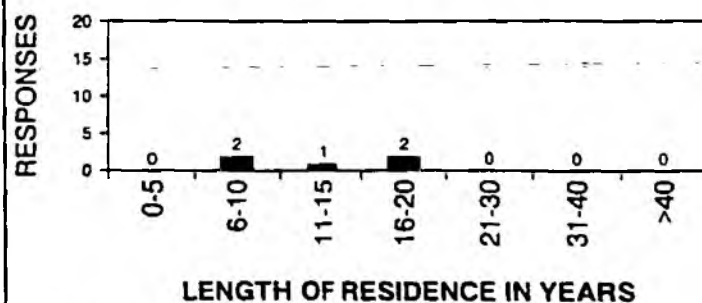
SIZE OF HOUSEHOLD FOR CLAY COTON



TOTAL OF 5 RESPONSES

Qu.4: Length of Residence in the Village

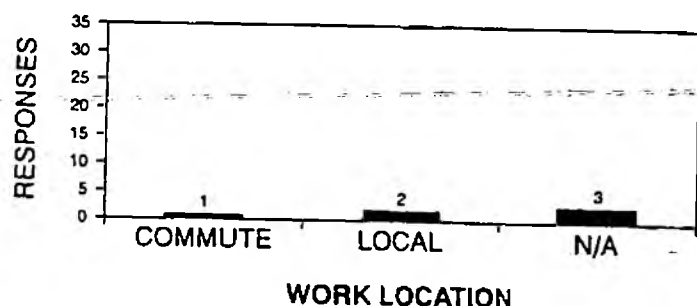
LENGTH OF RESIDENCE FOR CLAY COTON



TOTAL OF 5 RESPONSES

Qu.5: Work Location (if applicable)

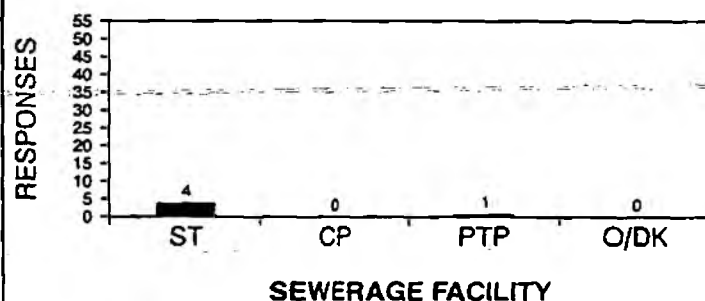
WORK LOCATION FOR CLAY COTON



TOTAL OF 6 RESPONSES

Qu.6: Type of Sewerage Facility

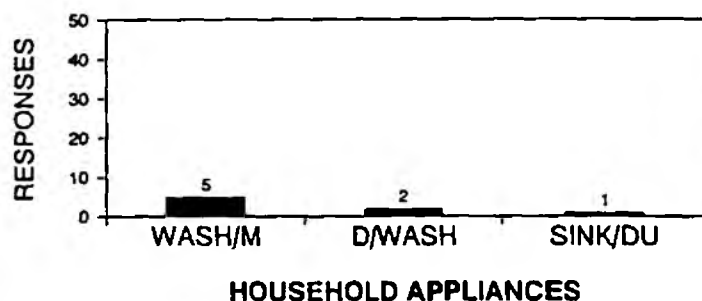
HOUSEHOLD SEWAGE SYSTEMS FOR CLAY COTON



TOTAL OF 5 RESPONSES

Qu.7: Water Consuming Appliances Used

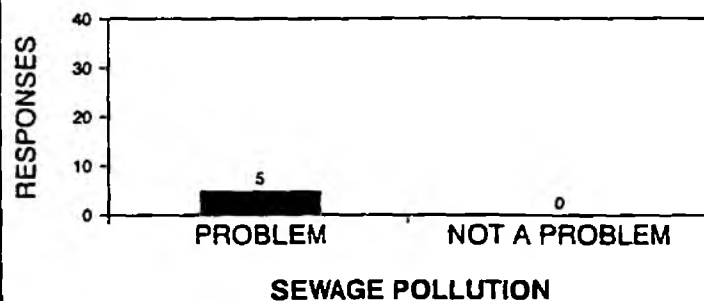
HOUSEHOLD APPLIANCES FOR CLAY COTON



TOTAL OF 8 RESPONSES

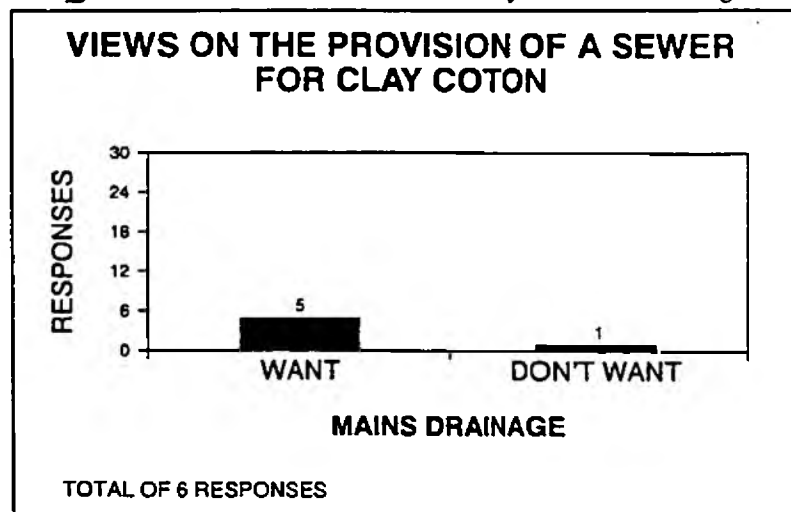
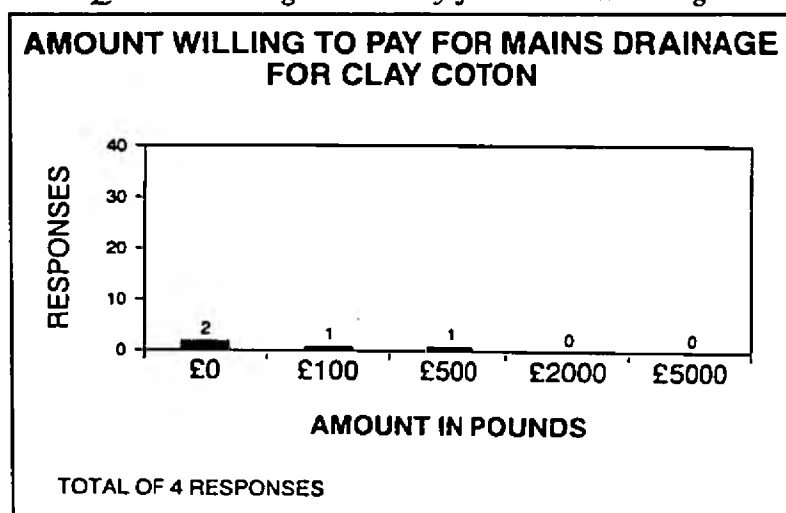
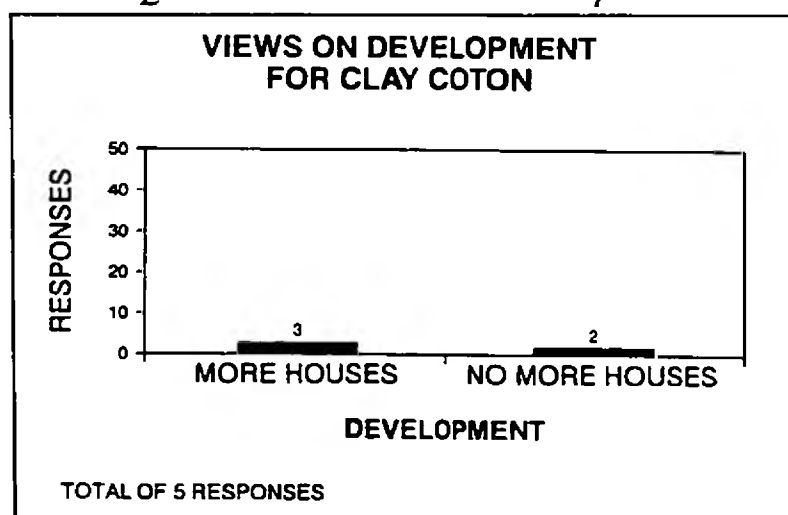
Qu.8: Attitude to Drainage Problems

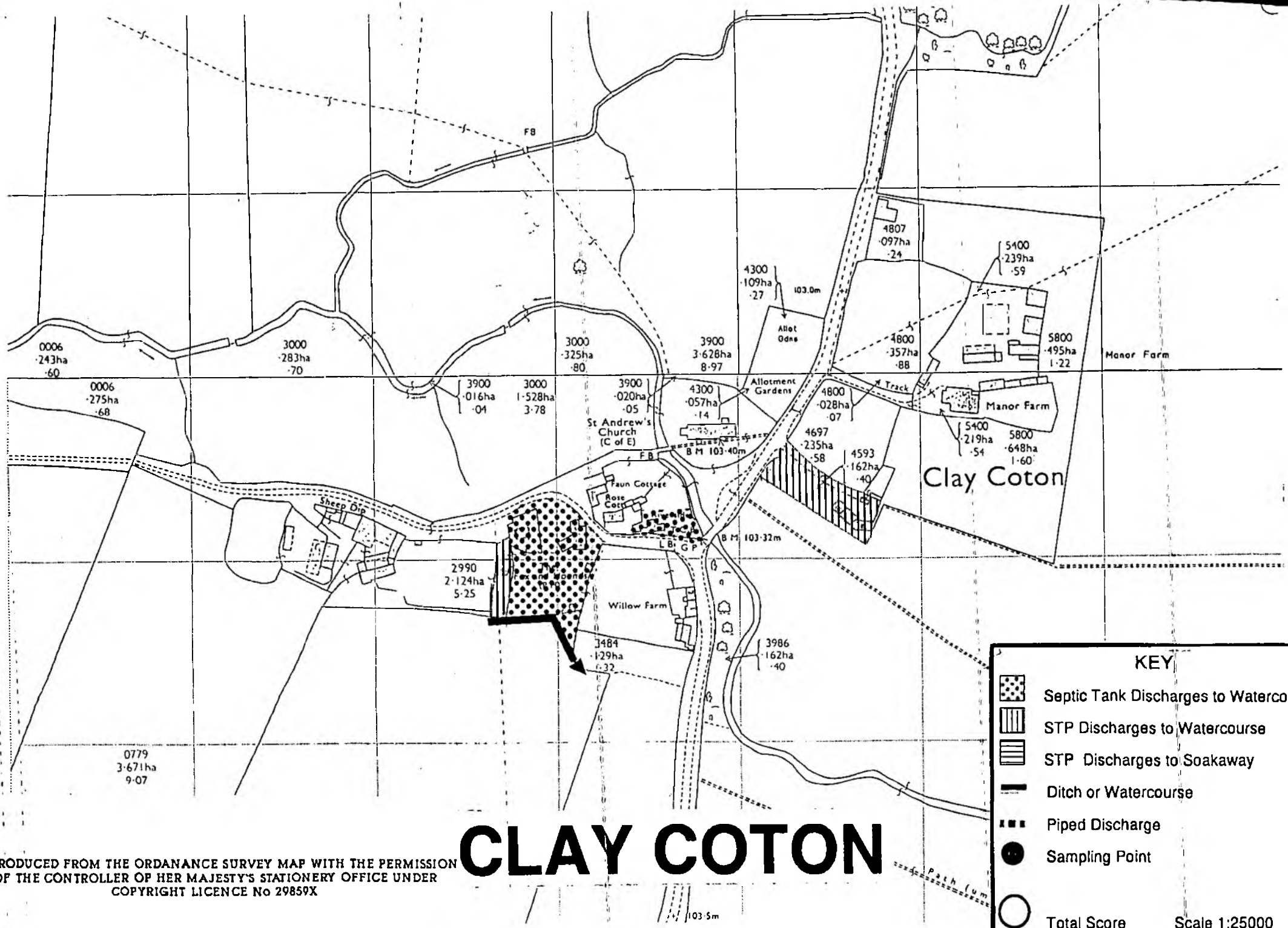
VIEW OF LOCAL SEWAGE POLLUTION FOR CLAY COTON



TOTAL OF 5 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



CLAY COTON

KEY

- Septic Tank Discharges to Watercourse
- STP Discharges to Watercourse
- STP Discharges to Soakaway
- Ditch or Watercourse
- Piped Discharge
- Sampling Point
- Total Score

Scale 1:25000

9.2.2**Site 6: STANFORD-ON-AVON****IMPACT SCORE: -*****Description***

Stanford-on-Avon is a very small village, situated two miles to the north of Yelvertoft, on the east bank of the River Avon. Stanford Hall lies just to the North of the village.

Soil Drainage Characteristics

The village lies on gravel, and drains to the River Avon. The soil type is a pelo-stagnogley soil (7.12). Under the Groundwater Vulnerability Classification the area has been defined as a Minor Aquifer site.

Development

Over the past ten years there have been eleven applications for development, none of which have been accepted.

Foul Drainage

All the properties in the village are served by septic tank/soakaway systems. Stanford Hall, which in peak summer, is visited by up to six thousand people, was found to have a septic discharge to the River Avon. This matter is now in hand.

Pollution

Polluted conditions were found at one point in the village, at Stanford Hall. This point was not used as the score point, as it was felt to be unrepresentative.

Environmental Health Complaints

Daventry District Council have received no environmental health complaints from this village.

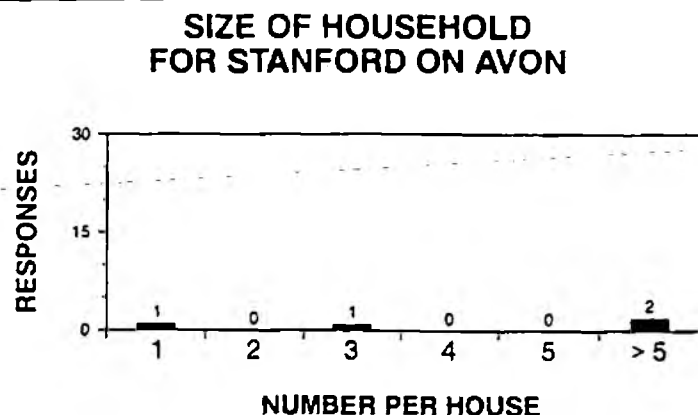
VILLAGE NAME: STANFORD-ON-AVON

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING		
NO OF DISCHARGE POINTS		
NO OF HOUSES DISCHARGING AT SCORING POINT		
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT		
B.O.D. 10M D/S OF SCORING POINT		
AMMONIA 10M D/S OF SCORING POINT		
DISSOLVED OXYGEN 10M D/S OF SCORING POINT		
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT		
PUBLIC ACCESSIBILITY		
TOTAL SCORE		--

NUMBER OF QUESTIONNAIRES SENT OUT:	11
NUMBER OF QUESTIONNAIRES RETURNED:	5
PERCENTAGE OF QUESTIONNAIRES RETURNED:	45%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	100%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	83%

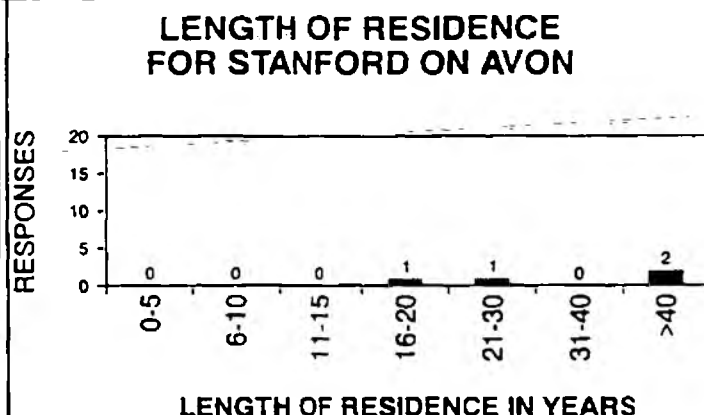
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property



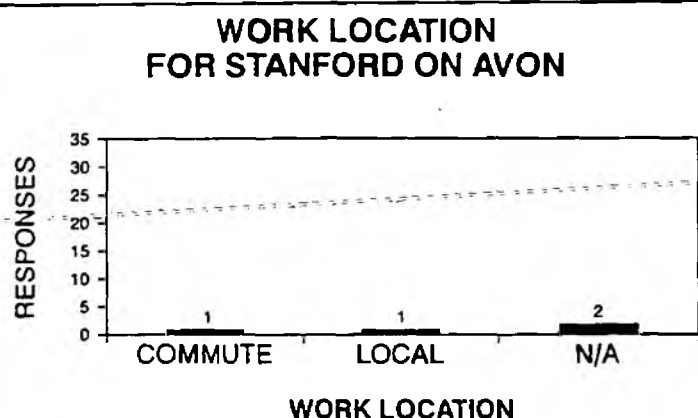
TOTAL OF 4 RESPONSES

Qu.4: Length of Residence in the Village



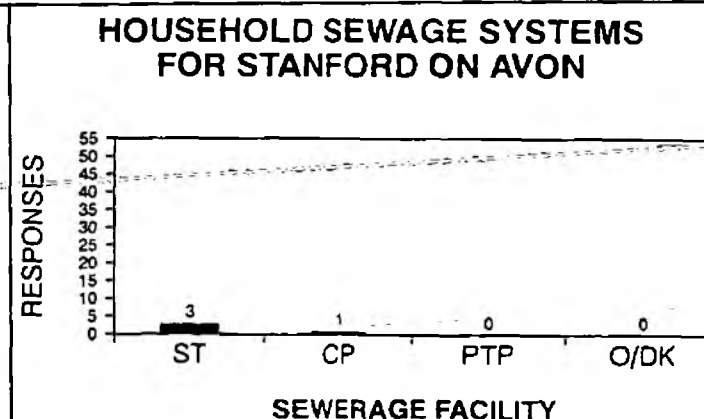
TOTAL OF 4 RESPONSES

Qu.5: Work Location (if applicable)



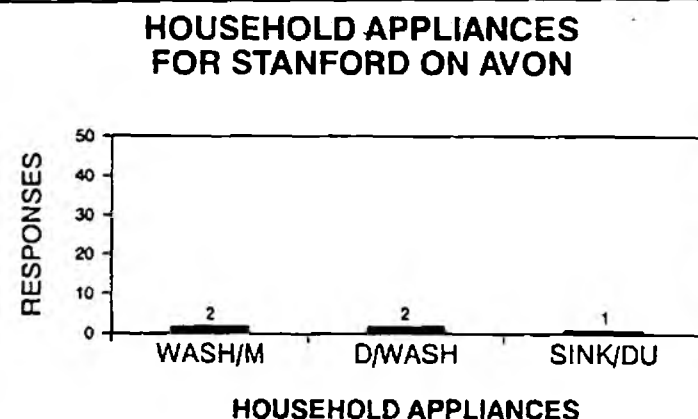
TOTAL OF 4 RESPONSES

Qu.6: Type of Sewerage Facility



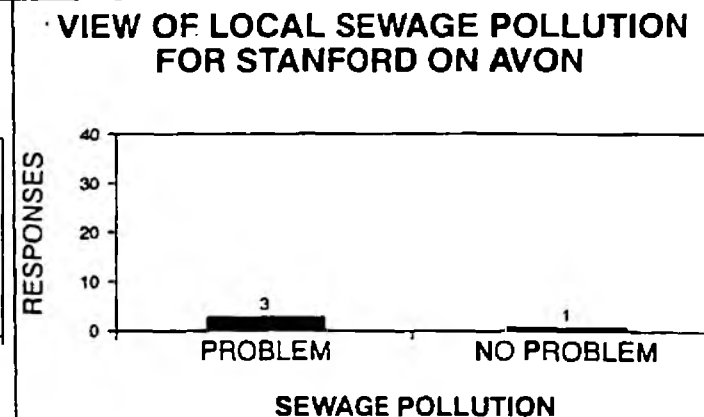
TOTAL OF 4 RESPONSES

Qu.7: Water Consuming Appliances Used



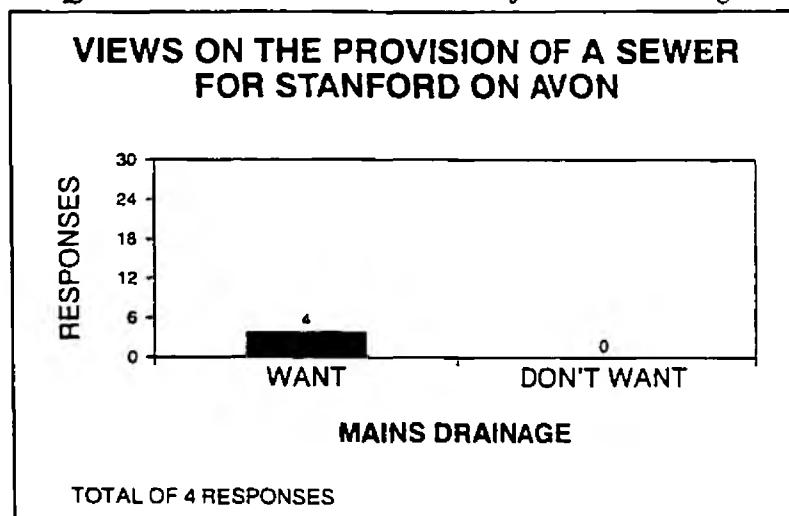
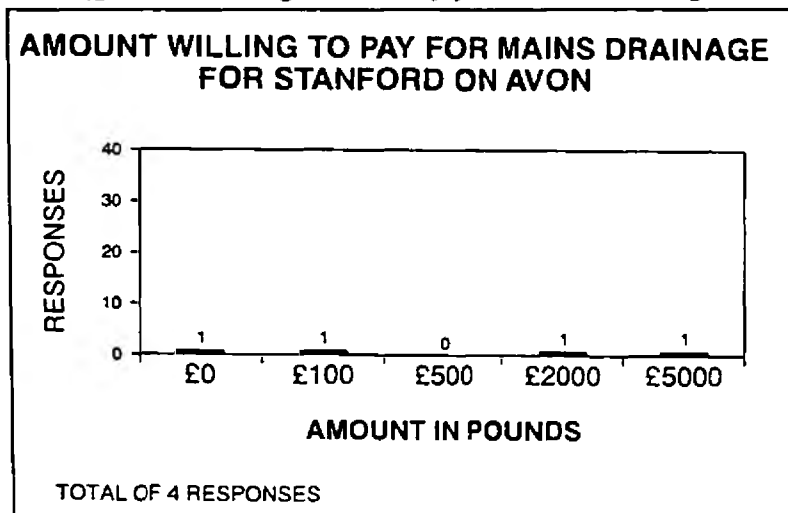
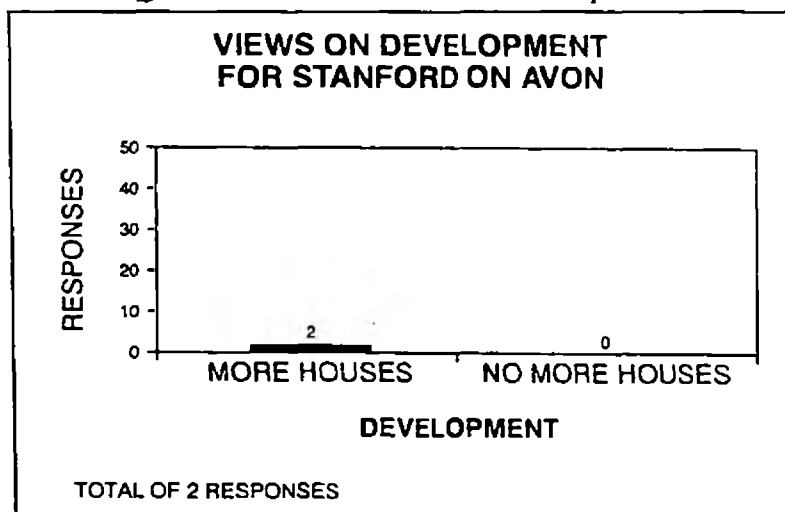
TOTAL OF 5 RESPONSES

Qu.8: Attitude to Drainage Problems

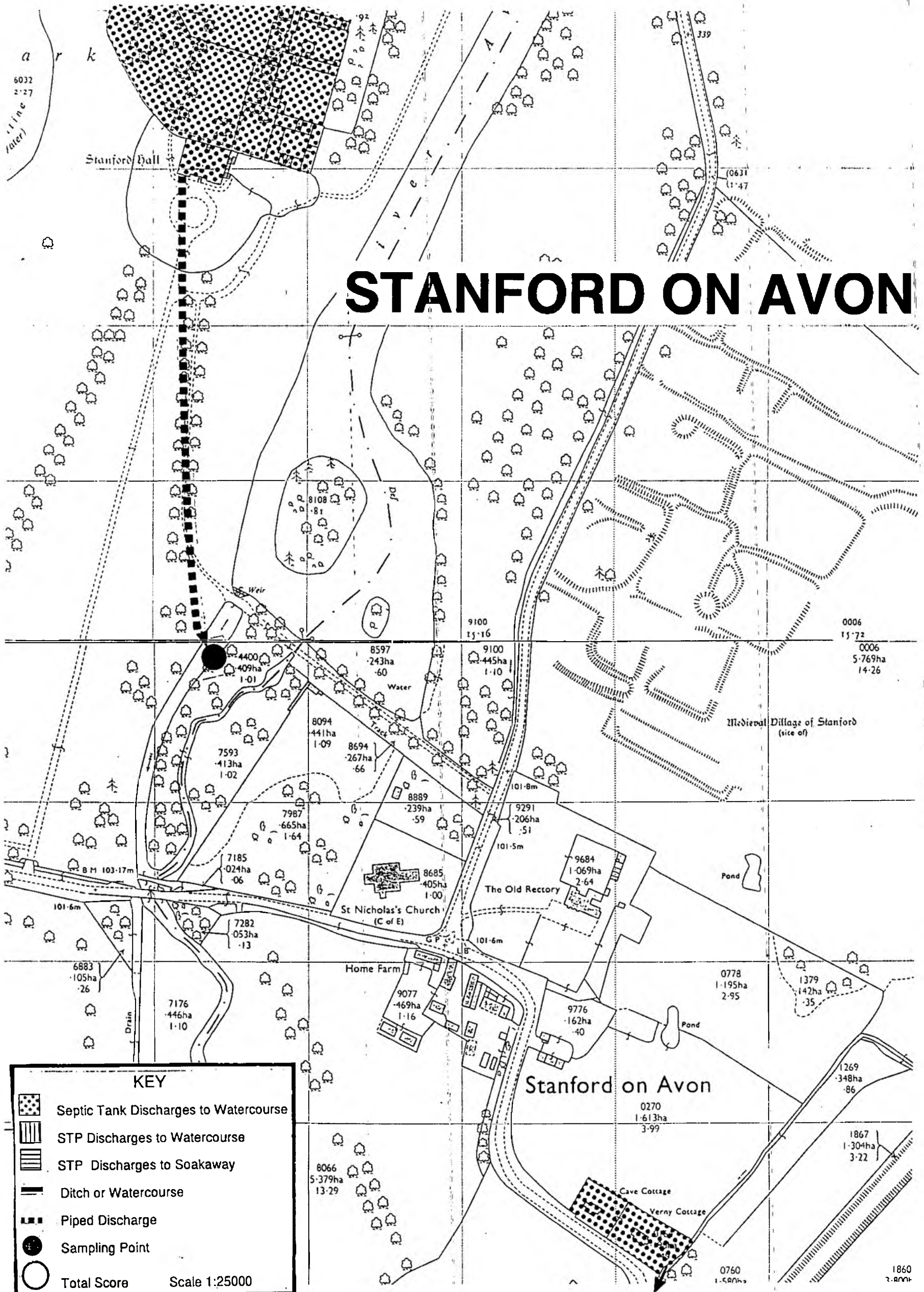


TOTAL OF 4 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

STANFORD ON AVON



REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER COPYRIGHT LICENCE No 29859X

9.3 FOREST OF DEAN DISTRICT COUNCIL

Response to Questionnaire

- **Population** 104,700
- **Population connected to the public sewerage system:**
No information available.
- **Policy towards provision of sewerage:**
This Council only requisitions sewers where there is a considerable reduction in cost, due to a large number of properties connecting on per unit run of sewer, or when a private developer is prepared to contribute to the costs.
- **Does the council have an on going programme of first time sewerage schemes?**
Yes.

Redbrook	1993/94	£129,000
Beachley	1994/95	£50,000
Brockweir	1995/96	£57,000
- **Total value of first time sewerage schemes constructed in the last ten years.**
£200,000
- **Does the council own/maintain sewage plants/sewerage systems in its own right?**
(Not as sewerage agents)
No.

Impact Ranking Order of Villages Covered in the Survey		
Site 10.	Loop Road, Beachley	31
Site 8	Blaisdon	21
Site 7.	Awre	-
Site 9.	Clifford's Mesne	-
Site 11.	Mayhill, Glasshouse	-
Site 12.	Rodley	-

THIS PAGE IS BLANK

9.3.1**Site 7: AWRE****IMPACT SCORE: -*****Description***

Awre is an isolated settlement located on a level agricultural plain close to the River Severn (NGR SO 705 081).

Soil Drainage Characteristics

The village lies on gravel overlying clay, and drains to the River Severn. The soil type is a typical calcareous pelosol (4.11). The area is susceptible to flooding, and has been classified as a Non-Aquifer site.

Development

Over the past ten years no properties have been built in Awre, and any new residential development will be restricted.

Foul Drainage

All properties in the village have septic tank/soakaway systems. Due to the high water table and impervious nature of the clay subsoil some of these systems malfunction.

Pollution

At the time of the visit, no polluted conditions were detected in the village. Accordingly, no water quality samples were taken.

Environmental Health Complaints

The Forest of Dean District Council receive occasional environmental health complaints from this village.

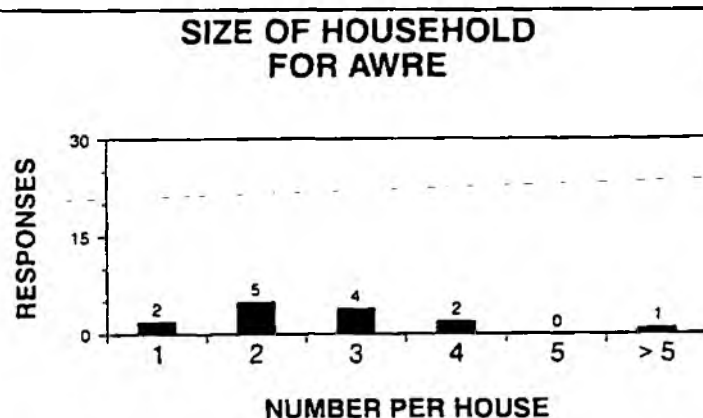
VILLAGE NAME: AWRE

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING		
NO OF DISCHARGE POINTS		
NO OF HOUSES DISCHARGING AT SCORING POINT		
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT		
B.O.D. 10M D/S OF SCORING POINT		
AMMONIA 10M D/S OF SCORING POINT		
DISSOLVED OXYGEN 10M D/S OF SCORING POINT		
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT		
PUBLIC ACCESSIBILITY		
TOTAL SCORE		--

NUMBER OF QUESTIONNAIRES SENT OUT:	26
NUMBER OF QUESTIONNAIRES RETURNED:	15
PERCENTAGE OF QUESTIONNAIRES RETURNED:	57%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	25%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	53%

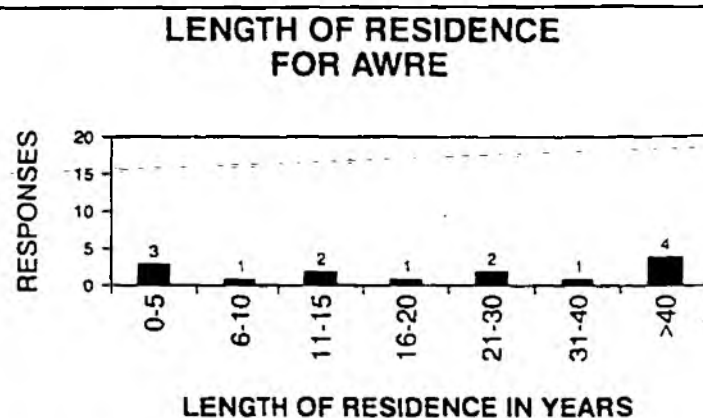
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property



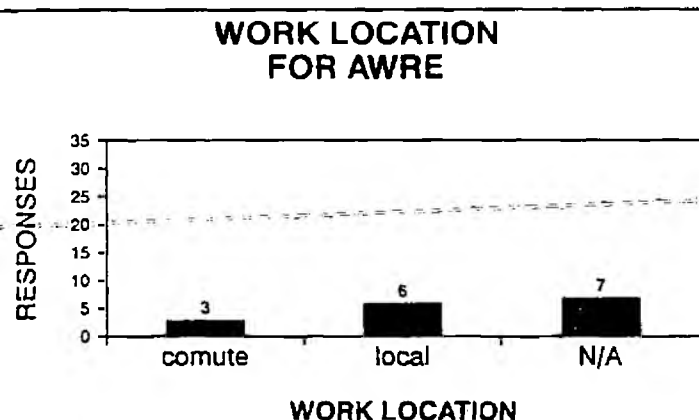
TOTAL OF 14 RESPONSES

Qu.4: Length of Residence in the Village



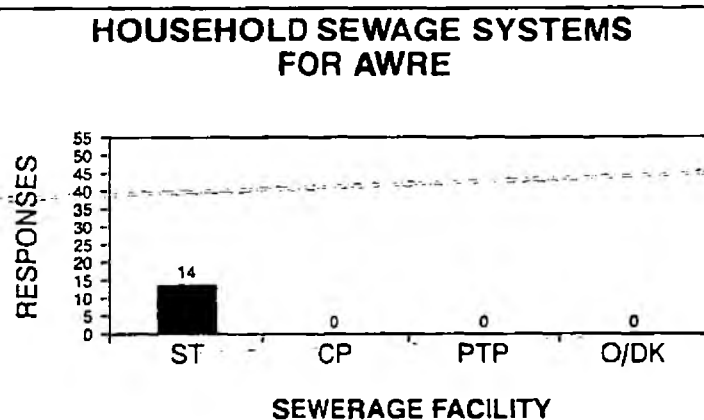
TOTAL OF 14 RESPONSES

Qu.5: Work Location (if applicable)



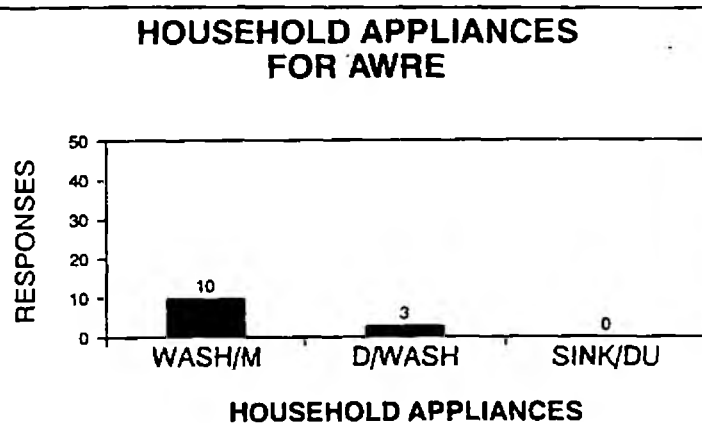
TOTAL OF 16 RESPONSES

Qu.6: Type of Sewerage Facility



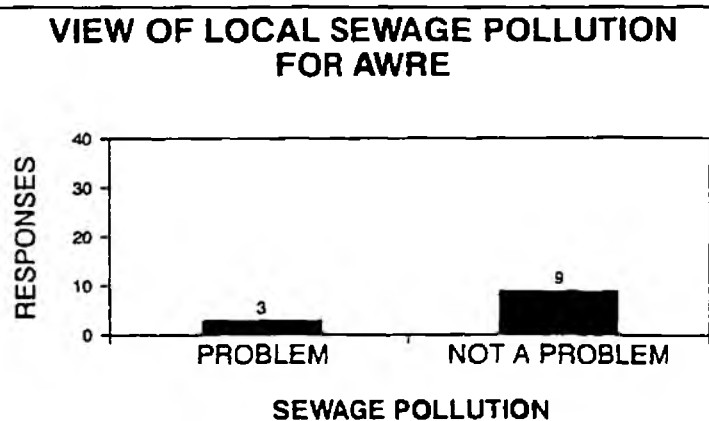
TOTAL OF 14 RESPONSES

Qu.7: Water Consuming Appliances Used



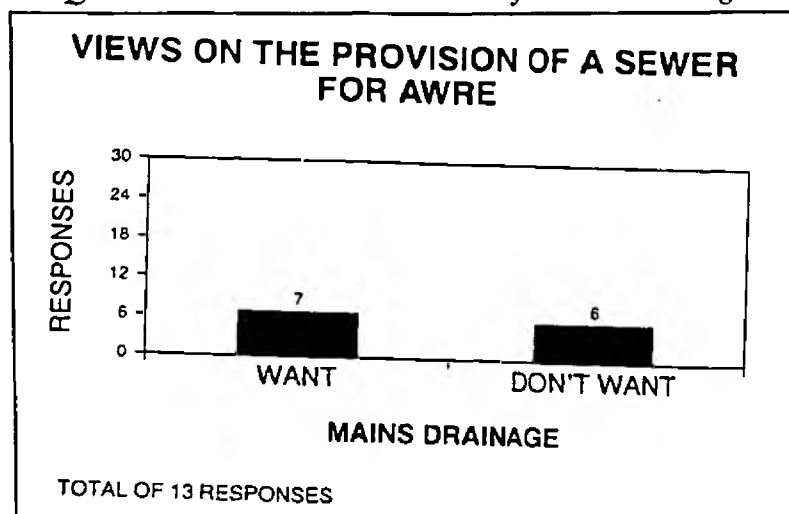
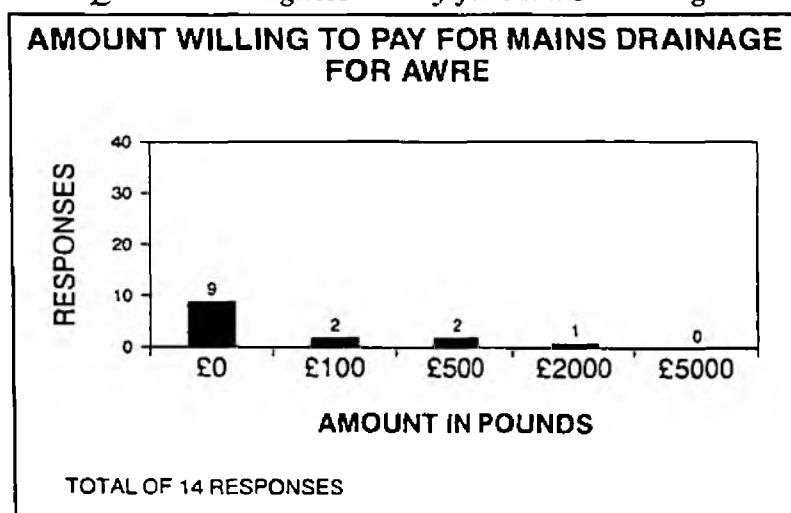
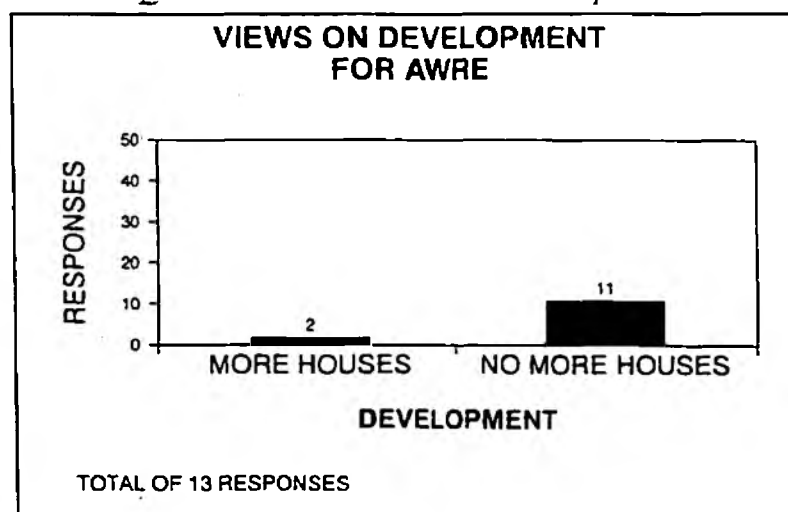
TOTAL OF 13 RESPONSES

Qu.8: Attitude to Drainage Problems

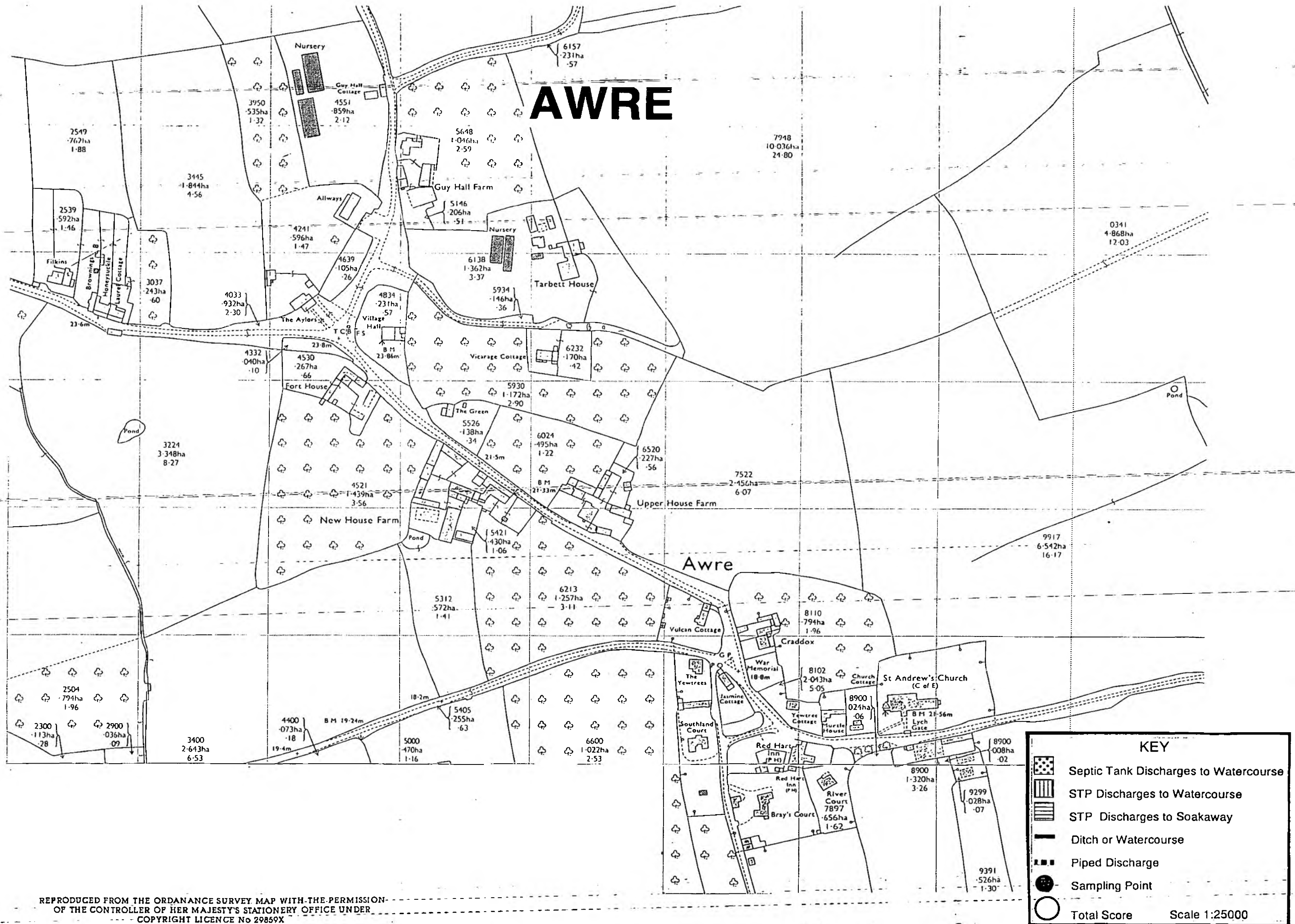


TOTAL OF 12 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

AWRE



9.3.2

Site 8: BLAISDON

IMPACT SCORE: 21

Description

Blaisdon is located approximately two miles south west of Huntley, on the edge of a lowland agricultural plain (NGR SO 703 170). There about 32 in the settlement, with a total population of about 70.

Soil Drainage Characteristics

The village lies on heavy clay and marl, and drains to the Longhope Brook and to Beech Brook. The soil type is a stagnogleyic argillic brown earth (5.72). The area have been given Non-Aquifer status.

Development

Blaisdon has been defined as a conservation area in the Forest of Dean District Council Local Plan. There have been no new dwellings built in the last ten years.

Foul Drainage

All of the properties in the village are served by septic tank/soakaway systems. Due to the impervious nature of the clay subsoil the majority of these malfunction. Some of this effluent makes its way to a series of historic culverts. One of these discharges to a ditch behind The Forge; and the other to the Beech Brook behind Blaisdon House.

Pollution

Polluted conditions were detected at four main locations, with contributions from approximately twenty one properties. At the scoring point water quality samples were indicative of a Class 1A watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
0.17	2.5	13	92

Environmental Health Complaints

Forest of Dean District Council receive regular environmental health complaints from this village.

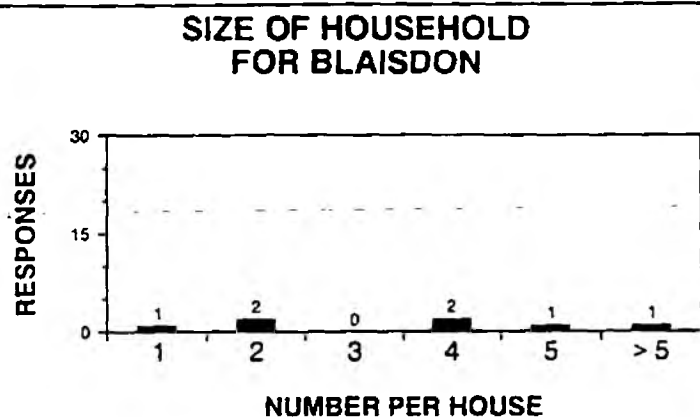
VILLAGE NAME: BLAISDON

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	6-10	2
NO OF DISCHARGE POINTS	3-4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	5-8	3
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>200	10
B.O.D. 10M D/S OF SCORING POINT	<5	1
AMMONIA 10M D/S OF SCORING POINT	<0.7	1
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	>60	1
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	LOW	1
TOTAL SCORE		21

NUMBER OF QUESTIONNAIRES SENT OUT:	39
NUMBER OF QUESTIONNAIRES RETURNED:	26
PERCENTAGE OF QUESTIONNAIRES RETURNED:	66%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM :	39%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	56%

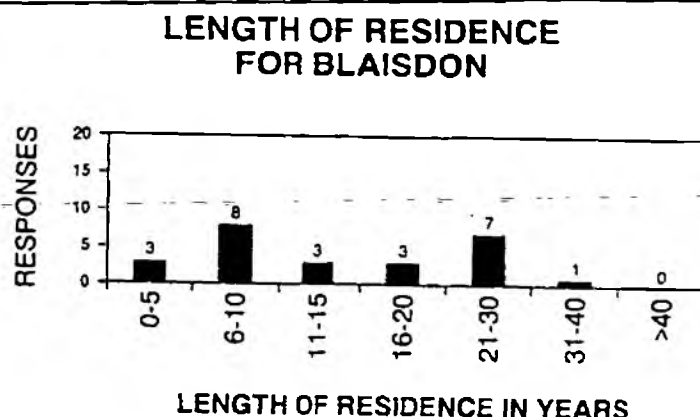
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property



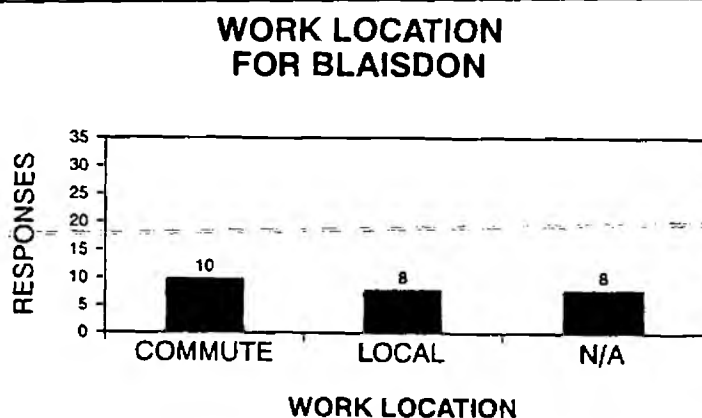
TOTAL OF 7 RESPONSES

Qu.4: Length of Residence in the Village



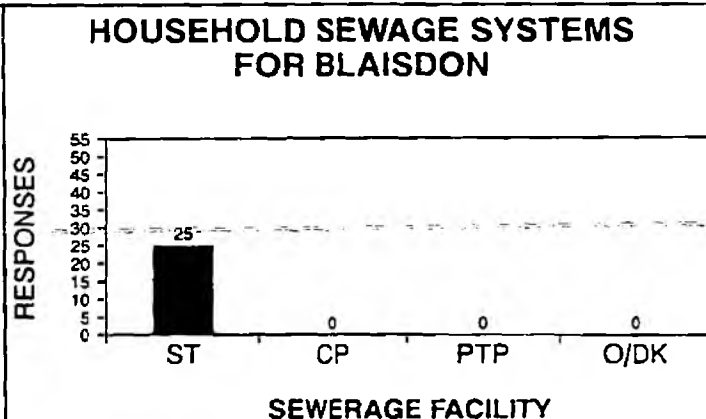
TOTAL OF 25 RESPONSES

Qu.5: Work Location (if applicable)



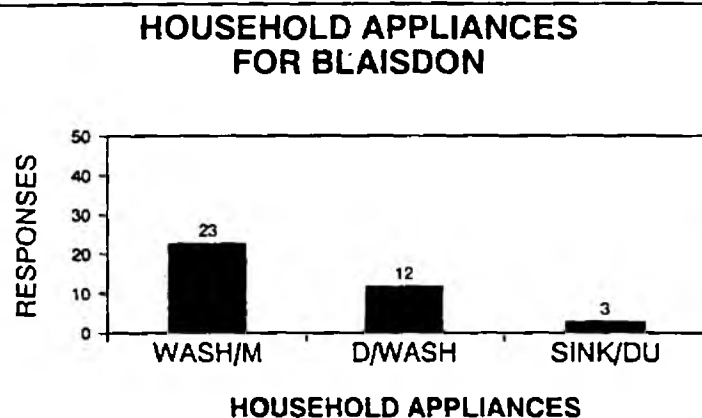
TOTAL OF 26 RESPONSES

Qu.6: Type of Sewerage Facility



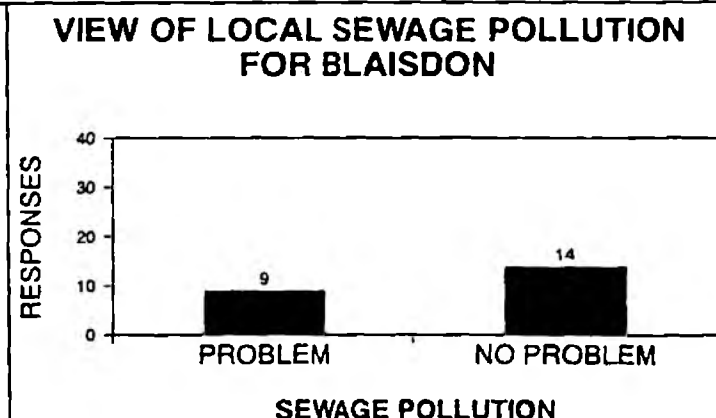
TOTAL OF 25 RESPONSES

Qu.7: Water Consuming Appliances Used



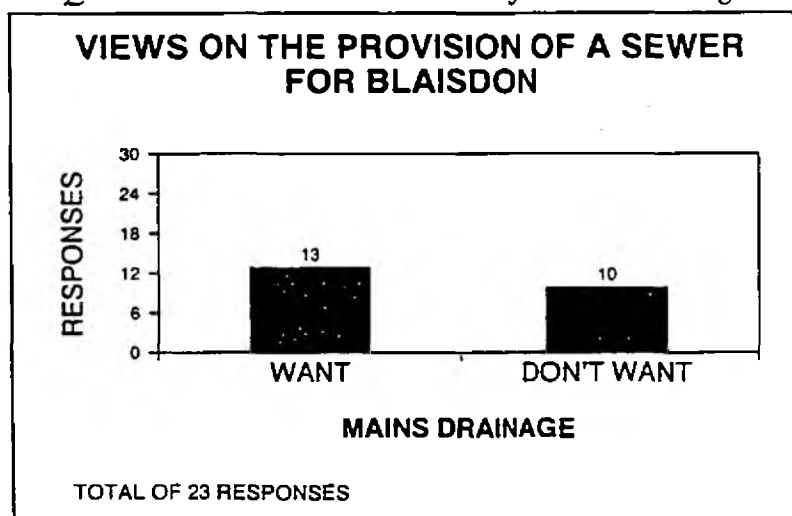
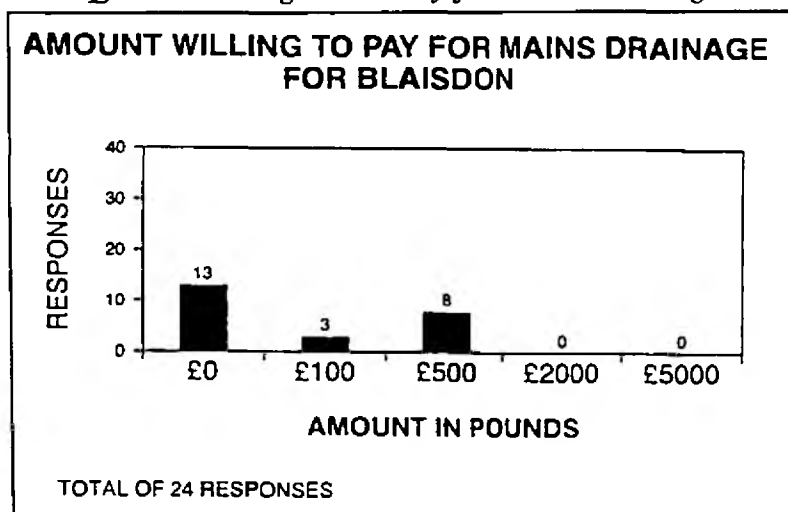
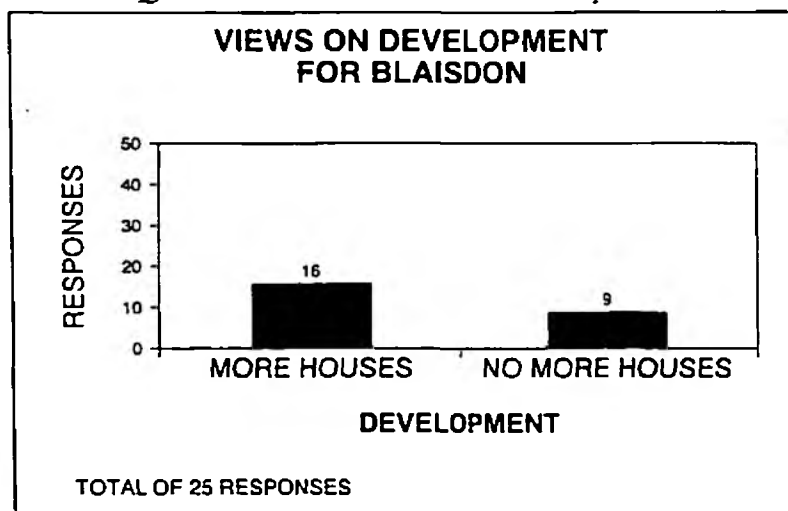
TOTAL OF 38 RESPONSES

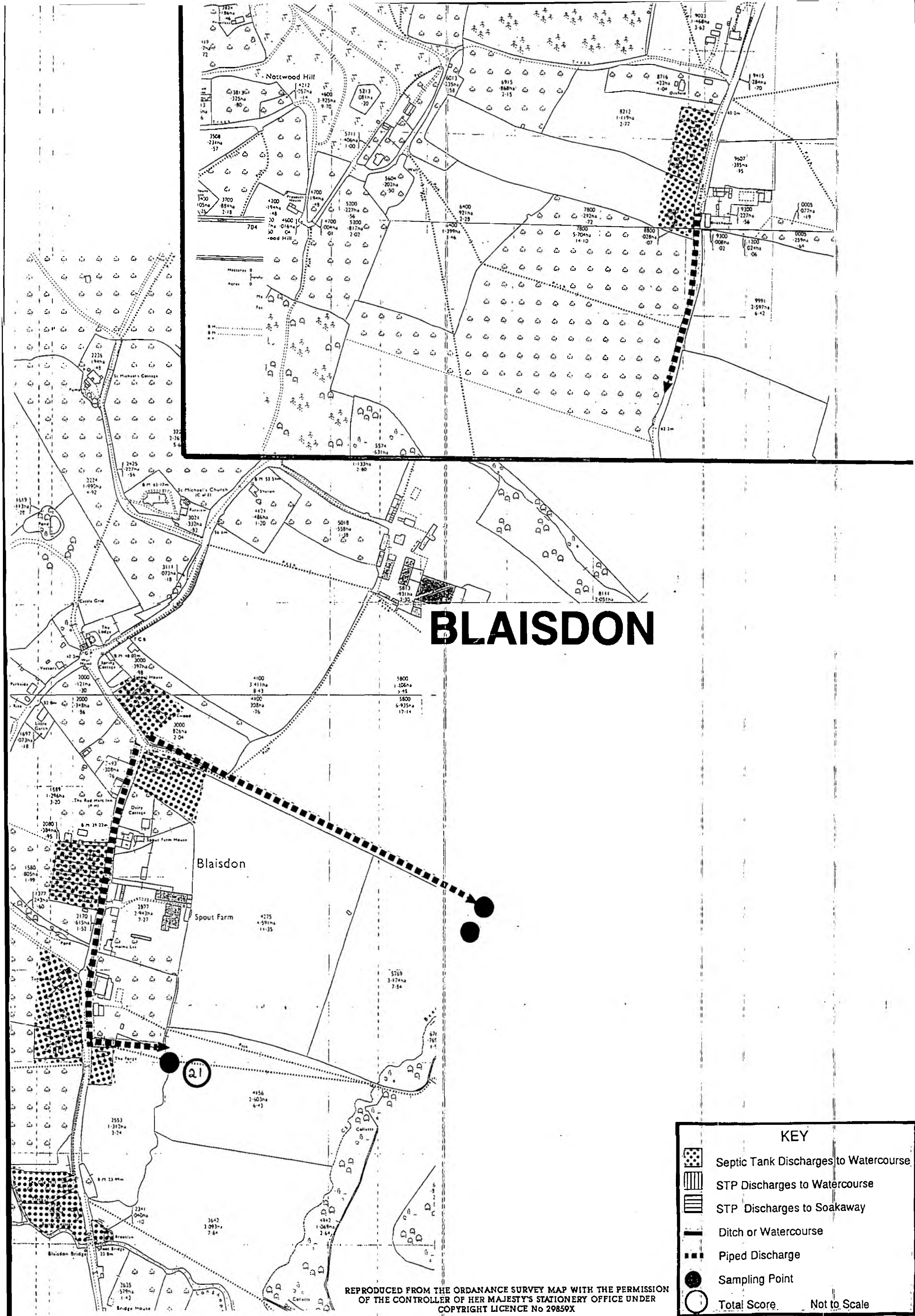
Qu.8: Attitude to Drainage Problems



TOTAL OF 23 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



9.3.3

Site 9: CLIFFORD'S MESNE

IMPACT SCORE: -

Description

Clifford's Mesne is a loosely scattered settlement lying South-West of Newent (NGR: 700 233). The estimated population of the settlement is 57 people.

Soil Drainage Characteristics

The area lies on peat overlying sandstone, and drains to Peacock Brook, a tributary of the Ell Brook. The soil type is a typical argillic brown earth (5.71). Under the Groundwater Vulnerability Classification this area has been designated as a Non-Aquifer site.

Development

There have been eight applications for development over the past ten years; and seven properties have been built.

Foul Drainage

The majority of properties in the settlement are served by septic tank/soakaway systems. Six council houses adjacent to Southall Terrace have a joint septic tank facility, with an overflow to Peacock Brook.

Pollution

At the time of the visit, no water pollution was detected in the village. Accordingly, no samples were taken.

Environmental Health Complaints

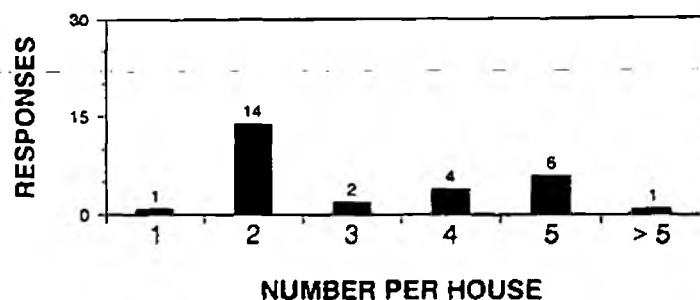
The Forest of Dean Council receive frequent complaints from this settlement.

VILLAGE NAME: CLIFFORD'S MESNE

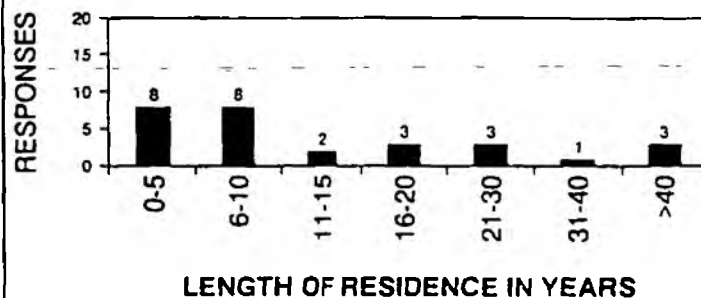
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING		
NO OF DISCHARGE POINTS		
NO OF HOUSES DISCHARGING AT SCORING POINT		
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT		
B.O.D. 10M D/S OF SCORING POINT		
AMMONIA 10M D/S OF SCORING POINT		
DISSOLVED OXYGEN 10M D/S OF SCORING POINT		
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT		
PUBLIC ACCESSIBILITY		
TOTAL SCORE		--

NUMBER OF QUESTIONNAIRES SENT OUT:	41
NUMBER OF QUESTIONNAIRES RETURNED:	28
PERCENTAGE OF QUESTIONNAIRES RETURNED:	68%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	40%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	50%

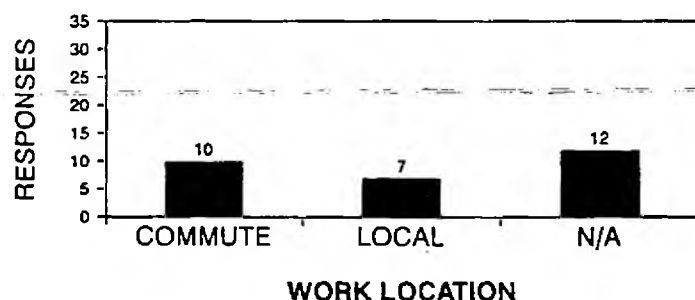
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property***SIZE OF HOUSEHOLD
FOR CLIFFORDS MESNE**

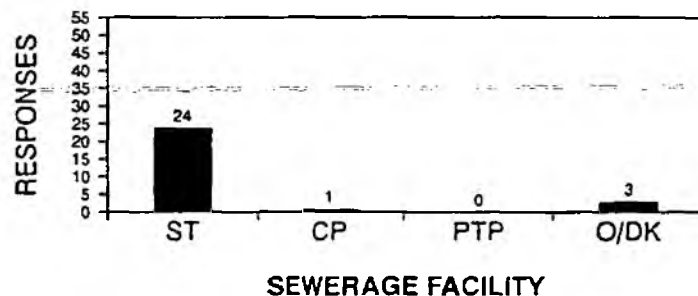
TOTAL OF 28 RESPONSES

*Qu.4: Length of Residence in the Village***LENGTH OF RESIDENCE
FOR CLIFFORDS MESNE**

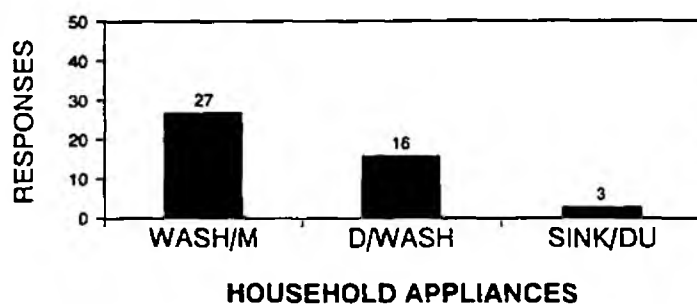
TOTAL OF 28 RESPONSES

*Qu.5: Work Location (if applicable)***WORK LOCATION
FOR CLIFFORDS MESNE**

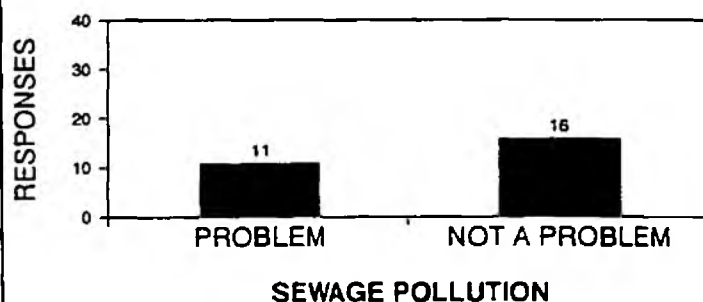
TOTAL OF 29 RESPONSES

*Qu.6: Type of Sewerage Facility***HOUSEHOLD SEWAGE SYSTEMS
FOR CLIFFORDS MESNE**

TOTAL OF 28 RESPONSES

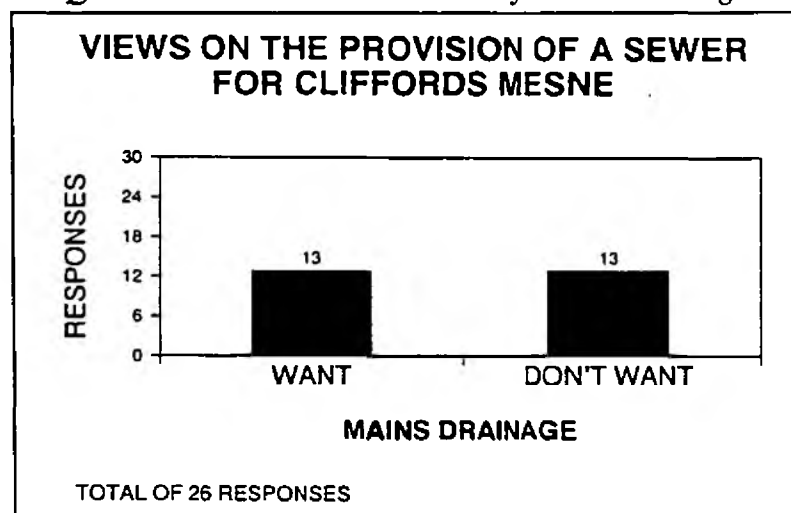
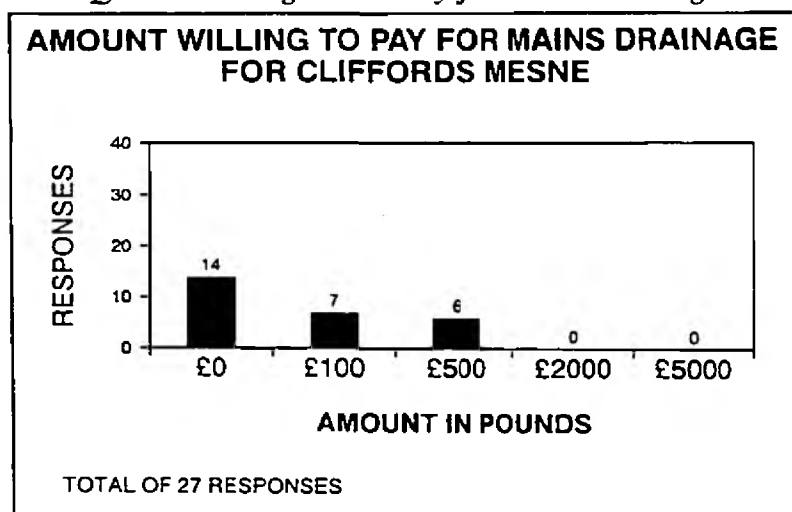
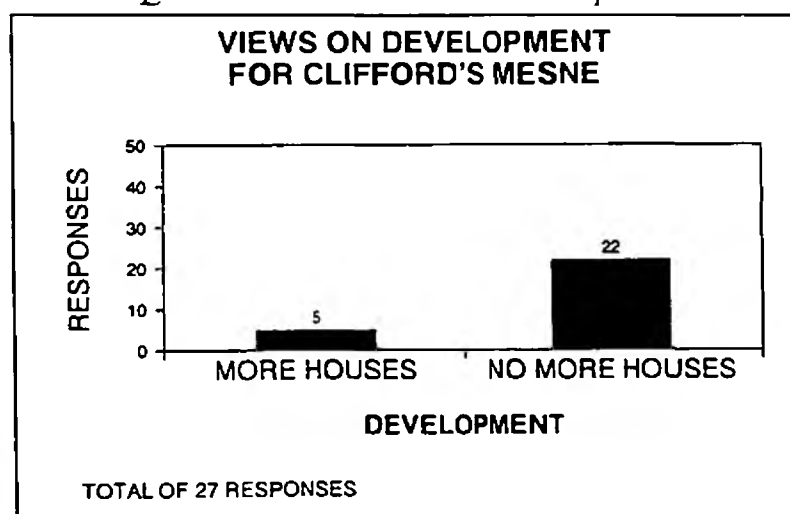
*Qu.7: Water Consuming Appliances Used***HOUSEHOLD APPLIANCES
FOR CLIFFORDS MESNE**

TOTAL OF 46 RESPONSES








*Qu.8: Attitude to Drainage Problems***VIEW OF LOCAL SEWAGE POLLUTION
FOR CLIFFORDS MESNE**

TOTAL OF 27 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

[illegible]

 Septic Tank Discharges to Watercourse
 STP Discharges to Watercourse
 STP Discharges to Soakaway
 Ditch or Watercourse
 Piped Discharge
 Sampling Point
 Total Score

Scale 1:25000

9.3.4

Site 10: LOOP ROAD, BEACHLEY

IMPACT SCORE: 31

Description

Loop Road is situated to the South of Sedbury on the Beachley Peninsula, between the Wye and the Severn Estuaries (NGR: SO 550 913). There are approximately 100 houses in this area with a population of 250.

Soil Drainage Characteristics

The area lies on alluvium gravel. Loop Road drains via Slimeroad Pil to the Severn Estuary. The soil type is a stagnogleyc argillic brown earth (5.72). Under the Groundwater Vulnerability Classification this area has been given Non-Aquifer status.

Development

In the past ten years four properties have been built in Beachley. The Forest of Dean Local Plan for this area stipulates that this area offers very few opportunities for further development. It is not considered appropriate to allow the area to expand into the surrounding open countryside.

Foul Drainage

Loop Road relies on private drainage facilities. Thirty four properties' foul effluent is discharged to a joint septic tank system. The overflow discharges to Slimeroad Pil. Properties in Buttington Terrace have a similar arrangement.

Pollution

Polluted conditions were detected at one location, with an estimated contribution from approximately forty properties. At the score point samples of water quality were indicative of a Class 4 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
32	269	320	21

Environmental Health Complaints

The Forest of Dean District Council receive frequent environmental health complaints from this site.

VILLAGE NAME: LOOP ROAD, BEACHLEY

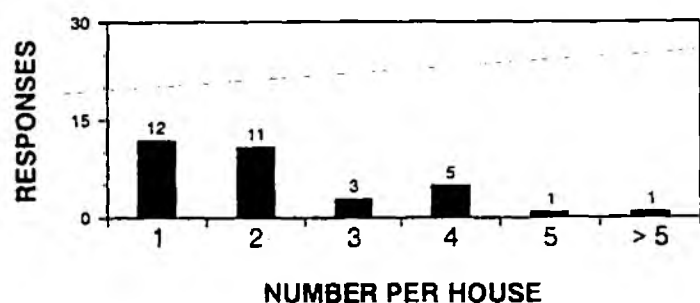
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	>40	5
NO OF DISCHARGE POINTS	1-2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	>16	5
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100M	1
B.O.D. 10M D/S OF SCORING POINT	>40	5
AMMONIA 10M D/S OF SCORING POINT	>20	5
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	40-21	3
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	>50M	5
PUBLIC ACCESSIBILITY	LOW	1
TOTAL SCORE		31

NUMBER OF QUESTIONNAIRES SENT OUT:	53
NUMBER OF QUESTIONNAIRES RETURNED:	33
PERCENTAGE OF QUESTIONNAIRES RETURNED:	62%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	68%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	78%

ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

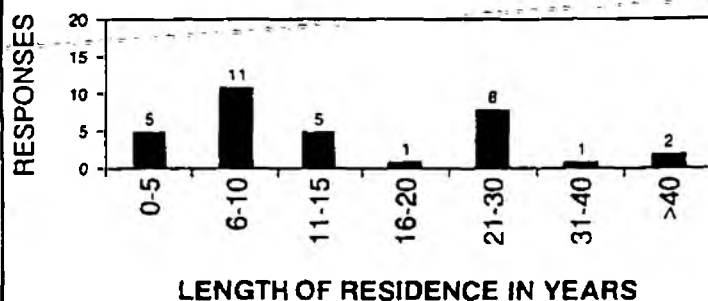
SIZE OF HOUSEHOLD FOR LOOP ROAD, BEACHLEY



TOTAL OF 33 RESPONSES

Qu.4: Length of Residence in the Village

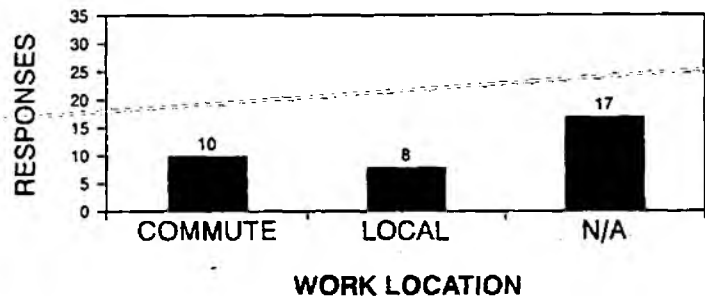
LENGTH OF RESIDENCE FOR LOOP ROAD, BEACHLEY



TOTAL OF 33 RESPONSES

Qu.5: Work Location (if applicable)

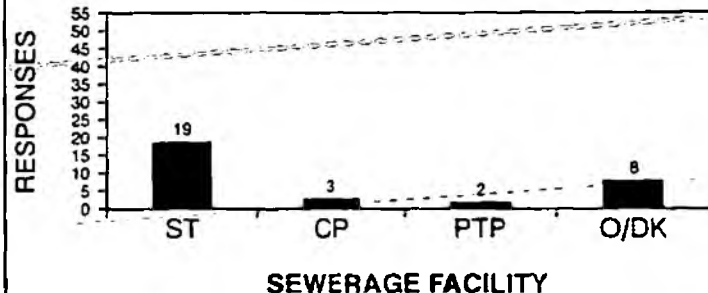
WORK LOCATION FOR LOOP ROAD, BEACHLEY



TOTAL OF 35 RESPONSES

Qu.6: Type of Sewerage Facility

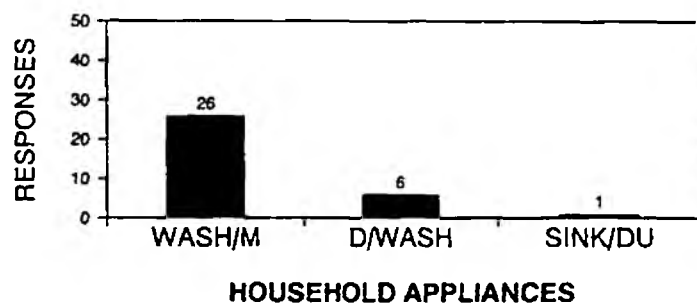
HOUSEHOLD SEWAGE SYSTEMS FOR LOOP ROAD, BEACHLEY



TOTAL OF 32 RESPONSES

Qu.7: Water Consuming Appliances Used

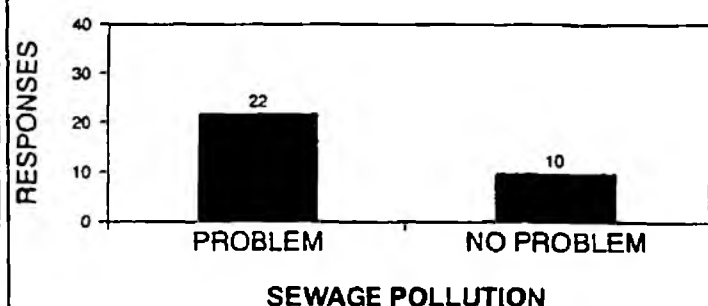
HOUSEHOLD APPLIANCES FOR LOOP ROAD, BEACHLEY



TOTAL OF 33 RESPONSES

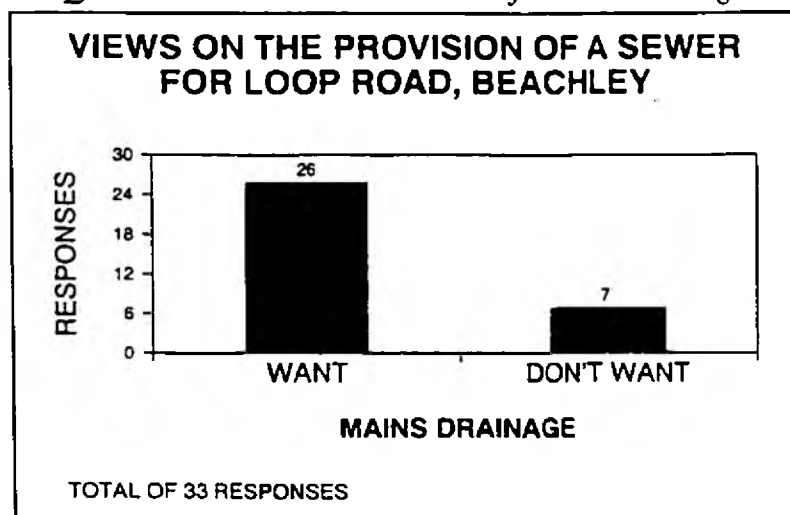
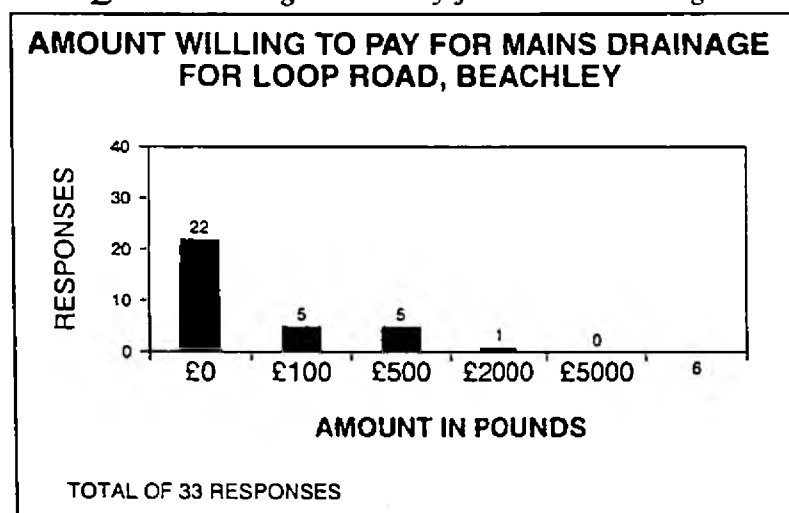
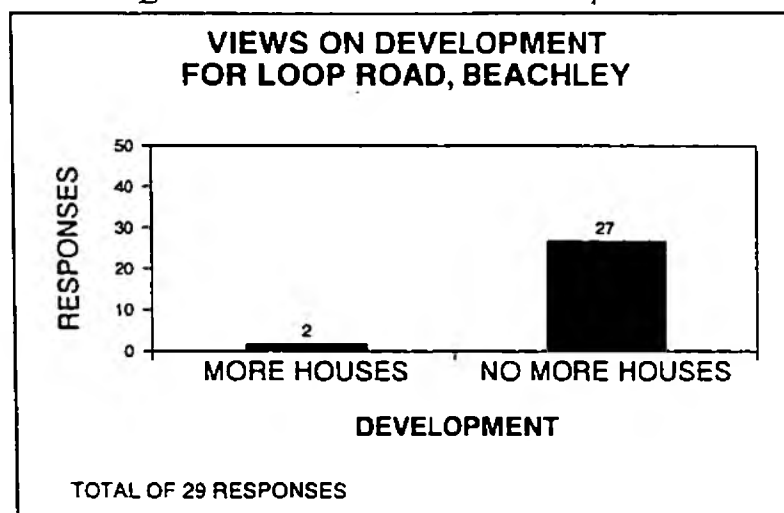
Qu.8: Attitude to Drainage Problems

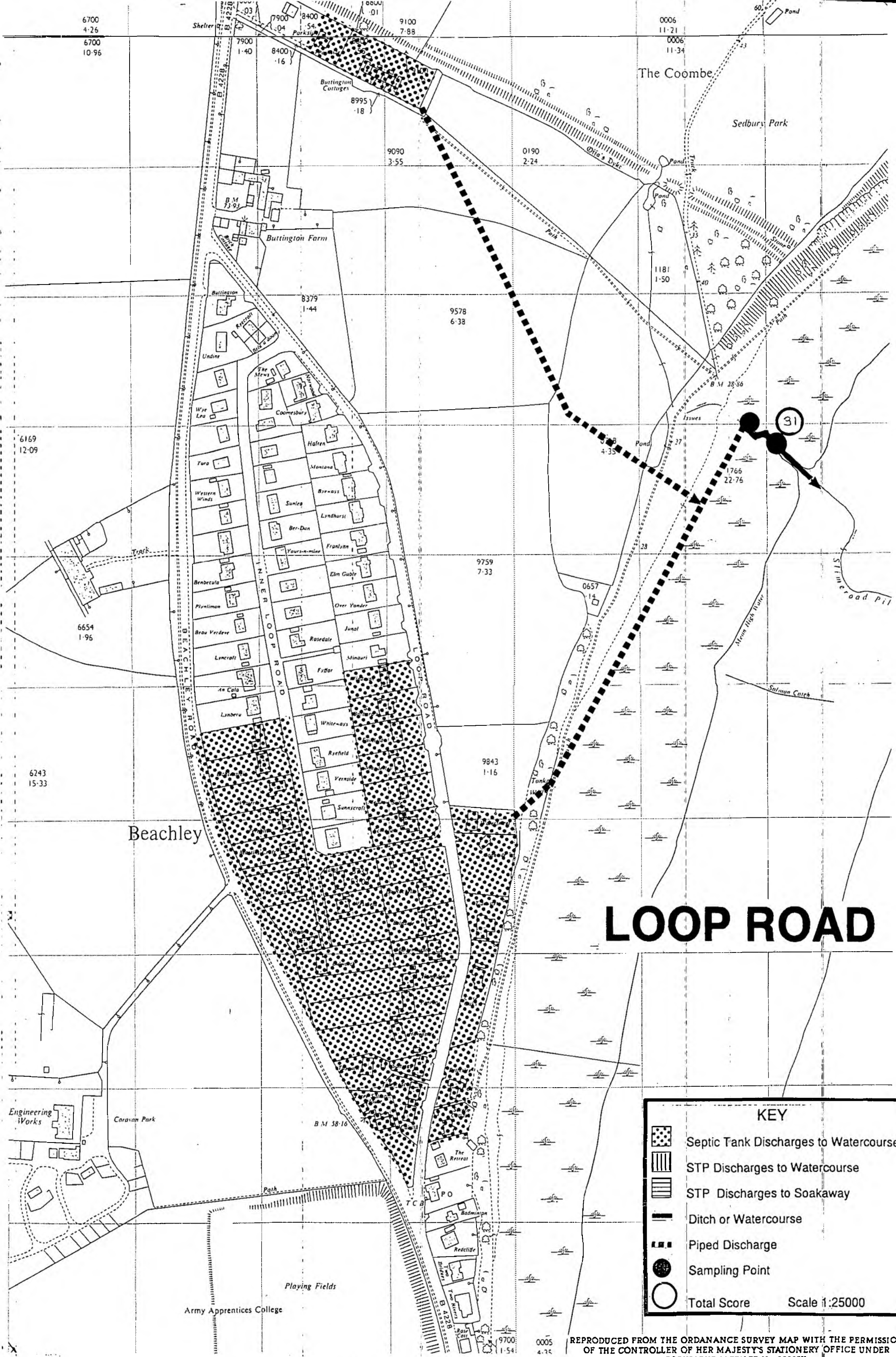
VIEW OF LOCAL SEWAGE POLLUTION FOR LOOP ROAD, BEACHLEY



TOTAL OF 32 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



LOOP ROAD

KEY

- Septic Tank Discharges to Watercourse
- STP Discharges to Watercourse
- STP Discharges to Soakaway
- Ditch or Watercourse
- Piped Discharge
- Sampling Point
- Total Score

Scale 1:25000

9.3.5**Site 11: MAYHILL- GLASSHOUSE****IMPACT SCORE: -*****Description***

Glasshouse is situated one and a half miles north east of Longhope, just to the south of Newent Woods (NGR: SO 710 213).

Soil Drainage Characteristics

The village lies on lias clay, and drains to a tributary of the Red Brook. The soil type is a stagnogleyic argillic brown earth (5.72). Under the Groundwater Vulnerability Classification this area has been assigned Non-Aquifer status.

Development

No information available.

Foul Drainage

All properties in this area are served by septic tank/soakaway systems, some of which malfunction due to the impervious nature of the clay subsoil.

Pollution

Polluted conditions were detected at four points in the village. It has not been possible to obtain water quality information due to low flow conditions.

Environmental Health Complaints

No information available.

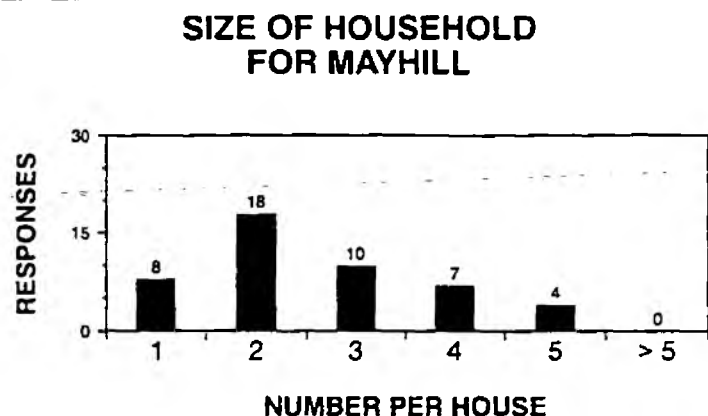
VILLAGE NAME: MAYHILL-GLASSHOUSE

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING		
NO OF DISCHARGE POINTS		
NO OF HOUSES DISCHARGING AT SCORING POINT		
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT		
B.O.D. 10M D/S OF SCORING POINT		
AMMONIA 10M D/S OF SCORING POINT		
DISSOLVED OXYGEN 10M D/S OF SCORING POINT		
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT		
PUBLIC ACCESSIBILITY		
TOTAL SCORE		--

NUMBER OF QUESTIONNAIRES SENT OUT:	52
NUMBER OF QUESTIONNAIRES RETURNED:	42
PERCENTAGE OF QUESTIONNAIRES RETURNED:	80%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	42%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	42%

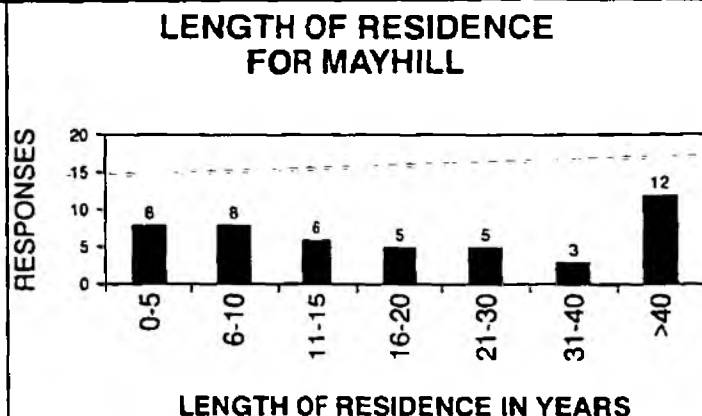
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property



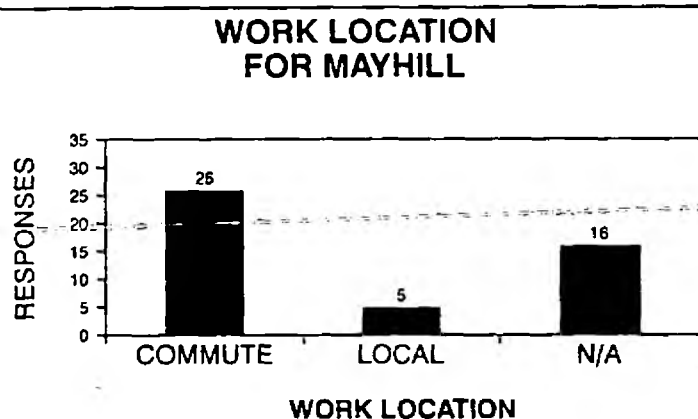
TOTAL OF 47 RESPONSES

Qu.4: Length of Residence in the Village



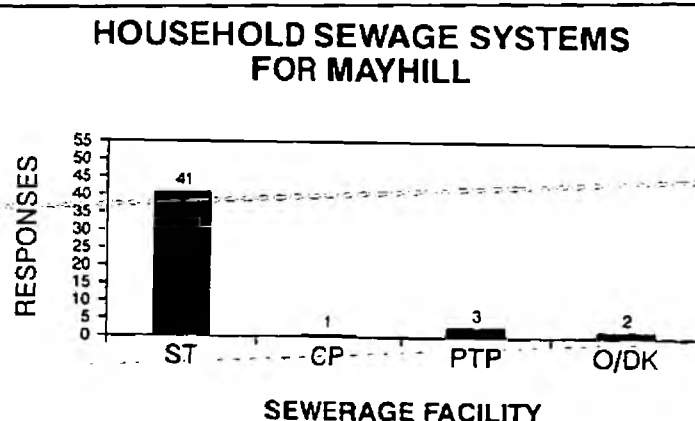
TOTAL OF 47 RESPONSES

Qu.5: Work Location (if applicable)



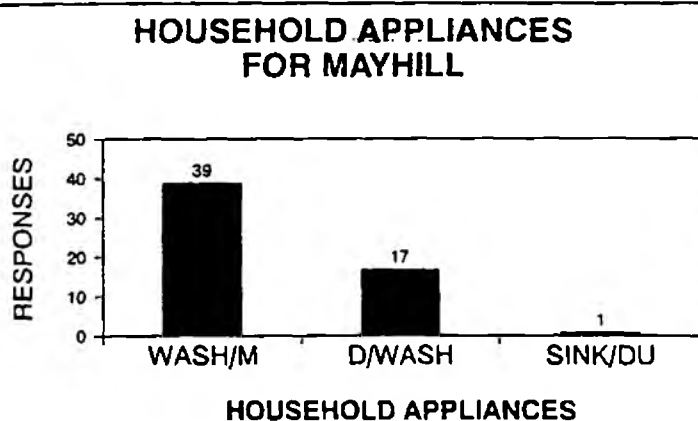
TOTAL OF 47 RESPONSES

Qu.6: Type of Sewerage Facility



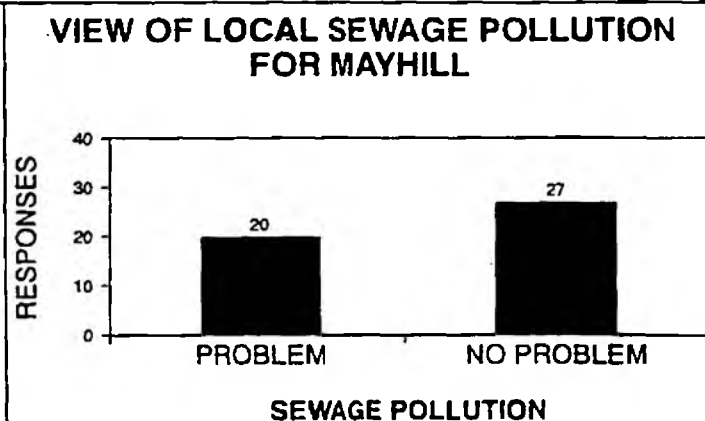
TOTAL OF 47 RESPONSES

Qu.7: Water Consuming Appliances Used



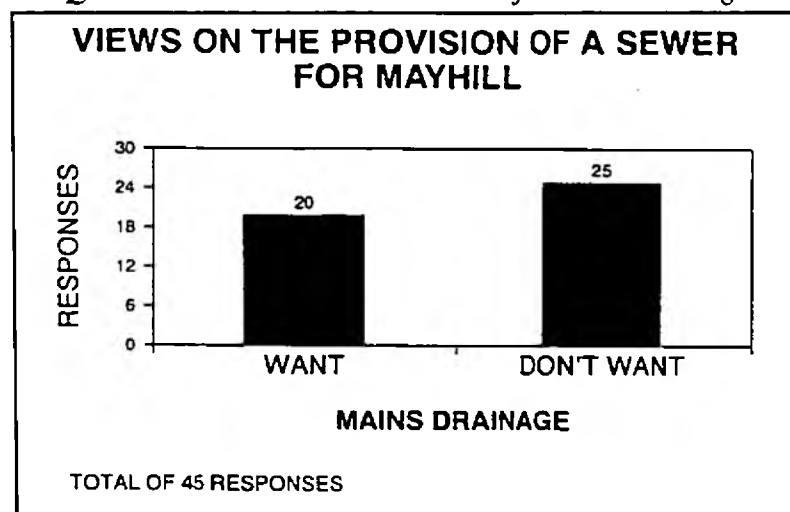
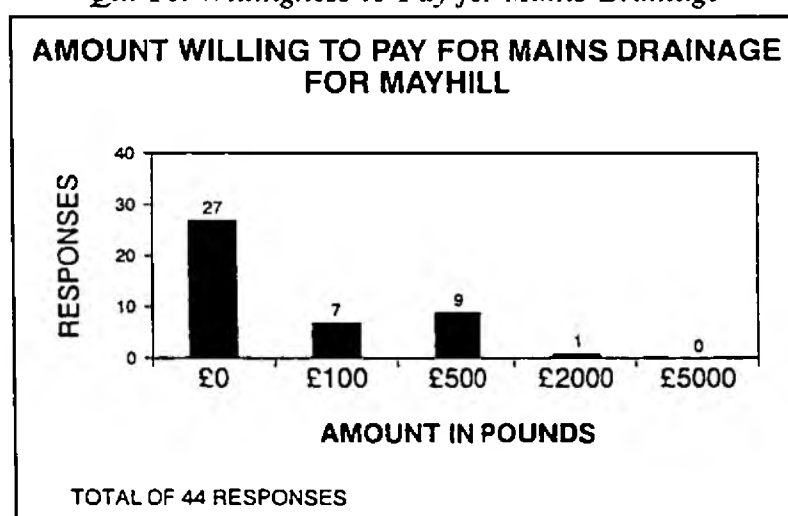
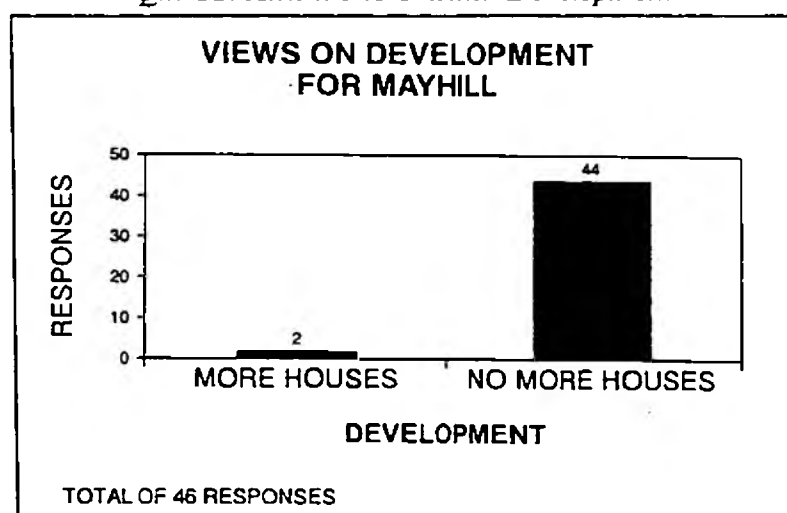
TOTAL OF 57 RESPONSES

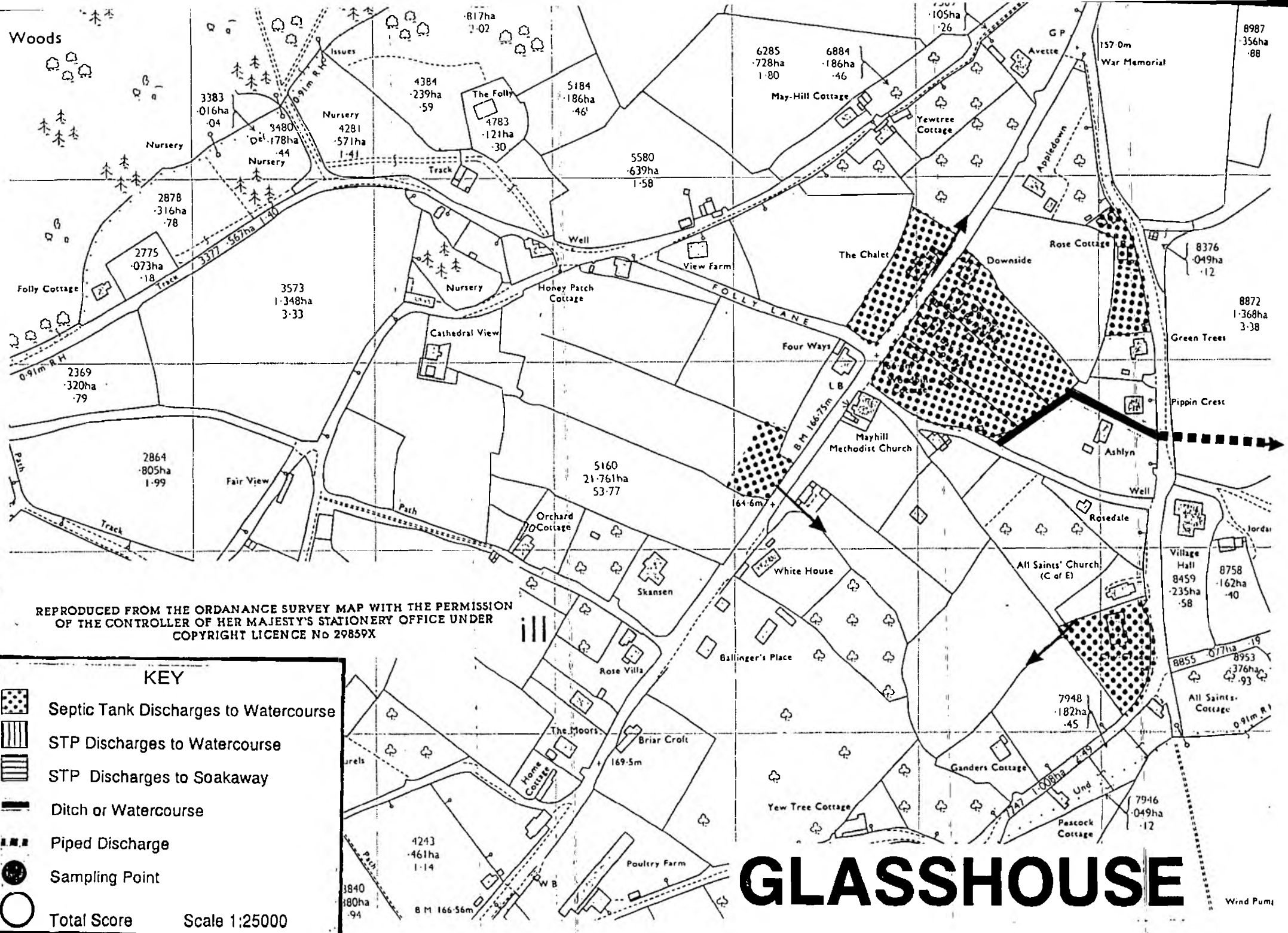
Qu.8: Attitude to Drainage Problems



TOTAL OF 47 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



9.3.6**Site 12: RODLEY****IMPACT SCORE: -*****Description***

Rodley is situated three miles to the west of Hardwicke, on the meandering west bank of the River Severn (NGR: SO 745 115).

Soil Drainage Characteristics

The village lies on heavy clay, and drains to the River Severn. The soil type is a typical calcareous pelosol (4.11). The area has been classified as a Non-Aquifer site.

Development

Over the last ten year period there have been six applications for development in Rodley, but none of these have been granted.

Foul Drainage

All properties in Rodley are served by septic tank/soakaway systems. Due to the high water table and impervious nature of the clay subsoil some of the septic tanks malfunction. It is thought that some of the overflows from the septic tanks may be connected to the highways drain.

Pollution

It was not possible to obtain water quality samples due to low flow conditions.

Environmental Health Complaints

The Forest of Dean District Council receive frequent environmental health complaints from this village.

VILLAGE NAME: RODLEY

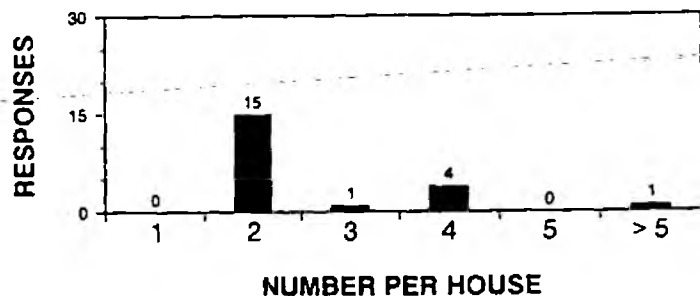
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING		
NO OF DISCHARGE POINTS		
NO OF HOUSES DISCHARGING AT SCORING POINT		
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT		
B.O.D. 10M D/S OF SCORING POINT		
AMMONIA 10M D/S OF SCORING POINT		
DISSOLVED OXYGEN 10M D/S OF SCORING POINT		
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT		
PUBLIC ACCESSIBILITY		
TOTAL SCORE		--

NUMBER OF QUESTIONNAIRES SENT OUT:	41
NUMBER OF QUESTIONNAIRES RETURNED:	21
PERCENTAGE OF QUESTIONNAIRES RETURNED:	52%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	28%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	30%

ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

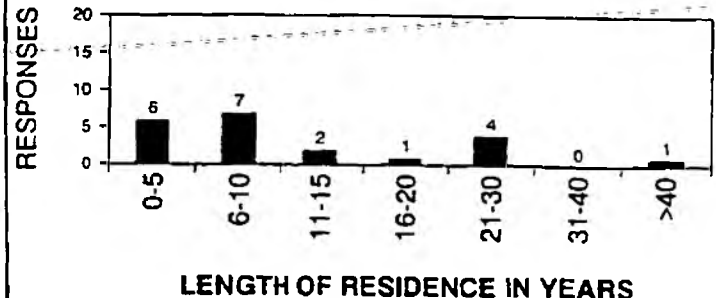
SIZE OF HOUSEHOLD FOR RODLEY



TOTAL OF 21 RESPONSES

Qu.4: Length of Residence in the Village

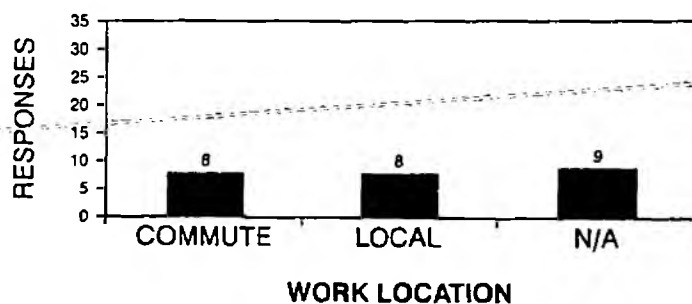
LENGTH OF RESIDENCE FOR RODLEY



TOTAL OF 21 RESPONSES

Qu.5: Work Location (if applicable)

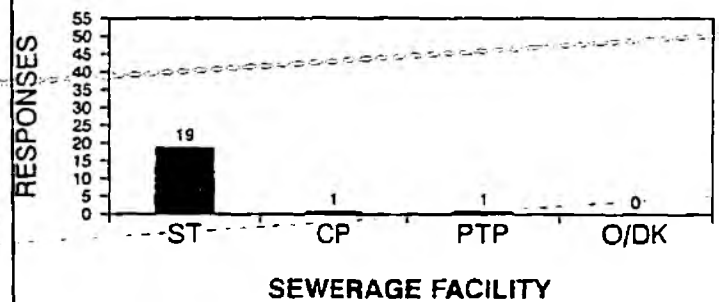
WORK LOCATION FOR RODLEY



TOTAL OF 25 RESPONSES

Qu.6: Type of Sewerage Facility

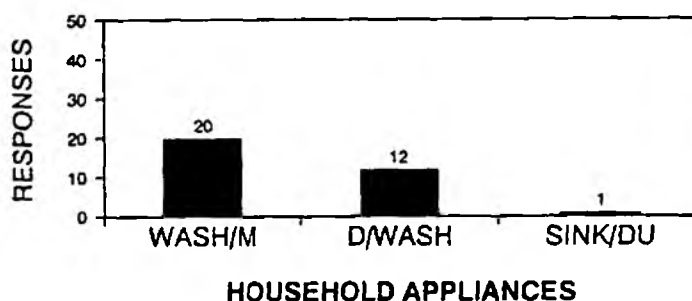
HOUSEHOLD SEWAGE SYSTEMS FOR RODLEY



TOTAL OF 21 RESPONSES

Qu.7: Water Consuming Appliances Used

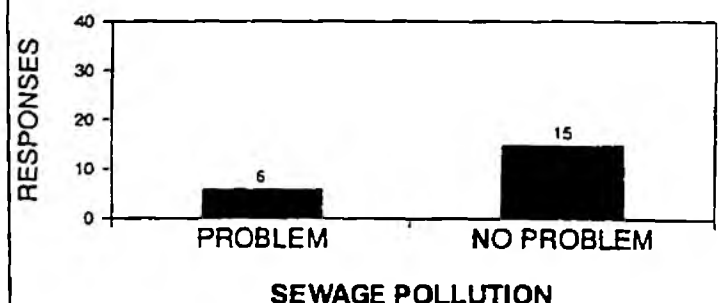
HOUSEHOLD APPLIANCES FOR RODLEY



TOTAL OF 33 RESPONSES

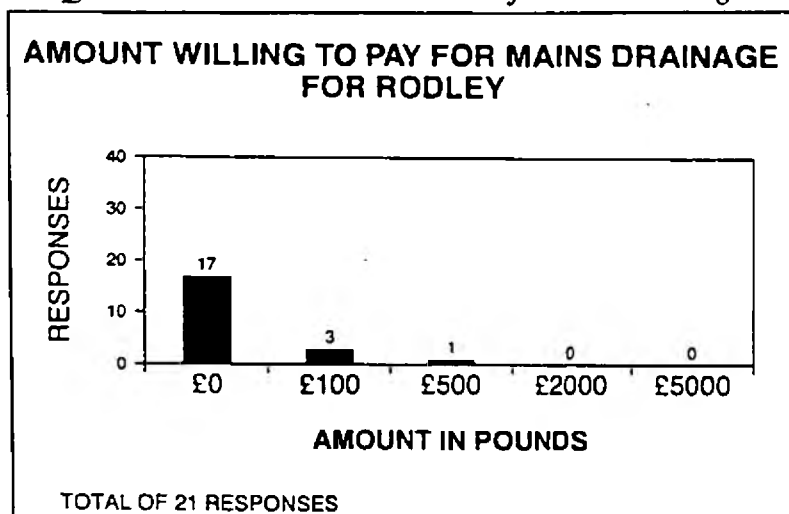
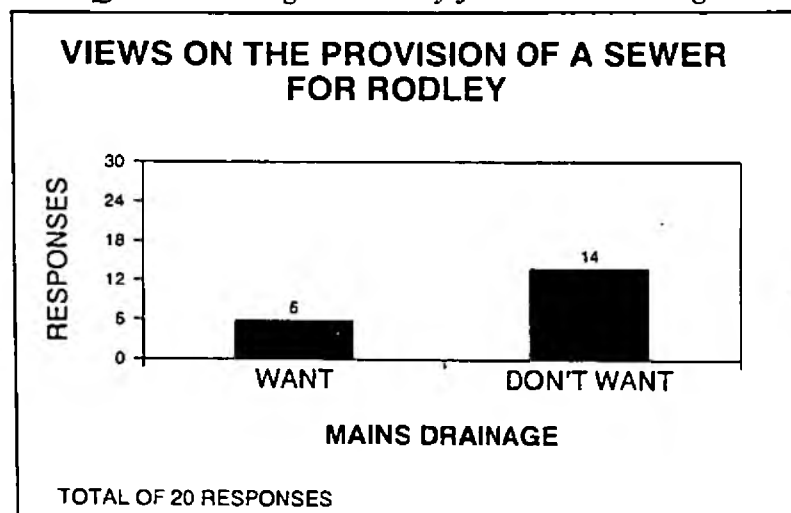
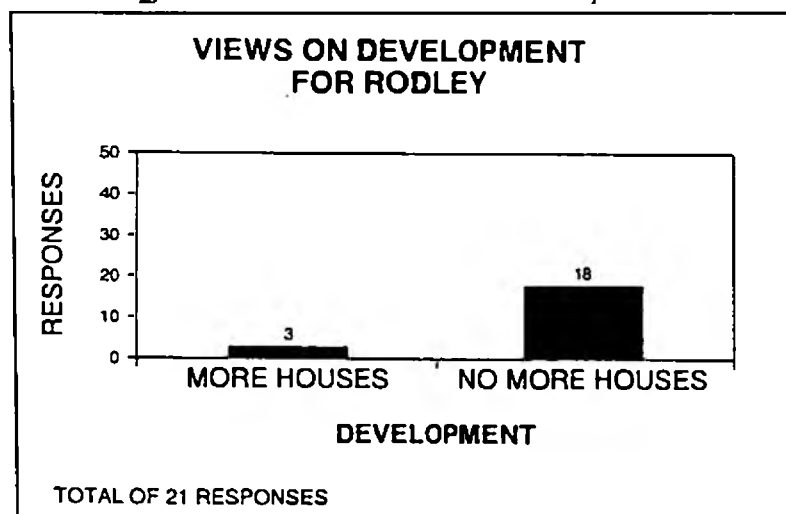
Qu.8: Attitude to Drainage Problems

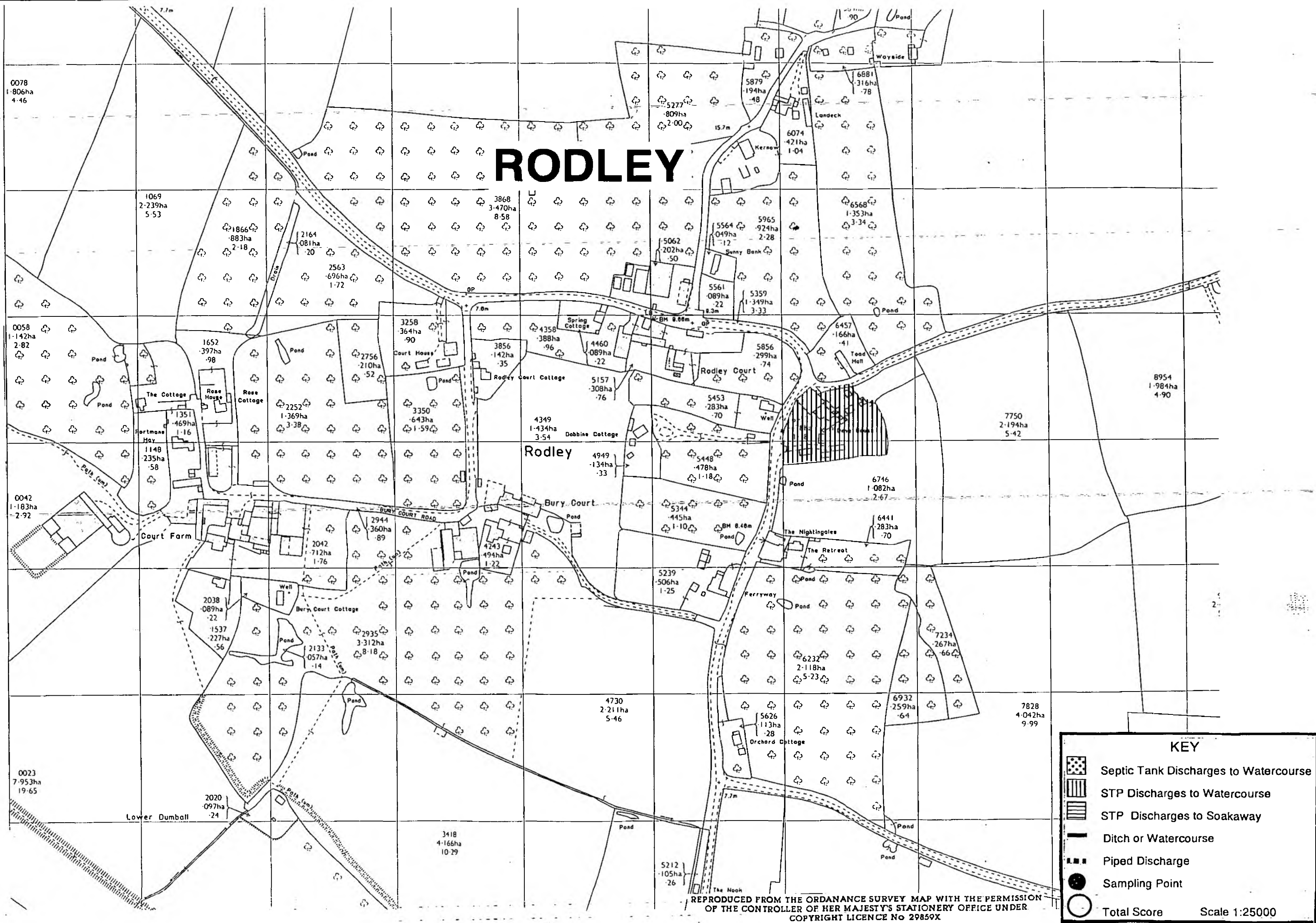
VIEW OF LOCAL SEWAGE POLLUTION FOR RODLEY



TOTAL OF 21 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



9.4 HARBOROUGH DISTRICT COUNCIL

Response to Questionnaire

- **Population of district:** 68,000
- **Population connected to the public sewerage system:** Estimate 65,000
- **Has your council adopted any formal policy towards provision of sewerage?**
Requisitions for the provision of first time sewerage have been undertaken by Harborough District Council 'on the back' of renewal schemes by Severn Trent Water. The Council has funded the requisition and the following villages have had a requisition element:

 Bruntingthorpe
 Peatling Parva
 Willoughby Waterleys
 Frolesworth
 North Kilworth
 South Kilworth
 Shawell
- **Does the council have an on going programme of first time sewerage schemes?**
There are very few groups of houses that are not now served by a sewerage system and the Council has no requirement for a programme of work.
- **Total value of first time sewerage schemes constructed in the last ten years.**
Requisition elements in schemes approximately £100,000.
- **Does the council own/maintain sewage plants/ sewerage systems in its own right?**
(Not as sewerage agents)
Septic Tank and filter at Halstead.

Impact Ranking Order of Villages Covered in the Survey		
Site 13.	Catthorpe	33

THIS PAGE IS BLANK

VILLAGE NAME: GREEN STREET

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	1-5	1
NO OF DISCHARGE POINTS	1-2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	3-4	2
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100-200M	5
B.O.D. 10M D/S OF SCORING POINT	18-40	4
AMMONIA 10M D/S OF SCORING POINT	5.1 - 20	4
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	>60	1
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		20

NUMBER OF QUESTIONNAIRES SENT OUT: 22

NUMBER OF QUESTIONNAIRES RETURNED: 16

PERCENTAGE OF QUESTIONNAIRES RETURNED: 72%

PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM: 42%

PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE: 40%

9.5.2

Site 15: GREEN STREET

IMPACT SCORE: 20

Description

Green street is situated to the East of Kempsey, adjacent to the M5. The village is linear in nature.

Soil Drainage Characteristics

The village lies on clay, and it drains to a tributary of the Hatfield Brook. The soil type is a stagnogleyic argillic brown earth (5.72). Under the Groundwater Vulnerability Classification the area has been given Non-Aquifer status.

Development

Development has been in the form of infilling and minor consolidation. One property has been built over the last ten years.

Foul Drainage

Four properties in the village are served by small package treatment plants. All other properties are served by septic tank/soakaway systems.

Pollution

Polluted conditions were found at two main points in the village. At the scoring point water quality samples were found to be indicative of a Class 4 watercourse (see table).

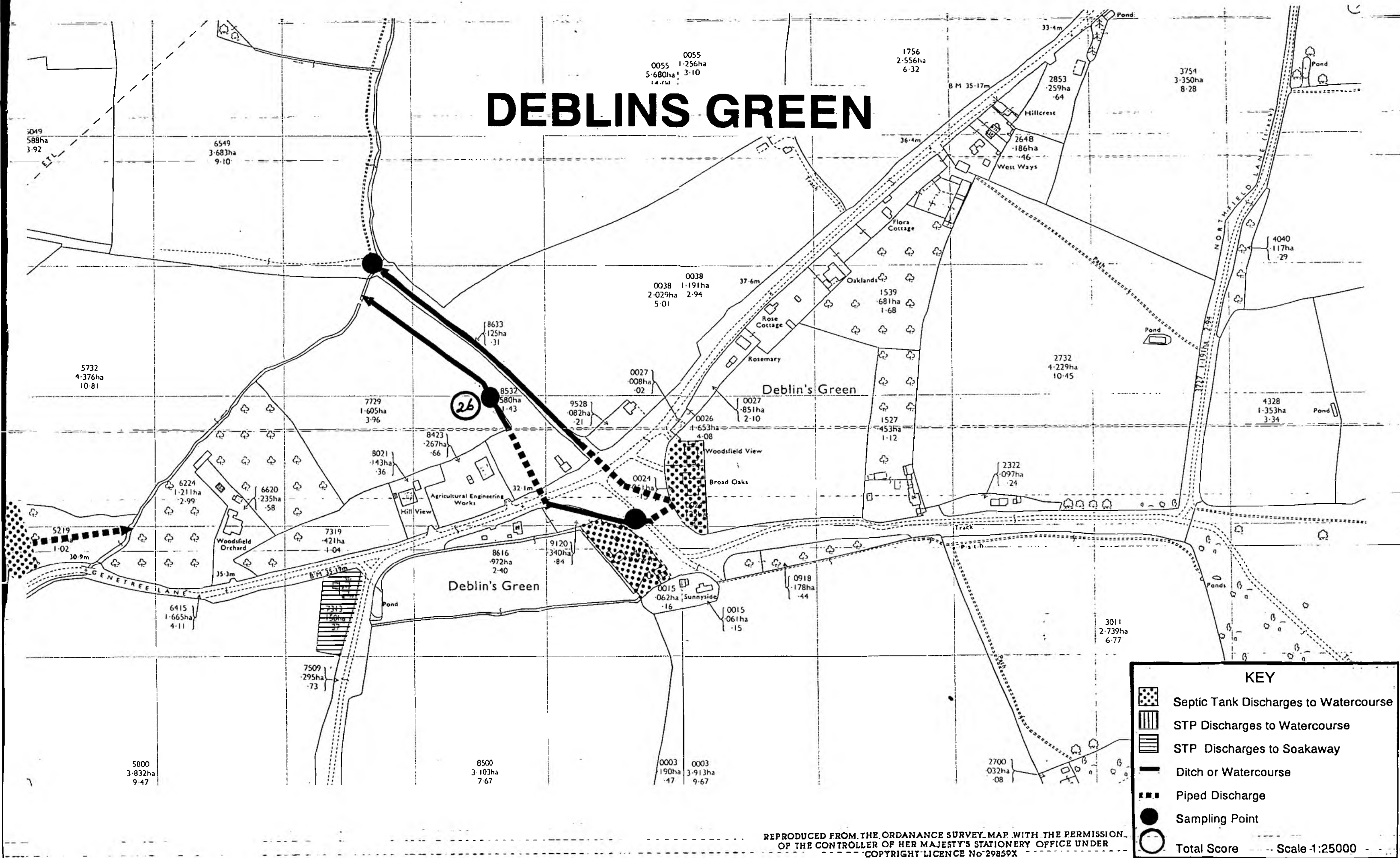
WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
12.6	25	16	83

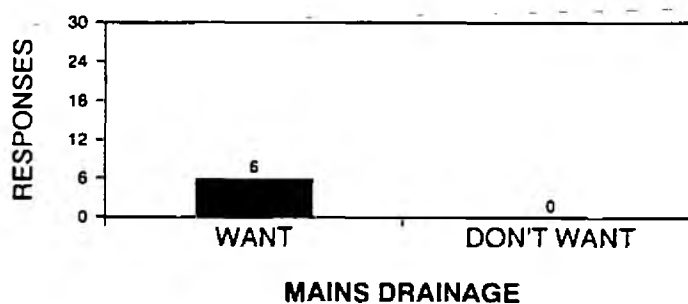
Environmental Health Complaints

Malvern Hills District Council receive regular environmental health complaints from this village.

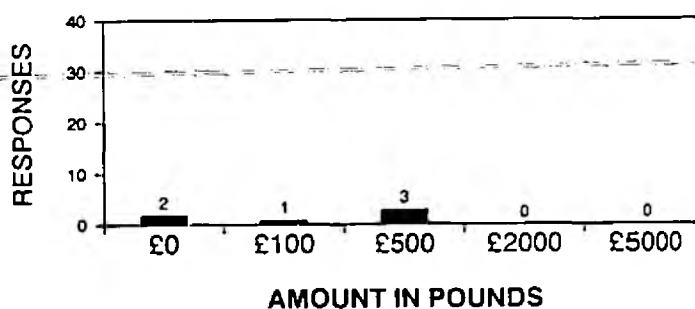
DEBLINS GREEN



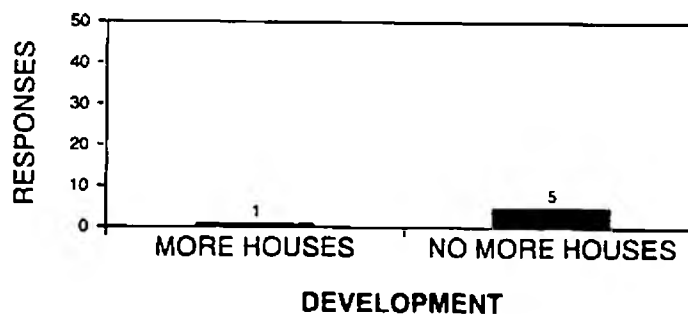
ANALYSIS OF QUESTIONNAIRE

*Qu. 9. Attitude to the Provision of Mains Drainage***VIEWS ON THE PROVISION OF A SEWER
FOR DEBLINS GREEN**

TOTAL OF 6 RESPONSES

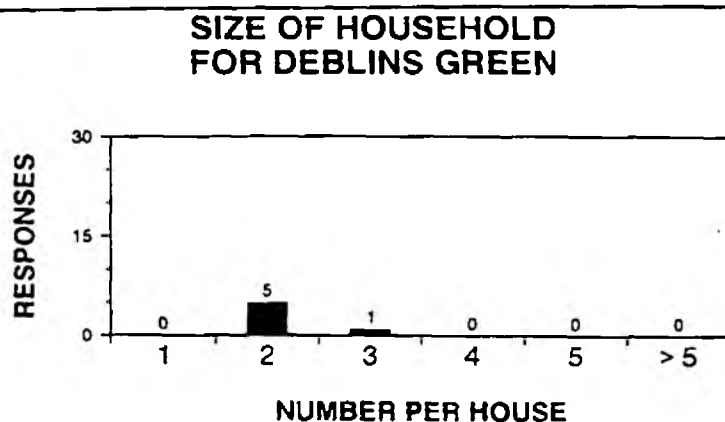
*Qu. 10. Willingness to Pay for Mains Drainage***AMOUNT WILLING TO PAY FOR MAINS DRAINAGE
FOR DEBLINS GREEN**

TOTAL OF 6 RESPONSES

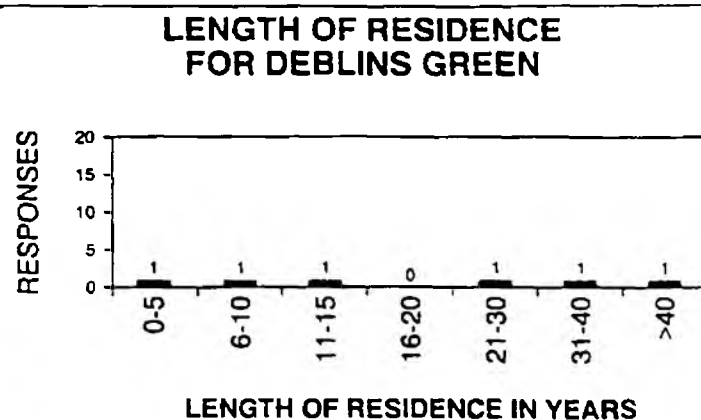
*Qu. 11. Attitude to Further Development***VIEWS ON DEVELOPMENT
FOR DEBLINS GREEN**

TOTAL OF 6 RESPONSES

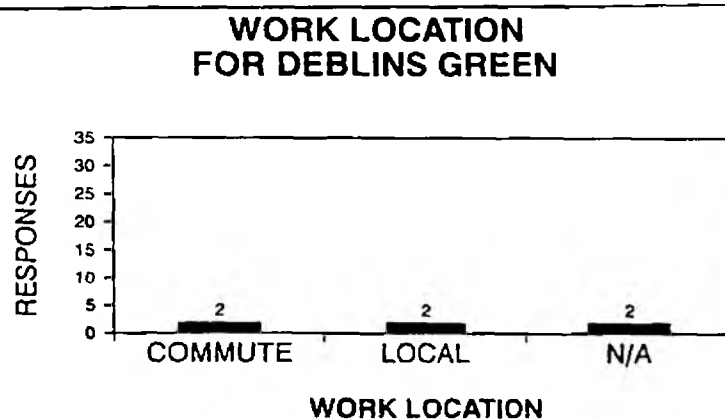
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

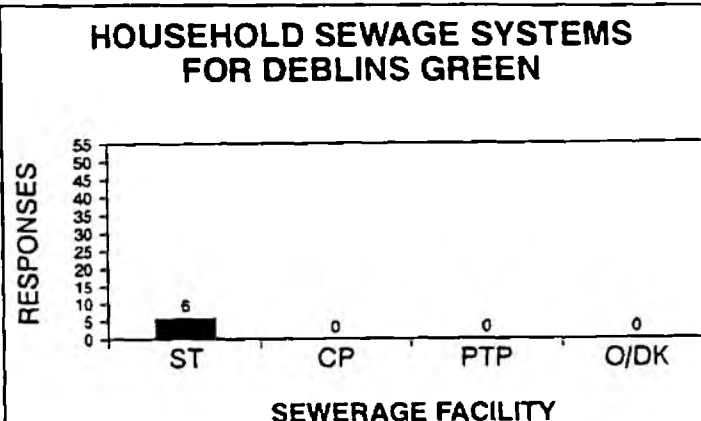
TOTAL OF 6 RESPONSES

Qu.4: Length of Residence in the Village

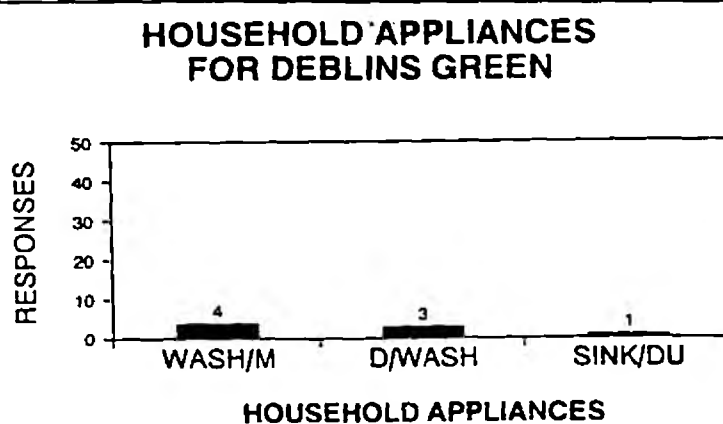
TOTAL OF 6 RESPONSES

Qu.5: Work Location (if applicable)

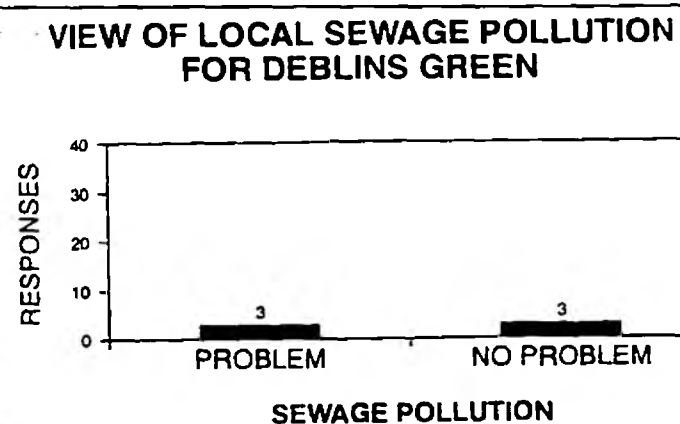
TOTAL OF 6 RESPONSES

Qu.6: Type of Sewerage Facility

TOTAL OF 6 RESPONSES

Qu.7: Water Consuming Appliances Used

TOTAL OF 8 RESPONSES

Qu.8: Attitude to Drainage Problems

TOTAL OF 6 RESPONSES

VILLAGE NAME: DEBLINS GREEN

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	6 - 10	2
NO OF DISCHARGE POINTS	3 - 4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	3 - 4	2
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>200M	10
B.O.D. 10M D/S OF SCORING POINT	5 - 9	2
AMMONIA 10M D/S OF SCORING POINT	5.1 - 20	4
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	60 - 41	2
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		26

NUMBER OF QUESTIONNAIRES SENT OUT:

17

NUMBER OF QUESTIONNAIRES RETURNED:

6

PERCENTAGE OF QUESTIONNAIRES RETURNED:

35%

PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE
POLLUTION IS A PROBLEM:

50%

PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:

100%

9.5.1**Site 14: DEBLINS GREEN****IMPACT SCORE: 26*****Description***

Deblins Green is a linear settlement situated approximately two miles west of Callow End (NGR SO 817 493).

Soil Drainage Characteristics

The village lies on clay, and drains to a tributary of the Carey's Brook. The soil type is a stagnogleyic argillic brown earth (5.72). Under the Groundwater Vulnerability Classification this area has been given Non-Aquifer status.

Development

Three properties have been built in the last ten years.

Foul Drainage

All properties in the village are served by septic tank/soakaway systems. Due to the impervious nature of the clay subsoil some of these malfunction, especially around the village green.

Pollution

Polluted conditions were found at three main points in the village, with a contribution from six properties. At the scoring point water quality samples were indicative of a Class 3 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
12.9	6.5	161	47

Environmental Health Complaints

Malvern Hills District Council receive occasional environmental health complaints from this village.

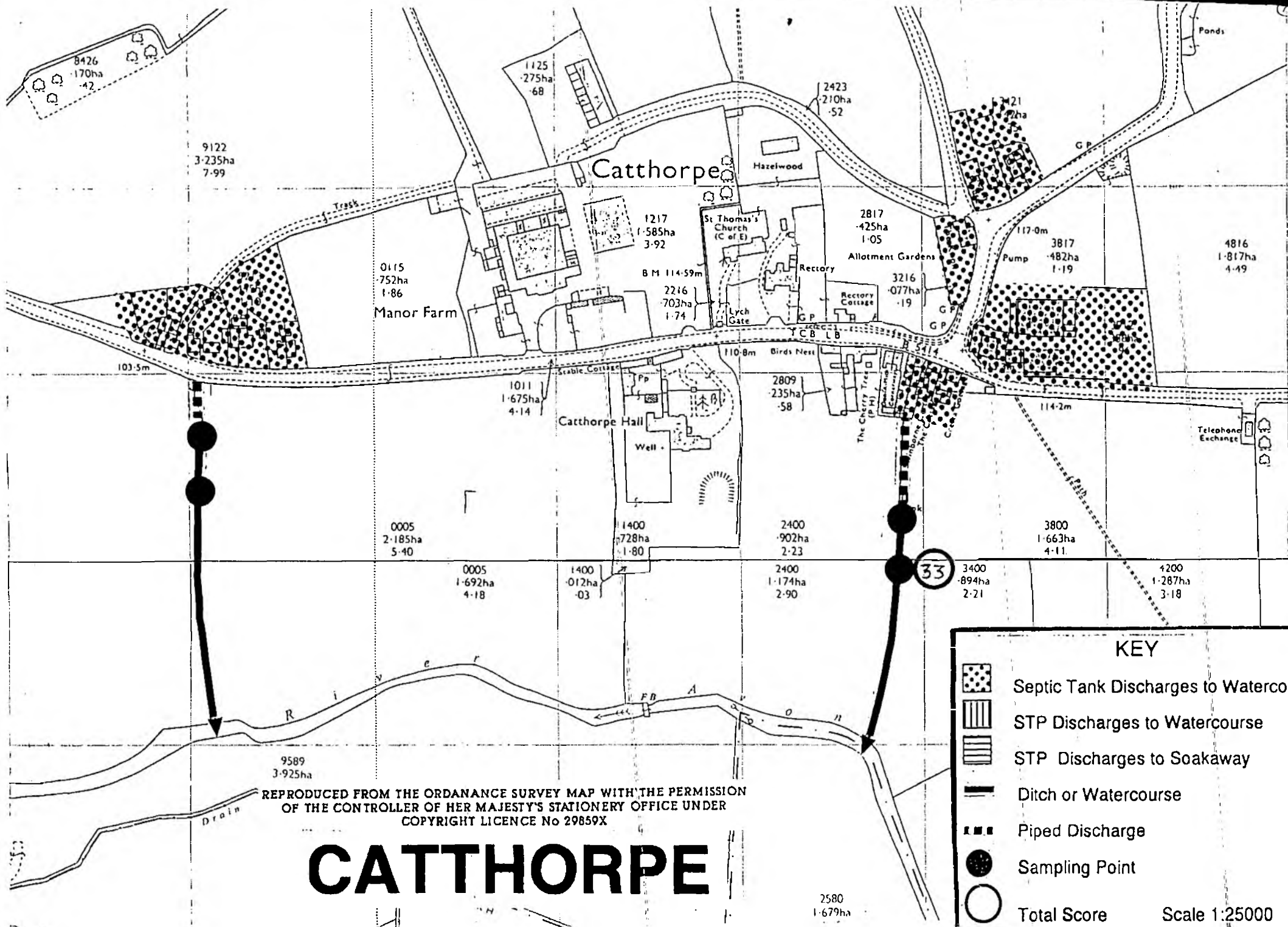
THIS PAGE IS BLANK

9.5 MALVERN HILLS DISTRICT COUNCIL

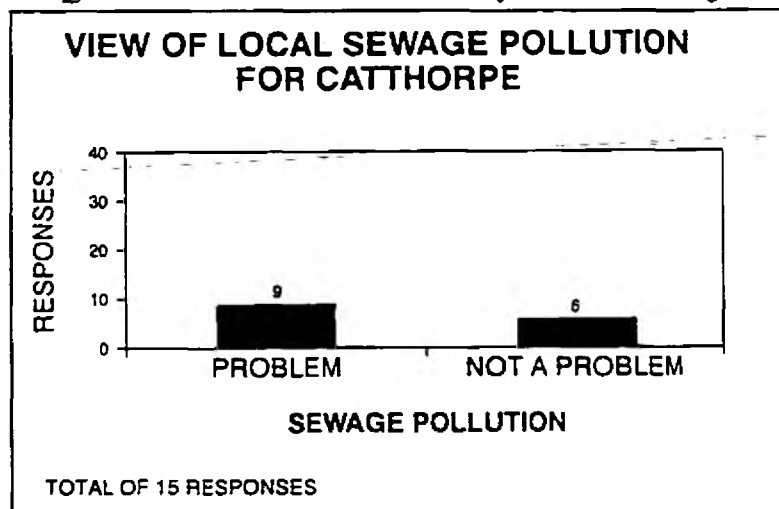
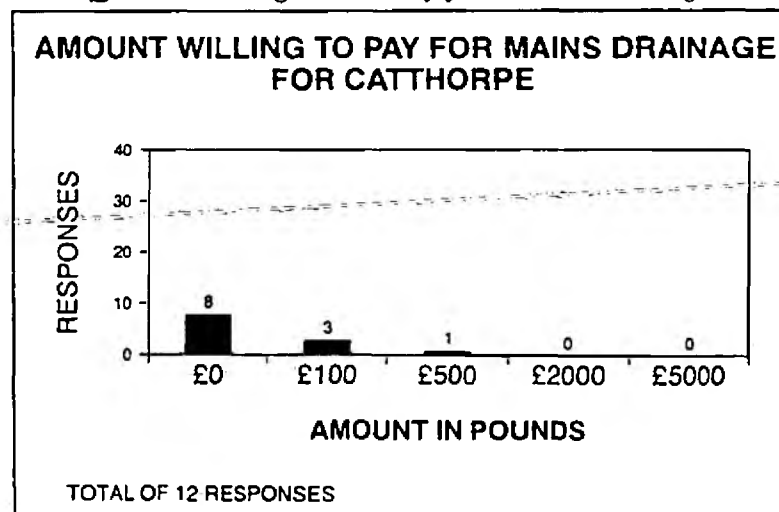
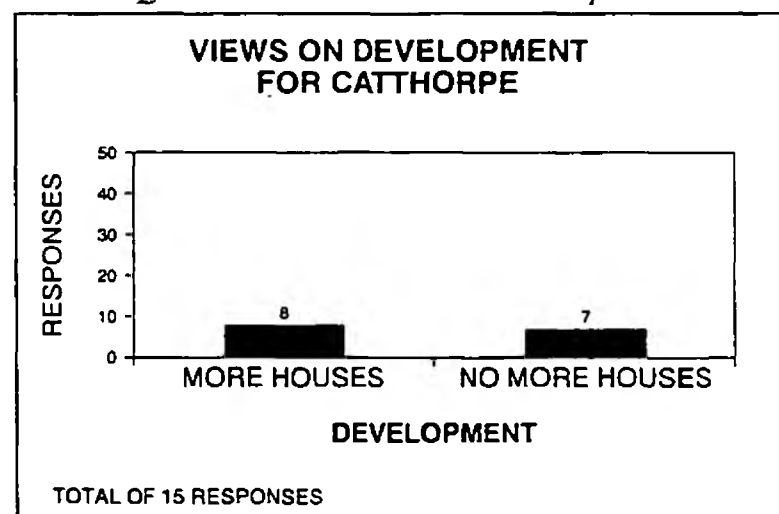
Response to Questionnaire

- **Population of District:** 90,000
- **Population connected to the sewerage system:**
No information available.
- **Policy towards provision of sewerage:**
No information available.
- **Does the council have an on-going programme of first time sewerage schemes?**
No.
- **Total value of first time sewerage schemes constructed in the last ten years?**
None.
- **Does the council own/maintain sewage plants/sewerage systems in its own right?**
(Not as sewerage agents)
Some are Malvern Hills District Council owned and maintained. Some have been adopted by the water company; and some will be adopted in the future.

Impact Ranking Order of Villages Covered in the Survey		
Site 16.	Long Green	33
Site 17.	Much Marcle	31
Site 47.	High Green	29
Site 14.	Deblins Green	26
Site 15.	Green Street	20

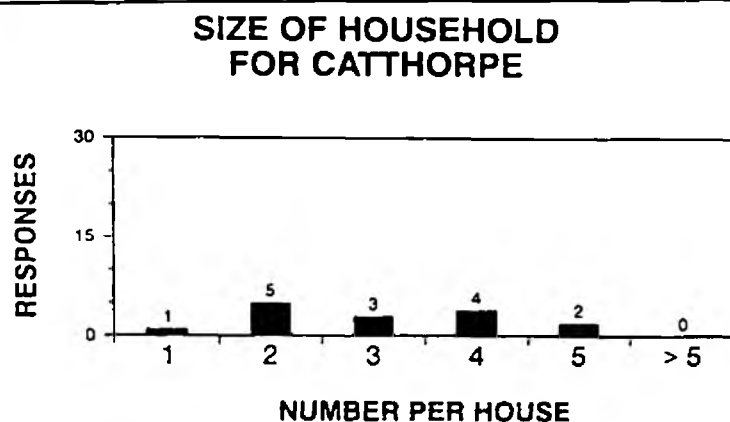


ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

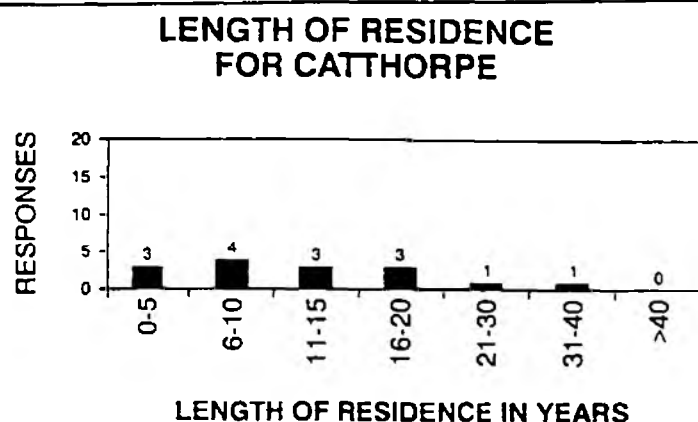
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property



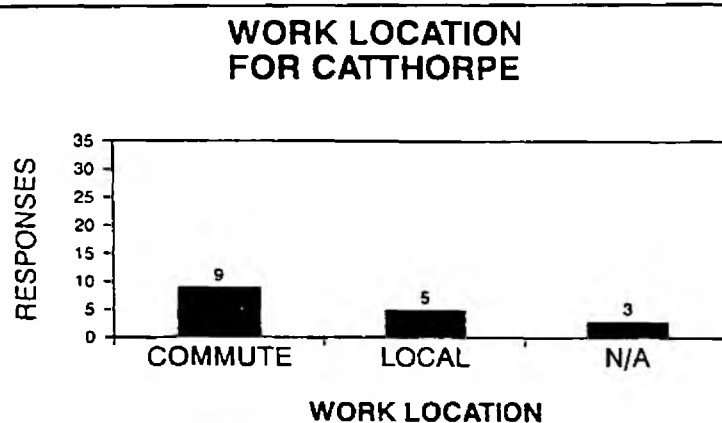
TOTAL OF 15 RESPONSES

Qu.4: Length of Residence in the Village



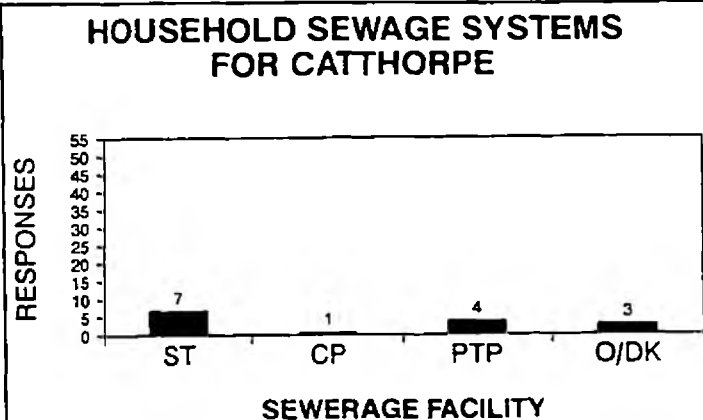
TOTAL OF 15 RESPONSES

Qu.5: Work Location (if applicable)



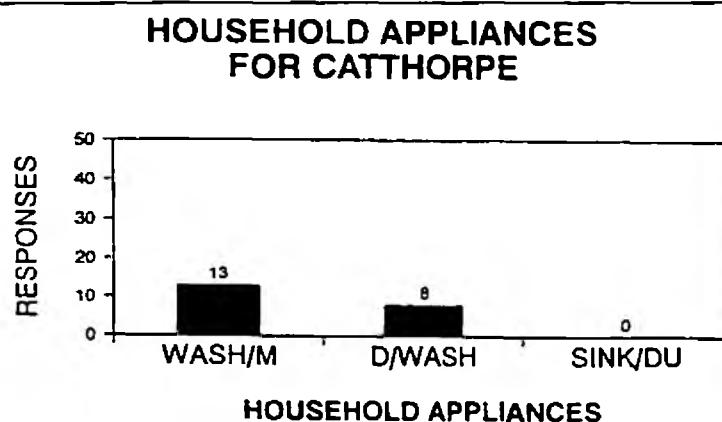
TOTAL OF 17 RESPONSES

Qu.6: Type of Sewerage Facility



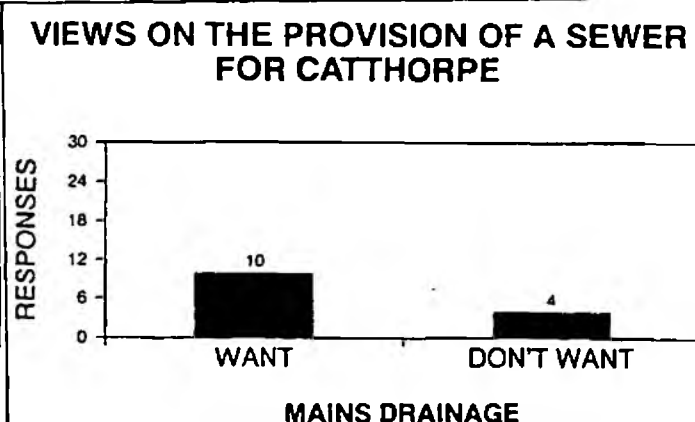
TOTAL OF 15 RESPONSES

Qu.7: Water Consuming Appliances Used



TOTAL OF 21 RESPONSES

Qu.8: Attitude to Drainage Problems



TOTAL OF 14 RESPONSES

VILLAGE NAME: CATTHORPE

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	11-20	3
NO OF DISCHARGE POINTS	1-2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	9-16	4
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100-200M	5
B.O.D. 10M D/S OF SCORING POINT	>40	5
AMMONIA 10M D/S OF SCORING POINT	>20	5
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	20-10	4
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	26-50M	4
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		33

NUMBER OF QUESTIONNAIRES SENT OUT:	25
NUMBER OF QUESTIONNAIRES RETURNED:	15
PERCENTAGE OF QUESTIONNAIRES RETURNED:	60%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	60%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	71%

9.4.1

Site 13: CATTHORPE

IMPACT SCORE: 33

Description

Catthorpe is situated two and a half miles north east of Rugby on the B 5414, on the north bank of the River Avon (NGR: SP 553 782).

Soil Drainage Characteristics

The village lies on gravel, and drains to the River Avon. The soil type is a typical stagnogley soil (7.11). Under the Groundwater Vulnerability Classification the area has been designated as a Minor Aquifer site.

Development

Over the past ten years there have been two properties built in this village. There is not much development pressure.

Foul Drainage

Overflows from septic tanks and direct foul connections discharge to one of two 'village drains' that have descriptive consents to a ditch leading to the River Avon.

Pollution

Polluted conditions were detected at two points in the village, with a contribution from nineteen properties. At the scoring point water quality samples were indicative of a Class 4 watercourse (see table).

WATER QUALITY INFORMATION

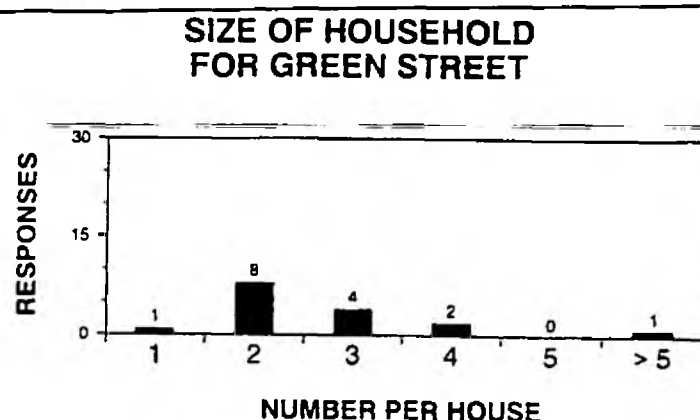
Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
87	254	205	13

Environmental Health Complaints

Harborough District Council do not receive any environmental health complaints from this village.

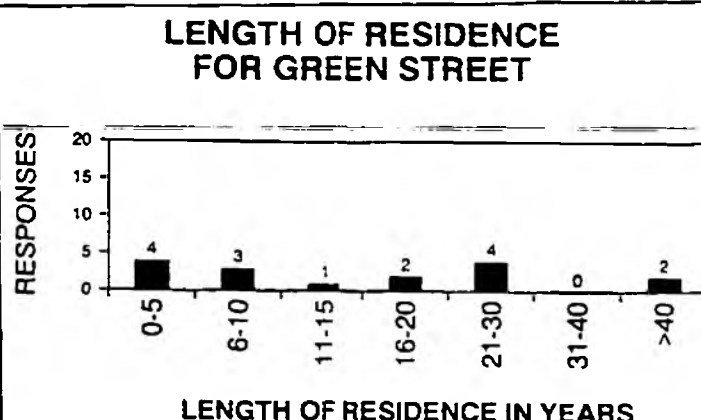
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property



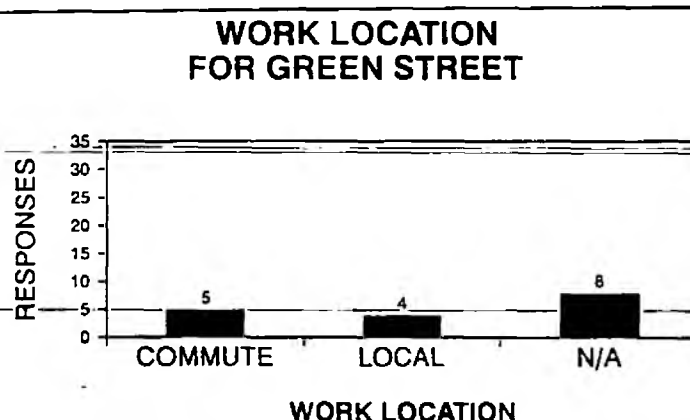
TOTAL OF 16 RESPONSES

Qu.4: Length of Residence in the Village



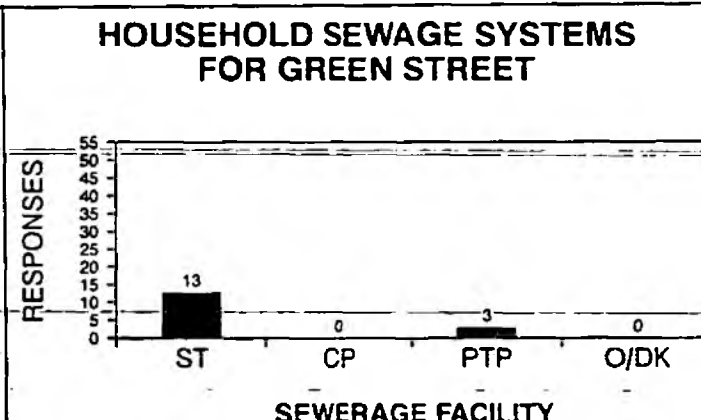
TOTAL OF 16 RESPONSES

Qu.5: Work Location (if applicable)



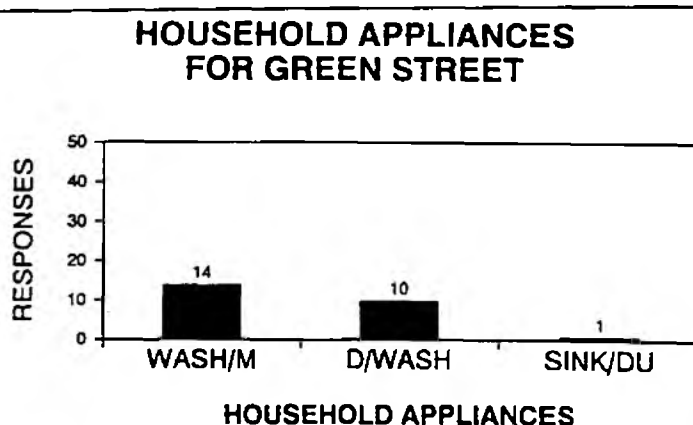
TOTAL OF 17 RESPONSES

Qu.6: Type of Sewerage Facility



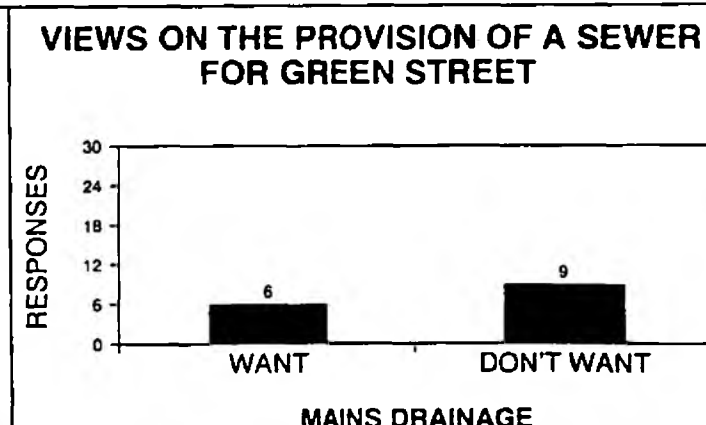
TOTAL OF 16 RESPONSES

Qu.7: Water Consuming Appliances Used



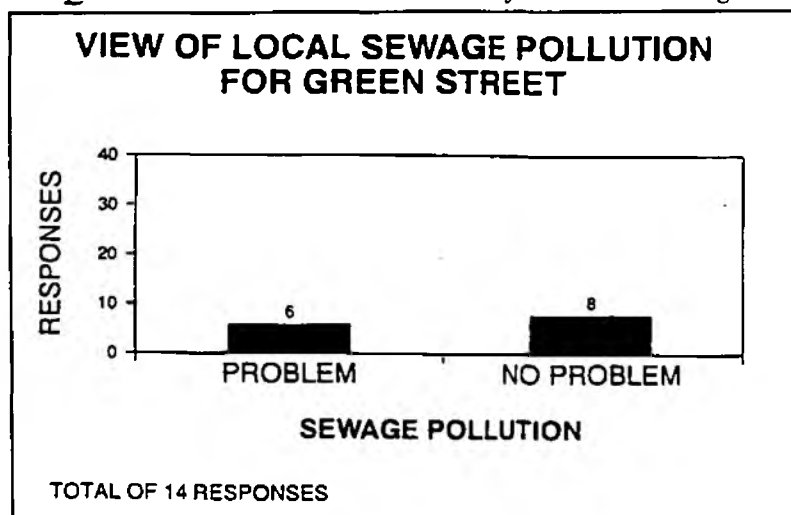
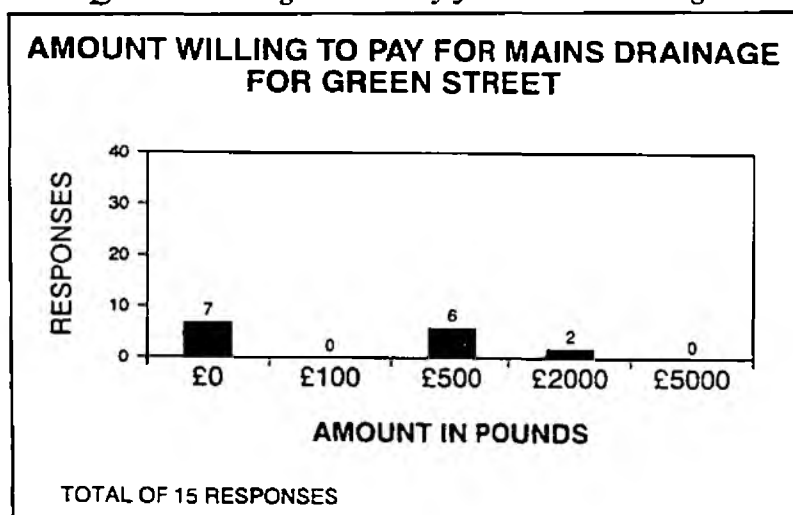
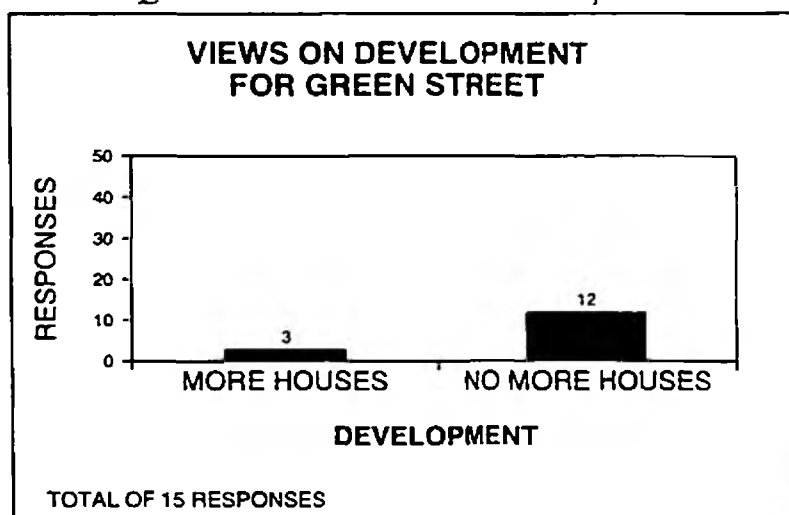
TOTAL OF 25 RESPONSES

Qu.8: Attitude to Drainage Problems



TOTAL OF 15 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

9.5.3

Site 47: HIGH GREEN

IMPACT SCORE: 29

Description

High Green is situated four miles south of Worcester to the East side of the M5(NGR SO: 874 452). The village is centred around Croome Estate Office.

Soil Drainage Characteristics

The village lies on heavy clay, and drains partly to the Ripple Brook and partly to a small tributary of the Avon. The soil type is a stagnogleyic argillic brown earth (5.72). Under the Groundwater Vulnerability Classification the area has been defined as a Non-Aquifer area.

Development

No information available.

Foul Drainage

All properties in the village are served by septic tank systems. Septic effluent from houses to the west side of the village overflow to a ditch that runs underneath the M5 to a tributary of the Avon. Effluent from properties to the East side of the village discharge to a ditch leading to the Ripple Brook.

Pollution

Polluted conditions were detected at two main points in the village, with contributions from seventeen properties. At the scoring point water quality samples were indicative of a Class 4 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
37.1	126	162	34

Environmental Health Complaints

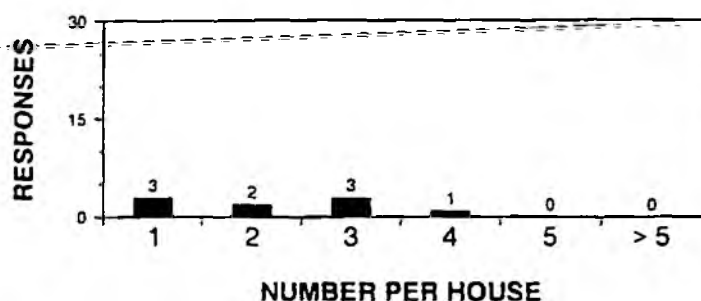
No information available.

VILLAGE NAME: HIGH GREEN

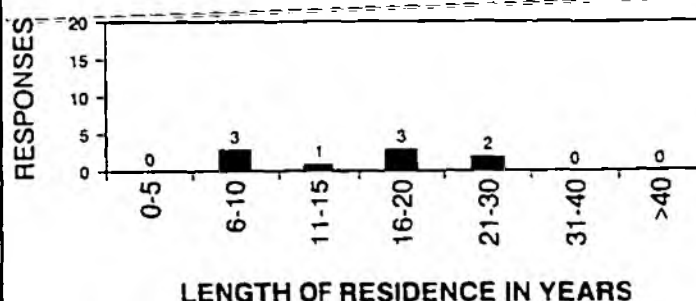
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	11-20	3
NO OF DISCHARGE POINTS	3-4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	9-16	4
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100-200M	5
B.O.D. 10M D/S OF SCORING POINT	>40	5
AMMONIA 10M D/S OF SCORING POINT	>20	5
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	40-21	3
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	OUTLET	1
PUBLIC ACESSIBILITY	LOW	1
TOTAL SCORE		29

NUMBER OF QUESTIONNAIRES SENT OUT:	21
NUMBER OF QUESTIONNAIRES RETURNED:	9
PERCENTAGE OF QUESTIONNAIRES RETURNED:	42%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	22%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	22%

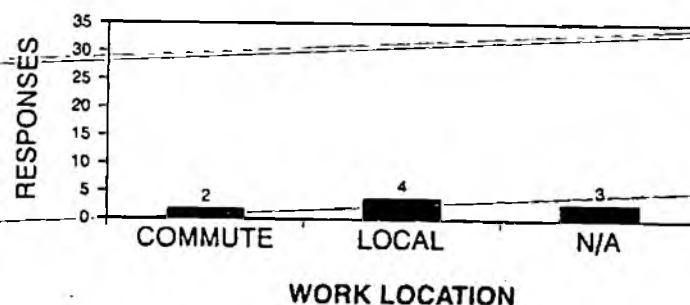
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property*SIZE OF HOUSEHOLD
FOR HIGH GREEN

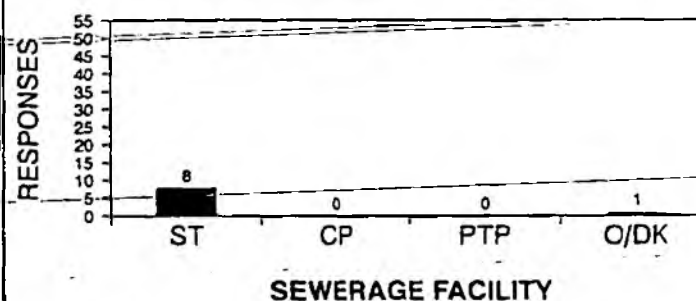
TOTAL OF 9 RESPONSES

*Qu.4: Length of Residence in the Village*LENGTH OF RESIDENCE
FOR HIGH GREEN

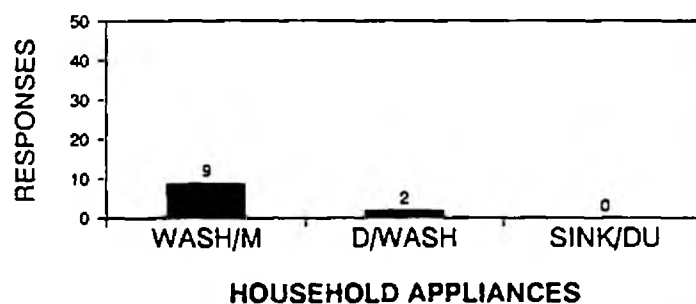
TOTAL OF 9 RESPONSES

*Qu.5: Work Location (if applicable)*WORK LOCATION
FOR HIGH GREEN

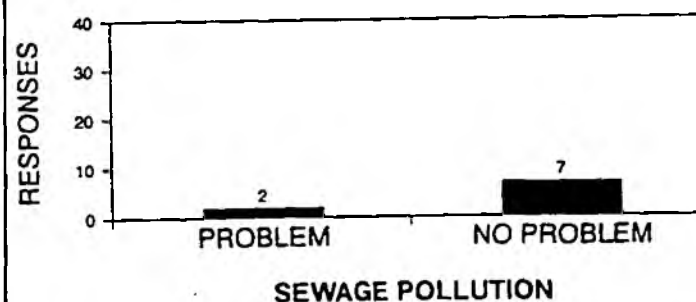
TOTAL OF 9 RESPONSES

*Qu.6: Type of Sewerage Facility*HOUSEHOLD SEWAGE SYSTEMS
FOR HIGH GREEN

TOTAL OF 9 RESPONSES

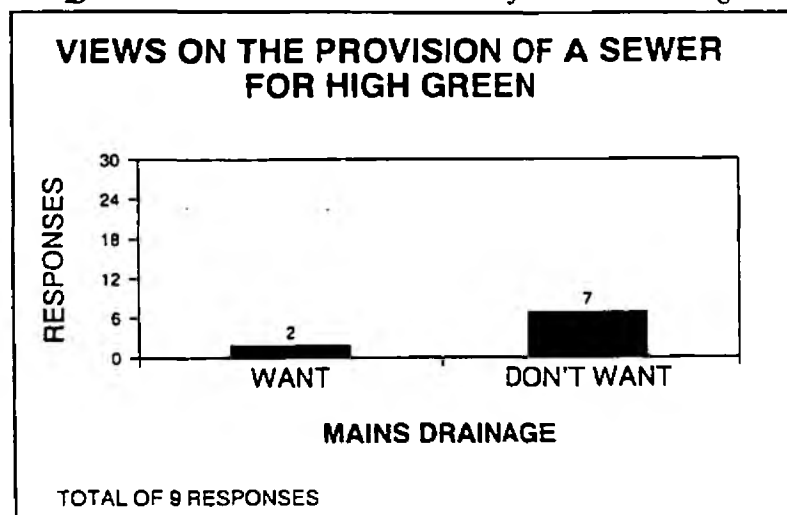
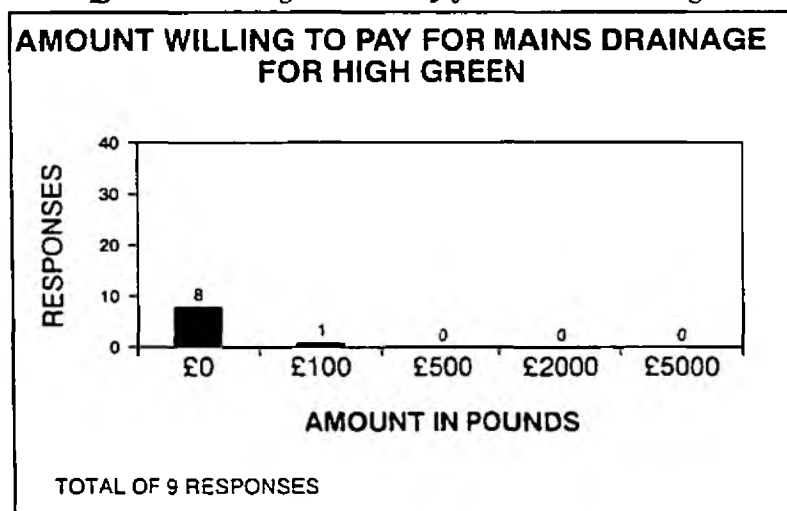
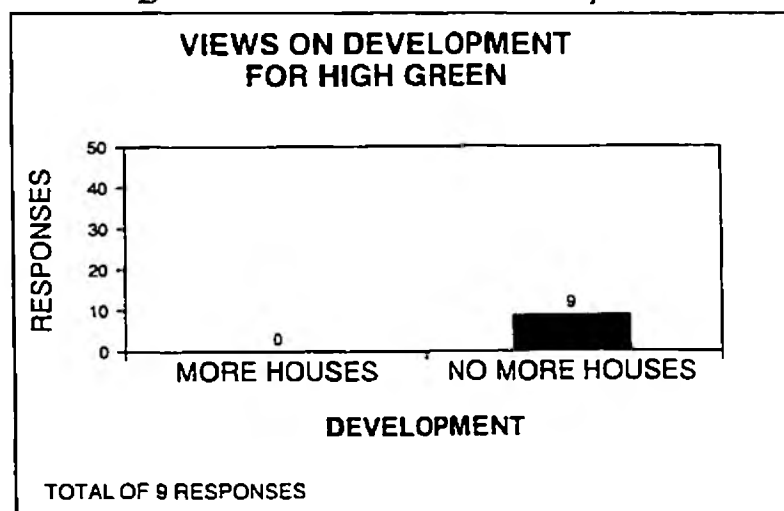
*Qu.7: Water Consuming Appliances Used*HOUSEHOLD APPLIANCES
FOR HIGH GREEN

TOTAL OF 11 RESPONSES

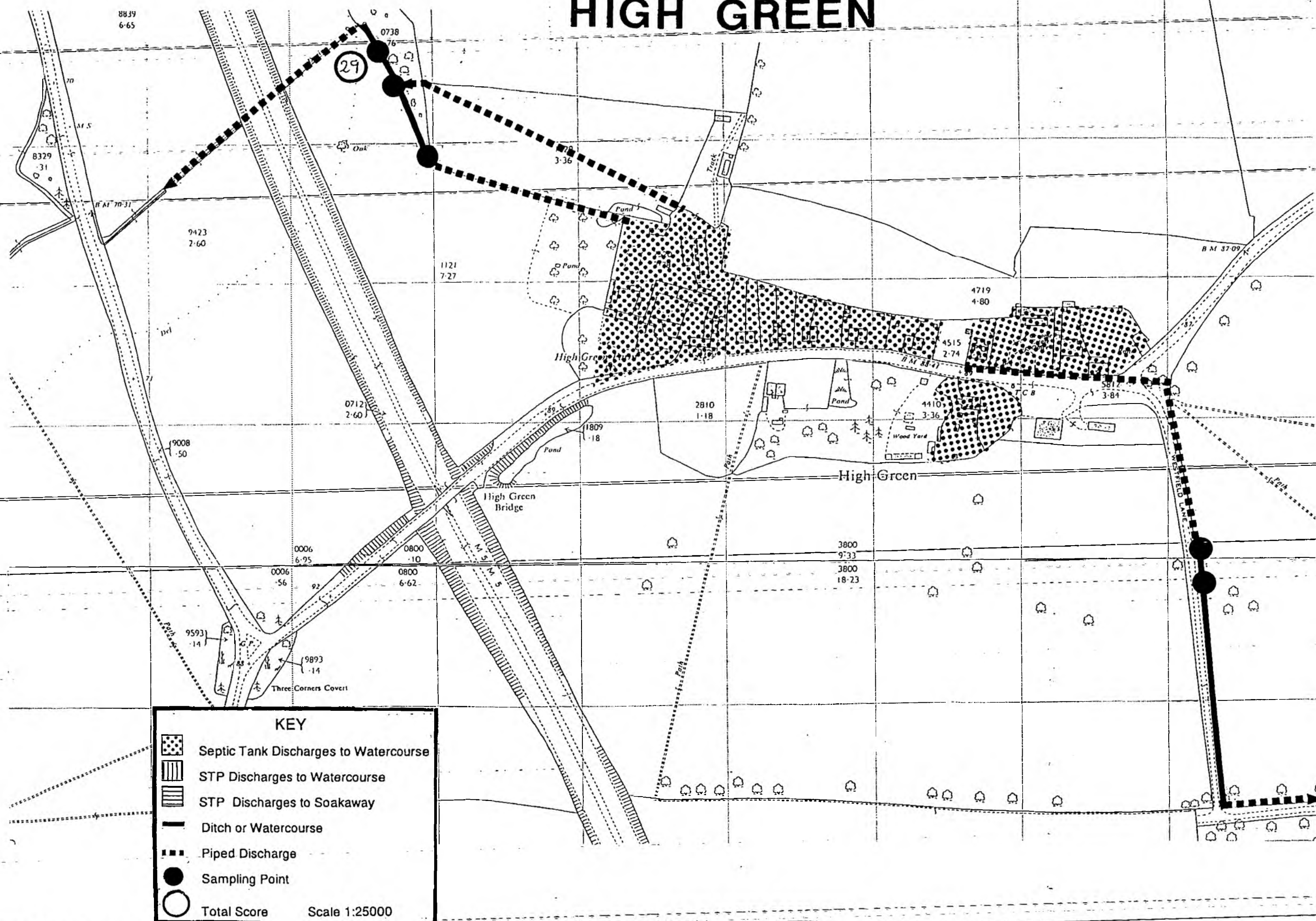
*Qu.8: Attitude to Drainage Problems*VIEW OF LOCAL SEWAGE POLLUTION
FOR HIGH GREEN

TOTAL OF 9 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

HIGH GREEN



REPRODUCED FROM THE ORDANANCE SURVEY MAP WITH THE PERMISSION
OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER
COPYRIGHT LICENCE No 29859X

9.5.4

Site 16: LONG GREEN

IMPACT SCORE: 33

Description

Long Green is a linear settlement and is situated to the West of Tewkesbury on the A438 (NGR SO 845 334).

Soil Drainage Characteristics

Long Green lies on sandstone and drains to a tributary of the Longdon Brook. The soil type is a typical stagnogley soil (7.11). Under the Groundwater Vulnerability Classification this area has been given Non-Aquifer status.

Development Pressure

Development has been in the form of infilling and minor consolidation. Detailed information has not been supplied.

Foul Drainage

The majority of properties in the village are served by septic tank/soakaway systems. Two of the council properties to the West side of the village have a shared Severn Trent septic tank system which goes to soakaway in a nearby wood. Property numbers 59 and 60 have recently installed a small package treatment plant, which has a consented discharge to the ditch behind the property.

Pollution

Polluted conditions were detected at one main point in the village. It is difficult to assess the number of houses contributing to this pollution because at the time of the visit, and on subsequent occasions, there was an input of farm effluent. This matter is now in hand. At the scoring point (not representative) water samples were indicative of a class four watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
21.8	37	61	39

Environmental Health Complaints

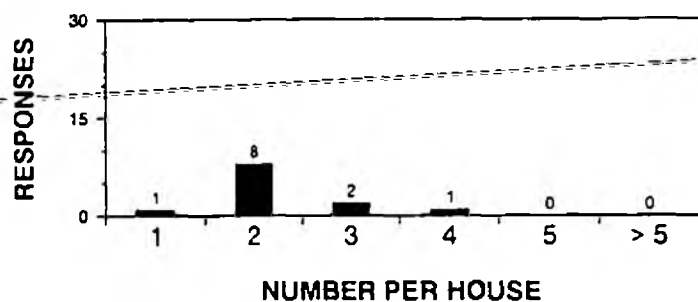
Malvern Hills District Council receive occasional environmental health complaints from this village.

VILLAGE NAME: LONG GREEN

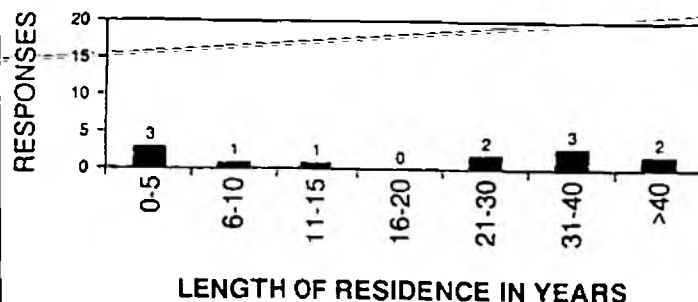
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	1-5	1
NO OF DISCHARGE POINTS	3-4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	1-2	1
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>400M	15
B.O.D. 10M D/S OF SCORING POINT	18-40	4
AMMONIA 10M D/S OF SCORING POINT	> 20	5
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	40-21	3
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		33

NUMBER OF QUESTIONNAIRES SENT OUT:	20
NUMBER OF QUESTIONNAIRES RETURNED:	12
PERCENTAGE OF QUESTIONNAIRES RETURNED:	60%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	90%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	81%

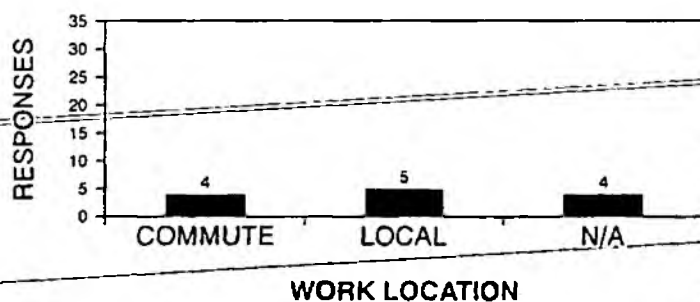
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property***SIZE OF HOUSEHOLD
FOR LONG GREEN**

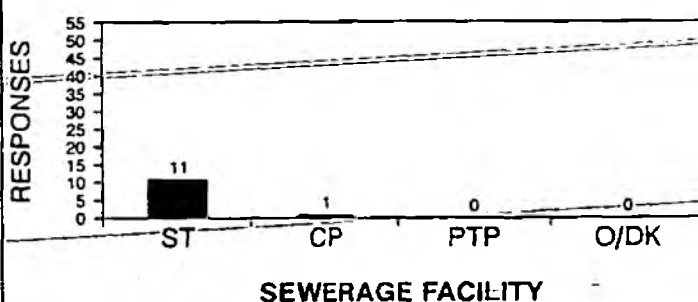
TOTAL OF 12 RESPONSES

*Qu.4: Length of Residence in the Village***LENGTH OF RESIDENCE
FOR LONG GREEN**

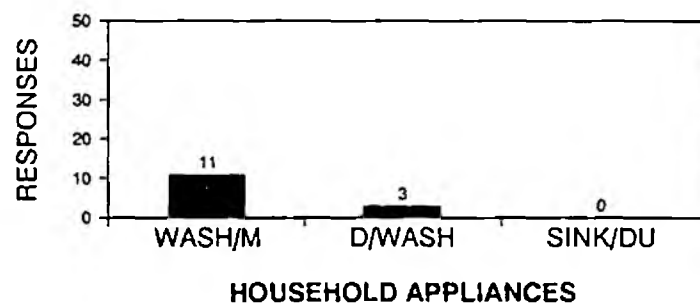
TOTAL OF 12 RESPONSES

*Qu.5: Work Location (if applicable)***WORK LOCATION
FOR LONG GREEN**

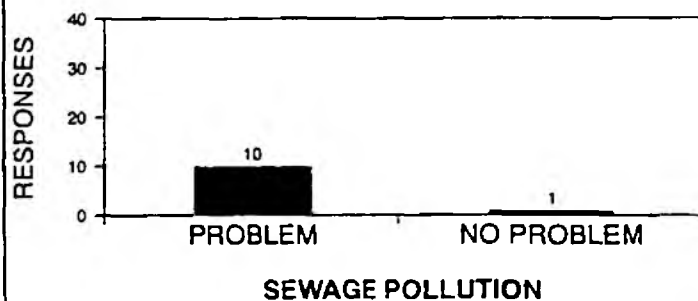
TOTAL OF 13 RESPONSES

*Qu.6: Type of Sewerage Facility***HOUSEHOLD SEWAGE SYSTEMS
FOR LONG GREEN**

TOTAL OF 12 RESPONSES

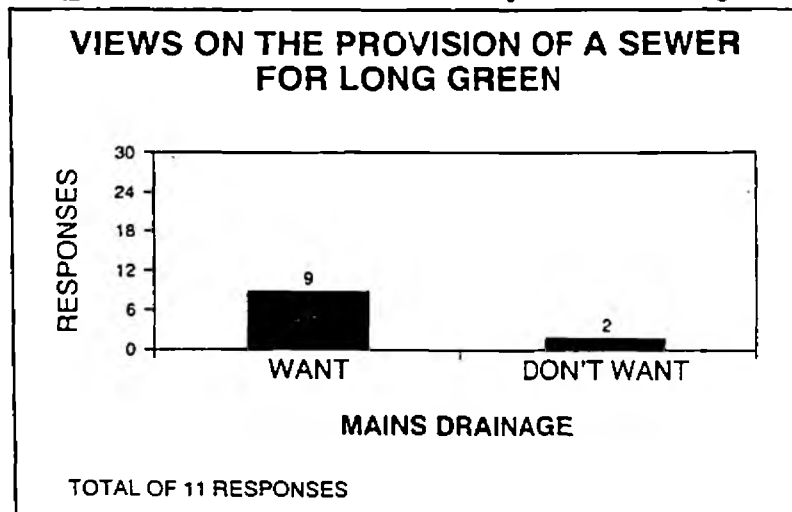
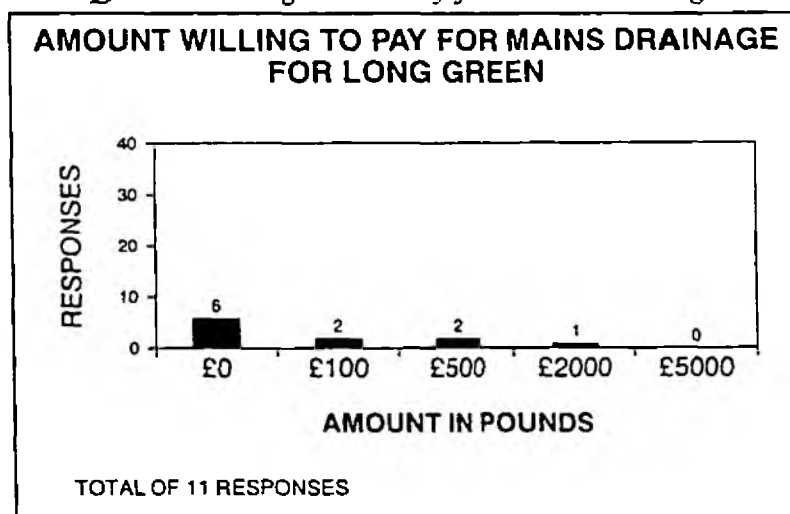
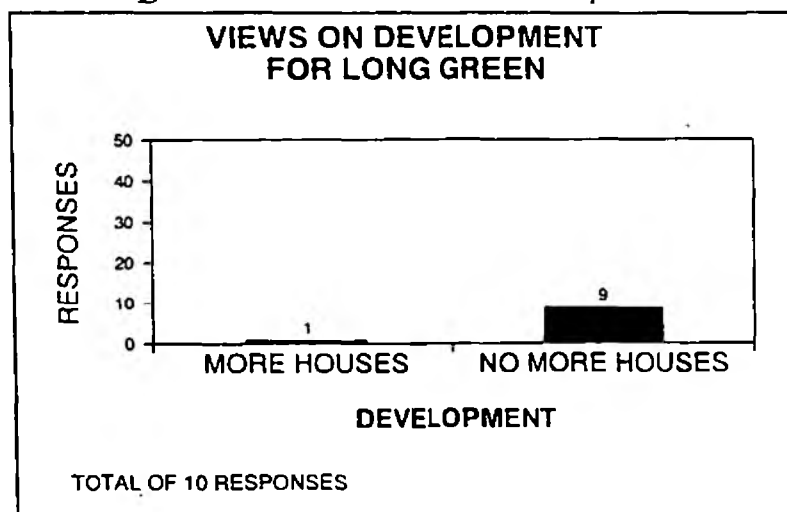
*Qu.7: Water Consuming Appliances Used***HOUSEHOLD APPLIANCES
FOR LONG GREEN**

TOTAL OF 14 RESPONSES

*Qu.8: Attitude to Drainage Problems***VIEW OF LOCAL SEWAGE POLLUTION
FOR LONG GREEN**








TOTAL OF 11 RESPONSES

ANALYSIS OF QUESTIONNAIRE

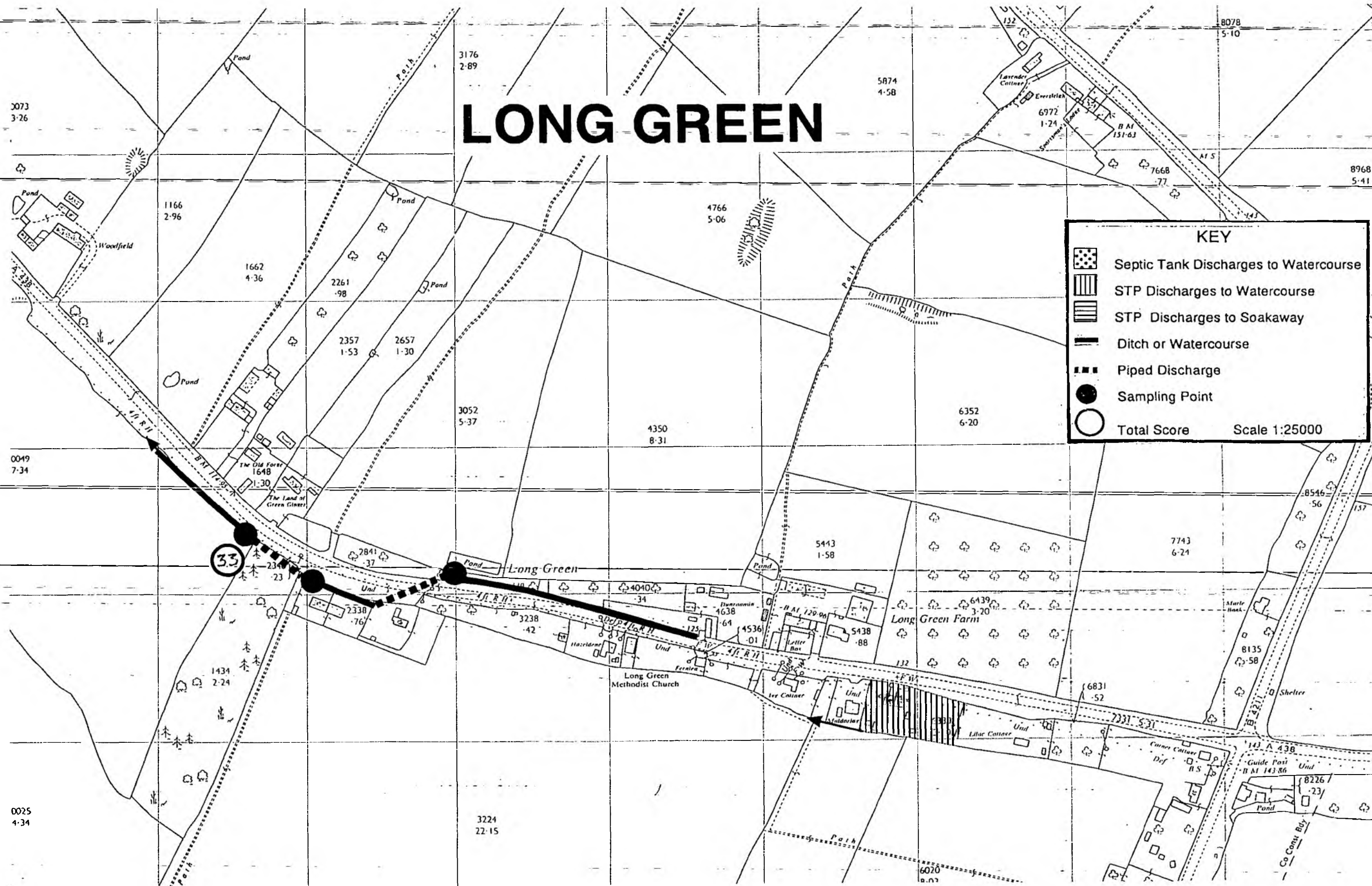
Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

LONG GREEN

KEY

-  Septic Tank Discharges to Watercourse
-  STP Discharges to Watercourse
-  STP Discharges to Soakaway
-  Ditch or Watercourse
-  Piped Discharge
-  Sampling Point
-  Total Score

Scale 1:25000



9.5.5

Site 17: MUCH MARCLE

IMPACT SCORE: 31

Description

Much Marcle is situated around the crossroads of the A449 and B4204, approximately four miles South-West of Ledbury (NGR: SO 656 328).

Soil Drainage Characteristics

The subsoil in the village is heavy clay, and the area drains to the Preston Brook. The soil type is a typical argillic brown earth (5.71). Under the Groundwater Vulnerability Classification this area has been given Non-Aquifer status.

Development

There is much pressure for development in this village. Although a Conservation Area was designated in June 1986, there has been considerable development over the past few years, with a number of infill and estate developments. Information from the 1991 Census recorded 220 dwellings in the parish, with 18 dwellings completed during the period 1981-1991. In addition, planning permission has been granted for a further 17 dwellings.

Foul Drainage

There is a proliferation of small package treatment plants in this area. Indeed, the new housing developments such as Monks Meadow, The Vicarage, and Glebe Orchard are served by package treatment plants. There is also a Malvern Hills District Council-run plant. The older part of the village is served by septic tank soakaway/systems. Some of the properties had overflows to the pond behind Phillips House, although this situation is being rectified.

Pollution

Polluted conditions were found at four main points in the village, with a contribution made from approximately eight properties. At the scoring point samples were found to be indicative of a Class 2 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
0.77	7.0	100	58

Environmental Health Complaints

Malvern Hills District Council receive occasional environmental health complaints from this village.

VILLAGE NAME: MUCH MARCLE

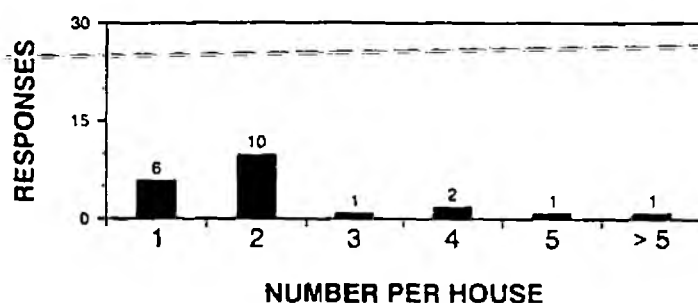
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	1-5	1
NO OF DISCHARGE POINTS	5-8	3
NO OF HOUSES DISCHARGING AT SCORING POINT	3-4	2
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>400M	15
B.O.D. 10M D/S OF SCORING POINT	5-9	2
AMMONIA 10M D/S OF SCORING POINT	0.7-2.5	2
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	60-41	2
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	OUTLET	1
PUBLIC ACCESSIBILITY	HIGH	3
TOTAL SCORE		31

NUMBER OF QUESTIONNAIRES SENT OUT:	40
NUMBER OF QUESTIONNAIRES RETURNED:	21
PERCENTAGE OF QUESTIONNAIRES RETURNED:	52%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	38%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	89%

ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

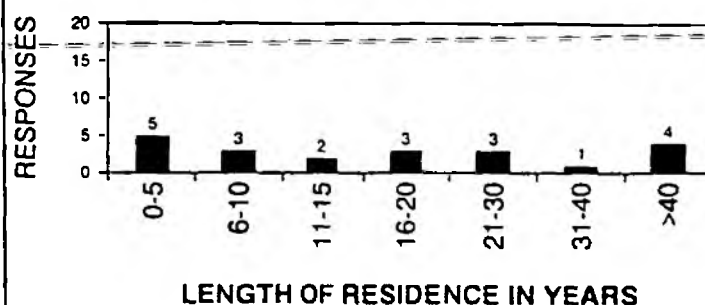
SIZE OF HOUSEHOLD FOR MUCH MARCLE



TOTAL OF 21 RESPONSES

Qu.4: Length of Residence in the Village

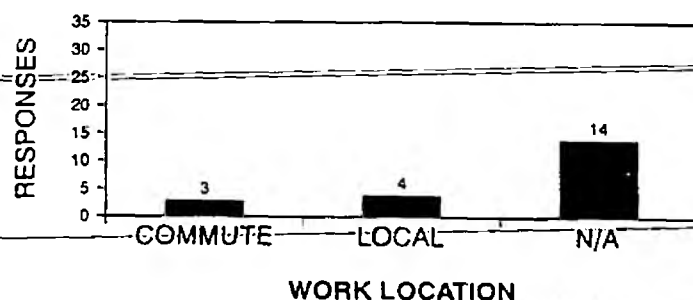
LENGTH OF RESIDENCE FOR MUCH MARCLE



TOTAL OF 21 RESPONSES

Qu.5: Work Location (if applicable)

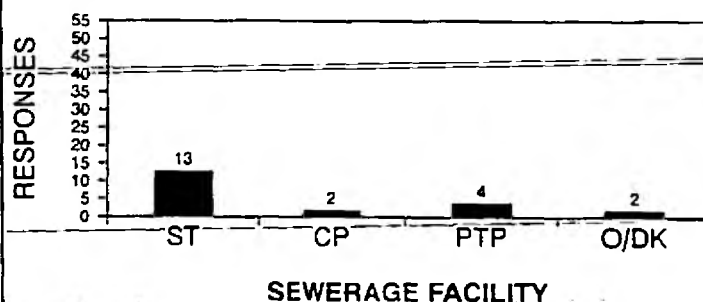
WORK LOCATION FOR MUCH MARCLE



TOTAL OF 21 RESPONSES

Qu.6: Type of Sewerage Facility

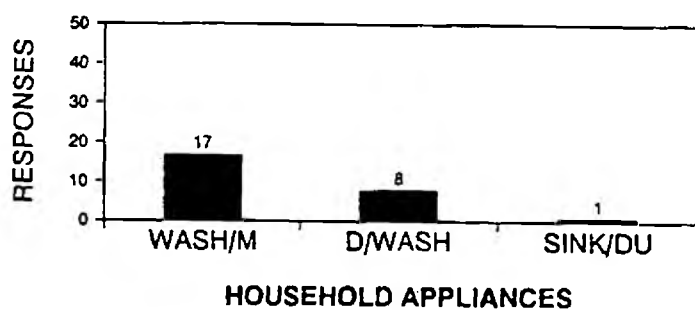
HOUSEHOLD SEWAGE SYSTEMS FOR MUCH MARCLE



TOTAL OF 21 RESPONSES

Qu.7: Water Consuming Appliances Used

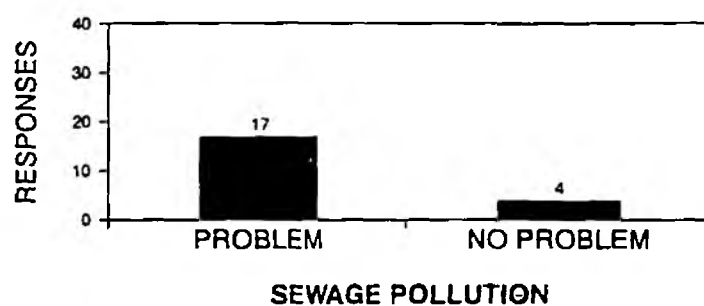
HOUSEHOLD APPLIANCES FOR MUCH MARCLE



TOTAL OF 26 RESPONSES

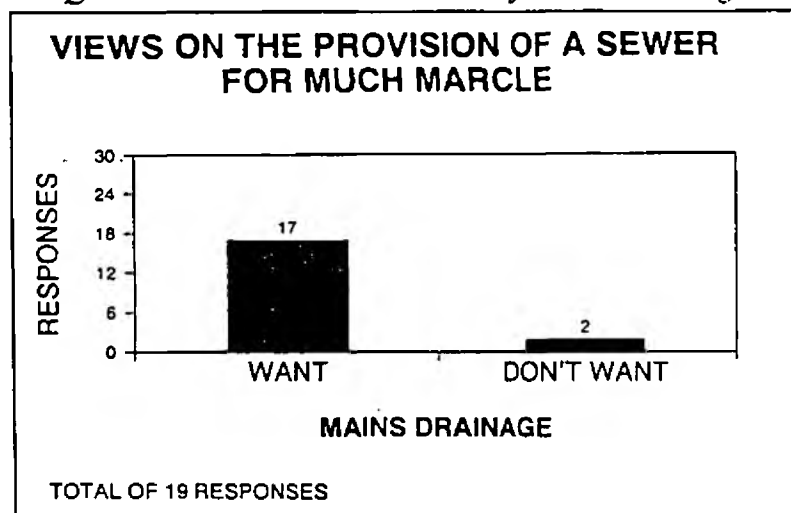
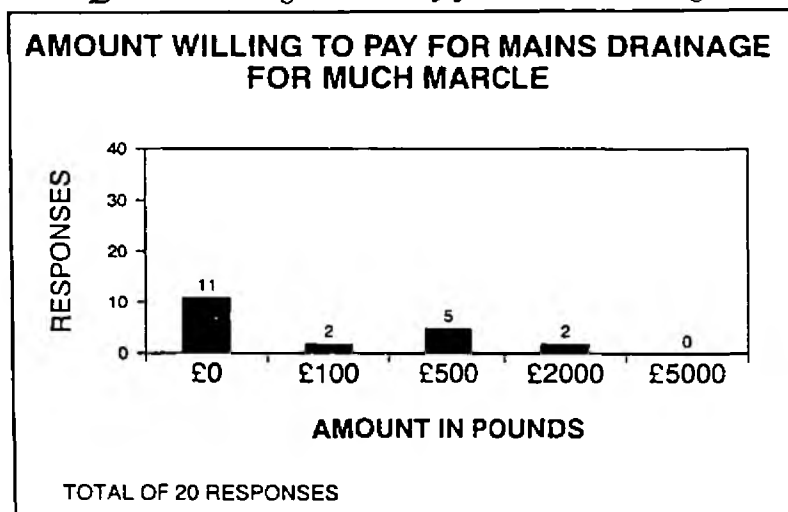
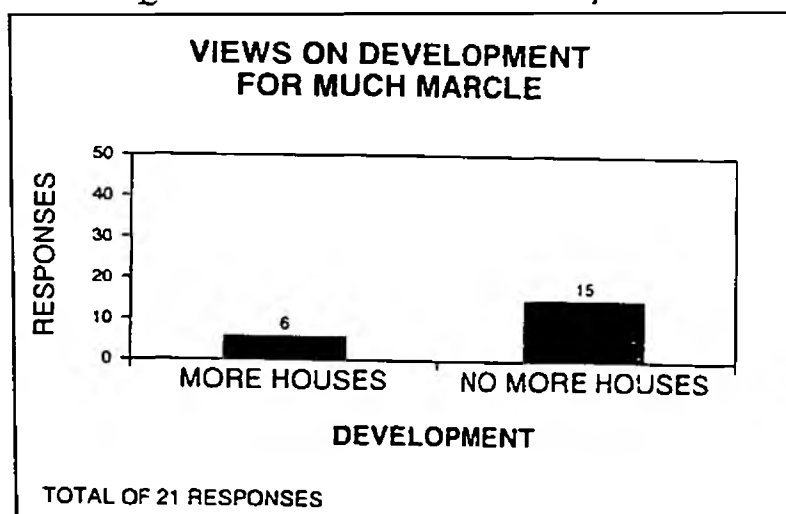
Qu.8: Attitude to Drainage Problems

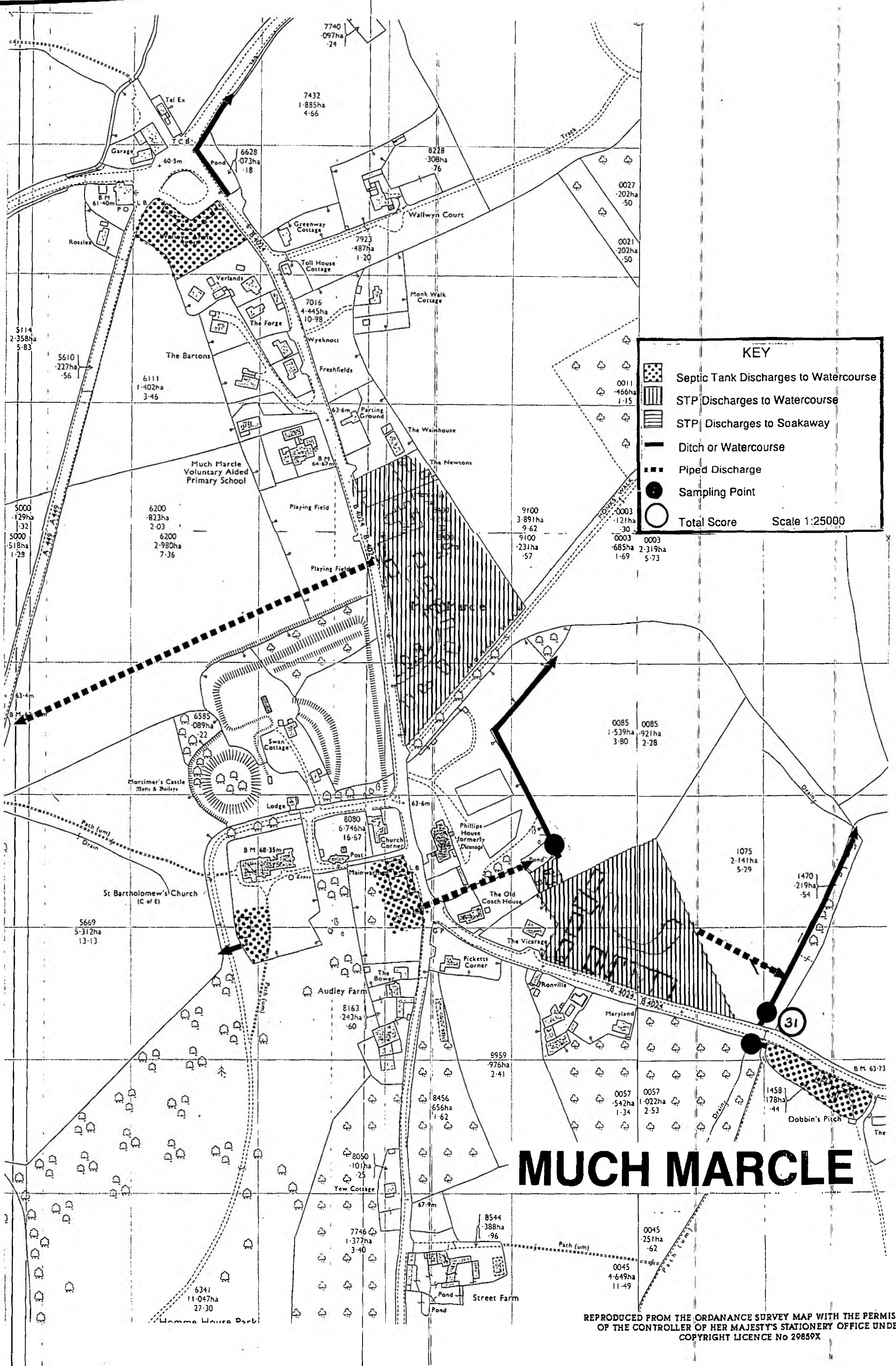
VIEW OF LOCAL SEWAGE POLLUTION FOR MUCH MARCLE



TOTAL OF 21 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



KEY

- Septic Tank Discharges to Watercourse
- STP Discharges to Watercourse
- STP Discharges to Soakaway
- Ditch or Watercourse
- Piped Discharge
- Sampling Point
- Total Score

Scale 1:25000

MUCH MARCLE

RUGBY BOROUGH COUNCIL

Response to Questionnaire

- Population of district: 85,300
- Population connected to the public sewerage system: 81,000
- Policy towards provision of sewerage?

The Rugby Borough Council have requisitioned 7 village sewerage schemes since 1974, and paid the appropriate costs for the requisitioned sewer lengths.

- Does the council have an on-going programme of first time sewerage schemes:
Yes

Flecknoe £65,000
Oxford Road, Ryton £210,000
Thurnmill Road £300,000
The time scale is in excess of 3 years.

- Total value of first time sewerage schemes constructed in the last ten years.

Harborough Magna	£345,000	Requisition: £50,000
Easenhall	£260,000	Requisition: £40,000
Church Lawford	£230,000	Requisition: £20,000
Bretford	£256,000	Requisition: £50,000

- Does the council own/maintain sewage plants/ sewerage systems in its own right?
(Not as sewerage agents)

Yes.

Coton Road Churchover Small Treatment Works
Lawford Heath Sewage Works
Flecknoe Oxigest Plant
Sweaton Lane Brinklow Oxigest Plant
R.O.C. Pumping Station
The Crescent Pumping Station
Edmondson Close Pumping Station
Thomas Way Pumping Station
Charles Lakin Close Pumping Station
Hallway Drive Pumping Station

Impact Ranking Order of Villages Covered in the Survey

Site 18.	Flecknoe	25
Site 19.	Ryton on Dunsmore	-

THIS PAGE IS BLANK

9.6.1

Site 18: FLECKNOE

IMPACT SCORE: 25

Description

Flecknoe is situated six miles to the east of Southam, north of the A 425 Southam to Daventry road (NGR: SP 515 635).

Soil Drainage Characteristics

Flecknoe lies on limestone clay subsoil, and drains to the Grand Union Canal. The soil type is a typical stagnogley soil (7.11). Under the Groundwater Vulnerability Classification the area has been designated as a Non-Aquifer site.

Development

There is much pressure for development in this village, and over the last ten year period there have been sixty four applications for building. Development has been restricted, and ten houses have been permitted.

Foul Drainage

Properties along Bush Hill Lane are served by a small sewage treatment works. The Farm conversion at Firs Farm have installed a package treatment plant that goes to soakaway.

All other properties in the village are served by septic tank systems, some of which connect into the 'village drain' that runs through the village. Properties near to the Old Olive Tree discharge to a ditchcourse.

Pollution

Polluted conditions were detected at four points in the village, with a contribution from approximately fifteen properties. At the scoring point water quality samples were indicative of a Class 4 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
70.5	208	119	39

Environmental Health Complaints

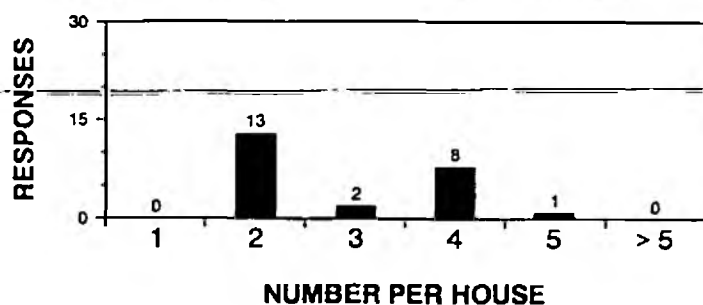
Rugby Borough Council receive regular environmental health complaints from this village.

VILLAGE NAME: FLECKNOE

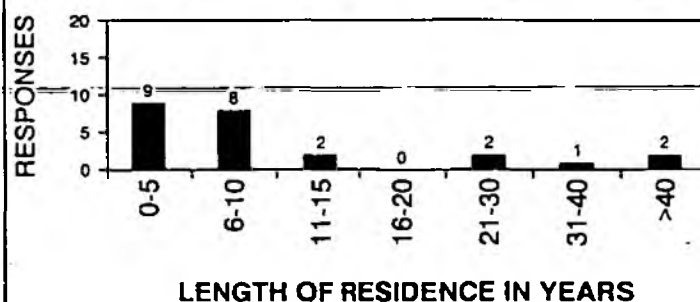
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	11 -20	3
NO OF DISCHARGE POINTS	3-4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	5-8	3
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100M	1
B.O.D. 10M D/S OF SCORING POINT	>40	5
AMMONIA 10M D/S OF SCORING POINT	>20	5
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	40-21	3
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	OUTLET	1
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		25

NUMBER OF QUESTIONNAIRES SENT OUT:	32
NUMBER OF QUESTIONNAIRES RETURNED:	24
PERCENTAGE OF QUESTIONNAIRES RETURNED:	75%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	25%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	43%

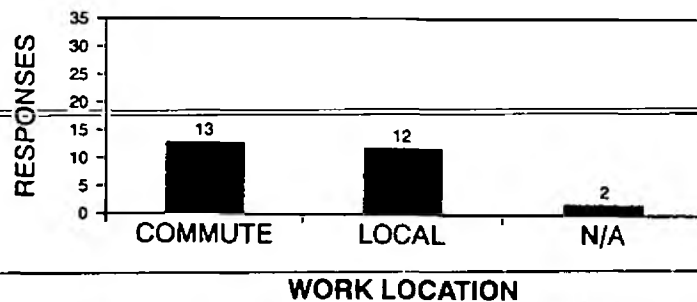
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property*SIZE OF HOUSEHOLD
FOR FLECKNOE

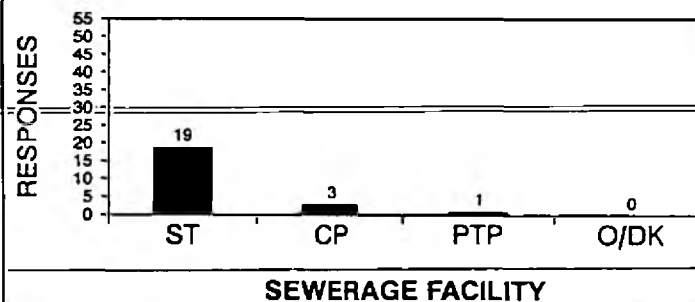
TOTAL OF 24 RESPONSES

*Qu.4: Length of Residence in the Village*LENGTH OF RESIDENCE
FOR FLECKNOE

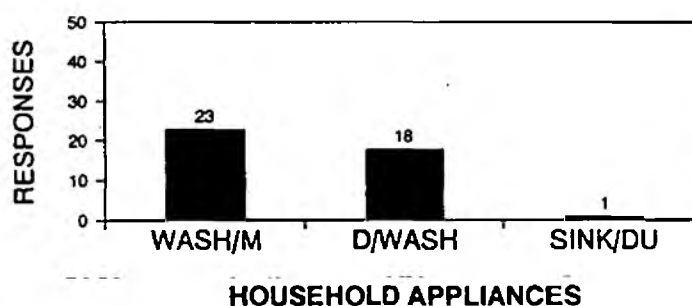
TOTAL OF 24 RESPONSES

*Qu.5: Work Location (if applicable)*WORK LOCATION
FOR FLECKNOE

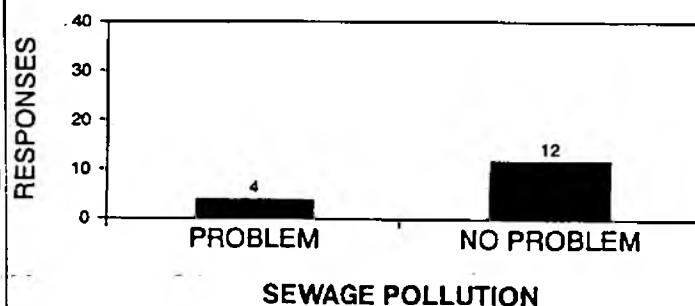
TOTAL OF 27 RESPONSES

*Qu.6: Type of Sewerage Facility*HOUSEHOLD SEWAGE SYSTEMS
FOR FLECKNOE

TOTAL OF 23 RESPONSES

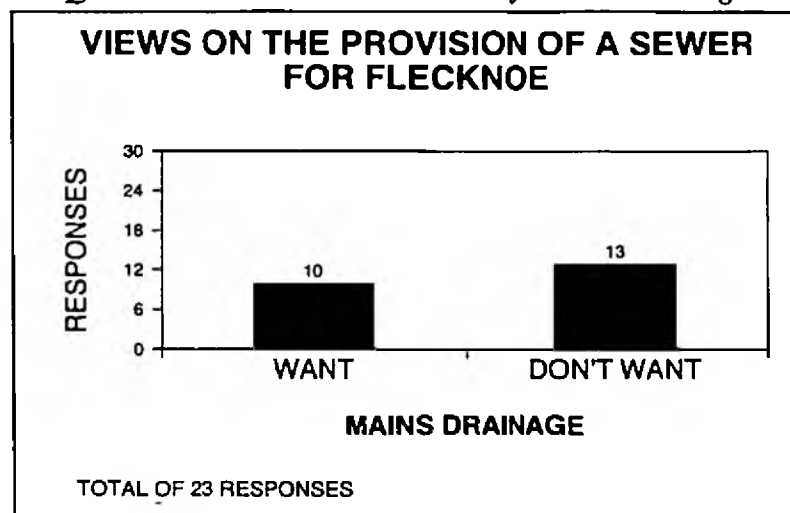
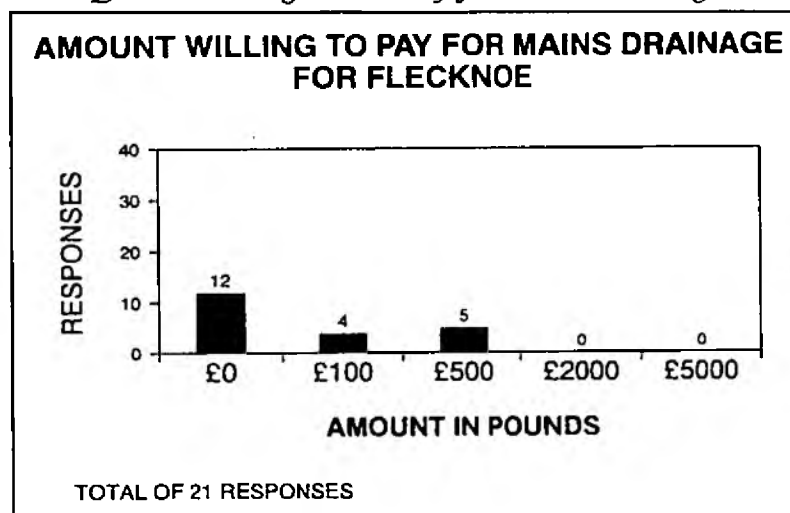
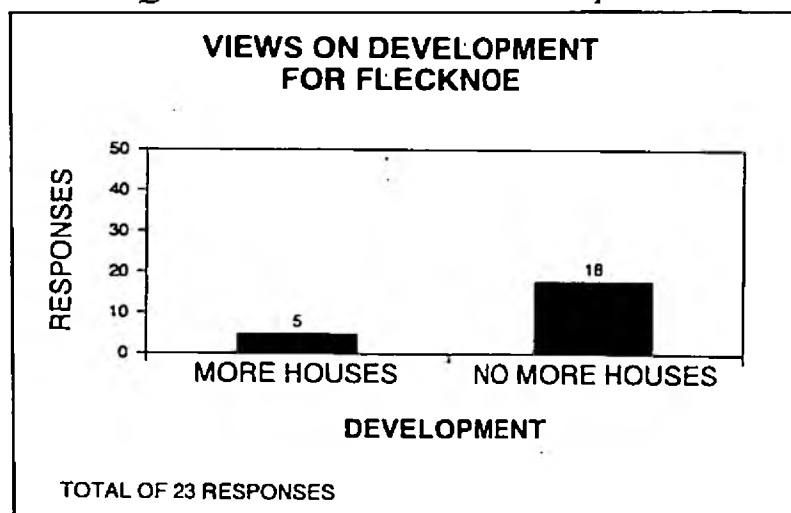
*Qu.7: Water Consuming Appliances Used*HOUSEHOLD APPLIANCES
FOR FLECKNOE

TOTAL OF 42 RESPONSES

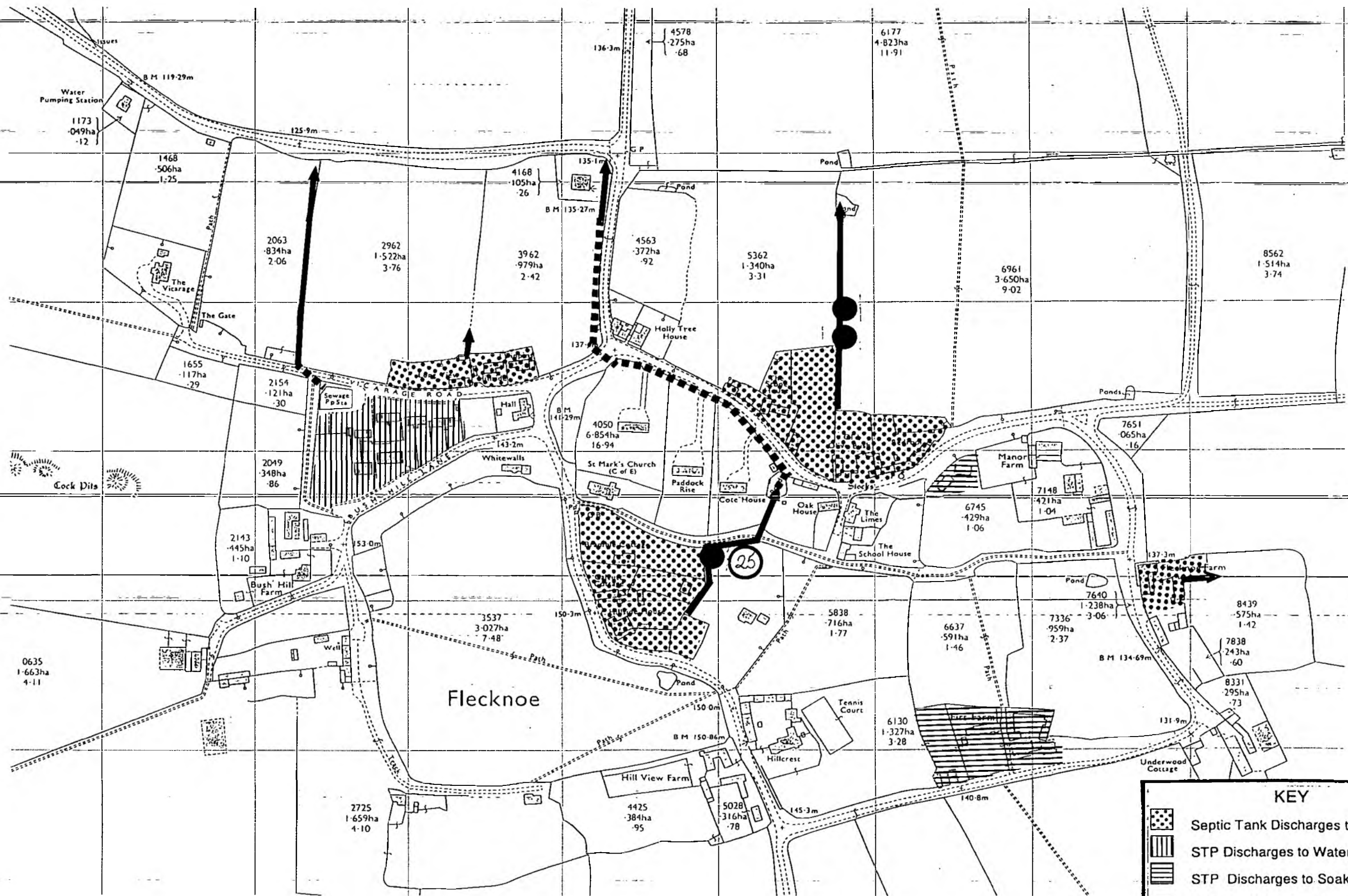
*Qu.8: Attitude to Drainage Problems*VIEW OF LOCAL SEWAGE POLLUTION
FOR FLECKNOE

TOTAL OF 16 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

FLECKNOE



KEY

- Septic Tank Discharges to Watercourse
- STP Discharges to Watercourse
- STP Discharges to Soakaway
- Ditch or Watercourse
- Piped Discharge
- Sampling Point

Total Score 25

Scale 1:25000

REPRODUCED FROM THE 'ORDNANCE SURVEY' MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER COPYRIGHT LICENCE No 29859X

9.6.2

Site 19: RYTON ON DUNSMORE

IMPACT SCORE: -

Description

Ryton on Dunsmore is located one mile to the south east of Coventry on the A45 (T), Coventry to Daventry Road (NGR: SP 385 743).

Soil Drainage Characteristics

This settlement lies on alluvium gravel, and drains to the River Avon. The soil type is a brown earth (5.41). Under the Groundwater Vulnerability Classification this area has been given Minor Aquifer status.

Development

Over the last ten year period there have been twelve applications for development along Oxford Road. None of these applications have been granted.

Foul Drainage

Properties along the Oxford Road are not provided with mains drainage. They are all served by septic tank/soakaway systems. The Caravan Park (nine caravans), has a cesspit but with an overflow to the ditch.

Pollution

Polluted conditions were detected at one point along Oxford Road, with a contribution from nine dwellings. It was not possible to take water quality samples, due to the low flow conditions.

Environmental Health Complaints

Rugby Borough Council receive occasional environmental health complaints from this village.

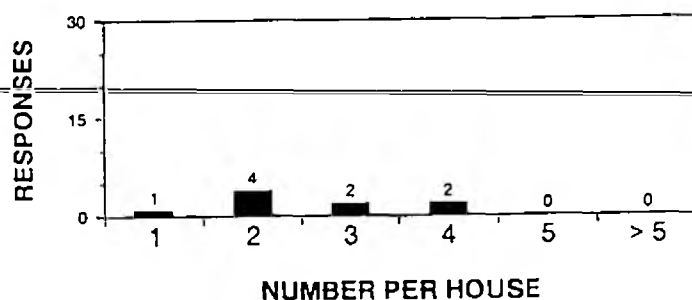
NAME OF VILLAGE: RYTON ON DUNSMORE

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING		
NO OF DISCHARGE POINTS		
NO OF HOUSES DISCHARGING AT SCORING POINT		
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT		
B.O.D. 10M D/S OF SCORING POINT		
AMMONIA 10M D/S OF SCORING POINT		
DISSOLVED OXYGEN 10M D/S OF SCORING POINT		
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT		
PUBLIC ACCESSIBILITY		
TOTAL SCORE		--

NUMBER OF QUESTIONNAIRES SENT OUT:	17
NUMBER OF QUESTIONNAIRES RETURNED:	9
PERCENTAGE OF QUESTIONNAIRES RETURNED:	53%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	75%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	100%

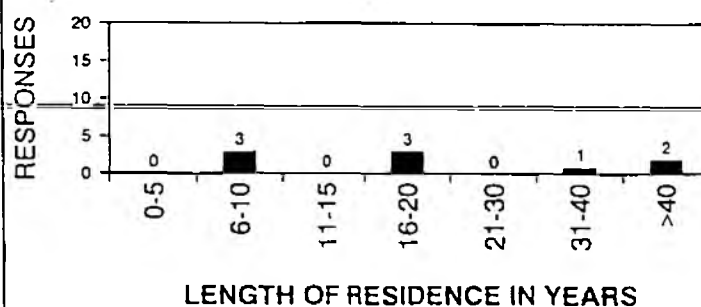
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

SIZE OF HOUSEHOLD
FOR RYTON ON DUNSMORE

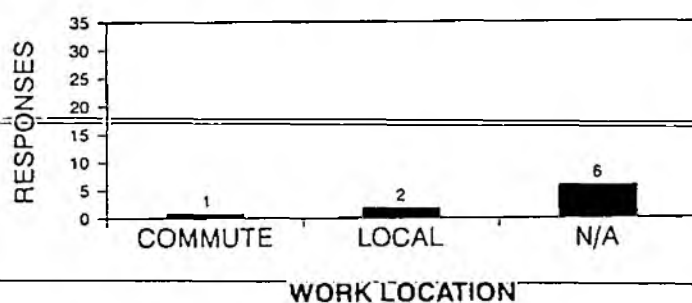
TOTAL OF 9 RESPONSES

Qu.4: Length of Residence in the Village

LENGTH OF RESIDENCE
FOR RYTON ON DUNSMORE

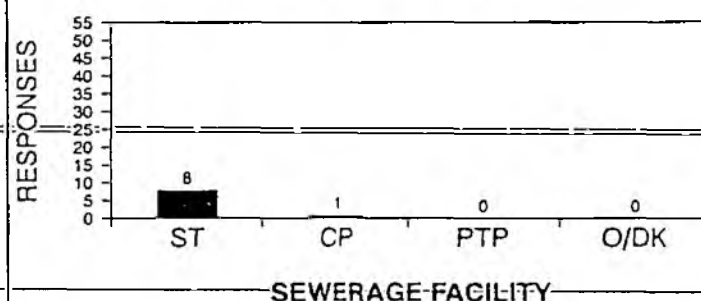
TOTAL OF 9 RESPONSES

Qu.5: Work Location (if applicable)

WORK LOCATION
FOR RYTON ON DUNSMORE

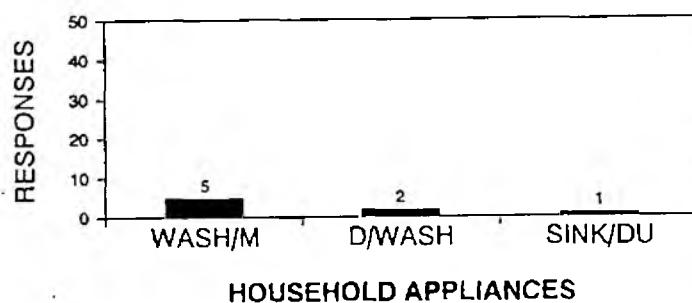
TOTAL OF 9 RESPONSES

Qu.6: Type of Sewerage Facility

HOUSEHOLD SEWAGE SYSTEMS
FOR RYTON ON DUNSMORE

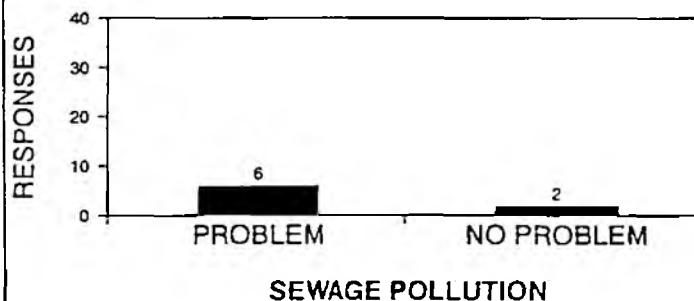
TOTAL OF 9 RESPONSES

Qu.7: Water Consuming Appliances Used

HOUSEHOLD APPLIANCES
FOR RYTON ON DUNSMORE

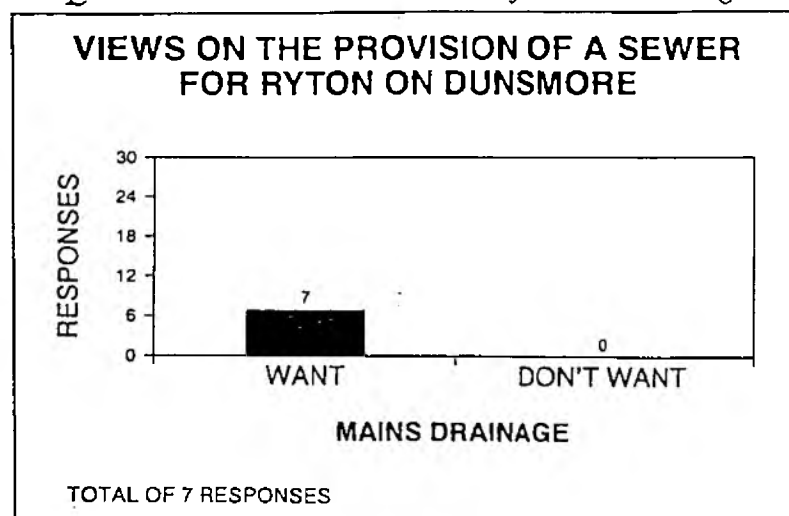
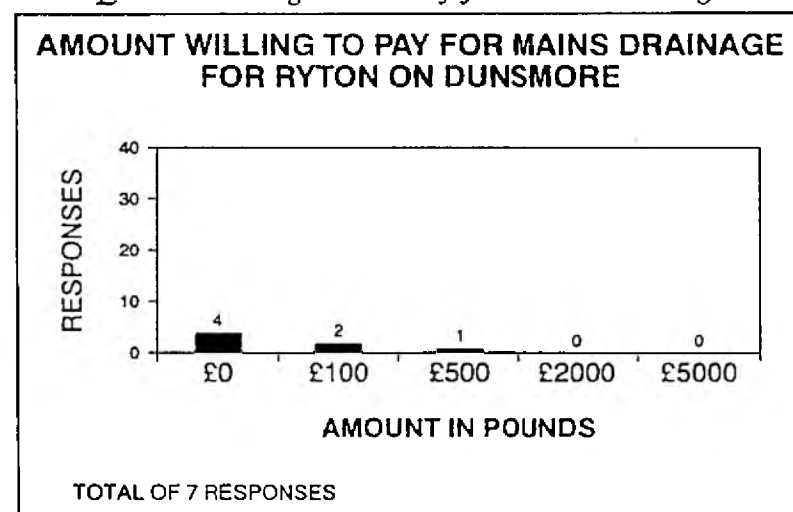
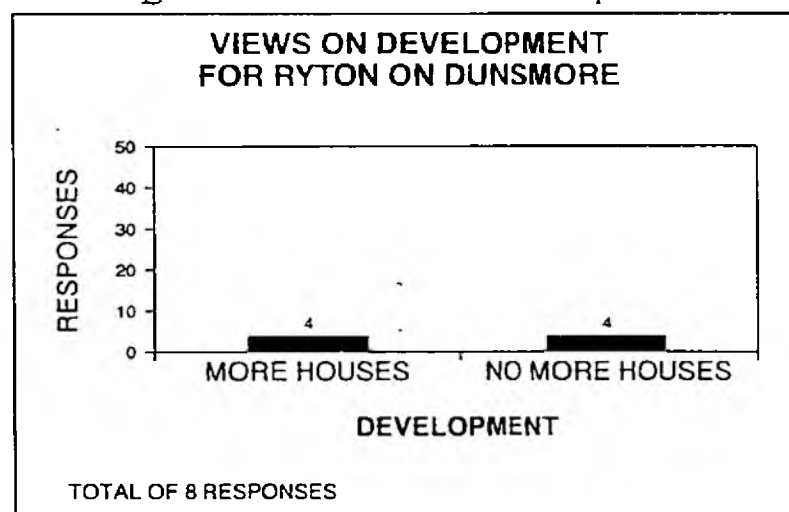
TOTAL OF 8 RESPONSES

Qu.8: Attitude to Drainage Problems

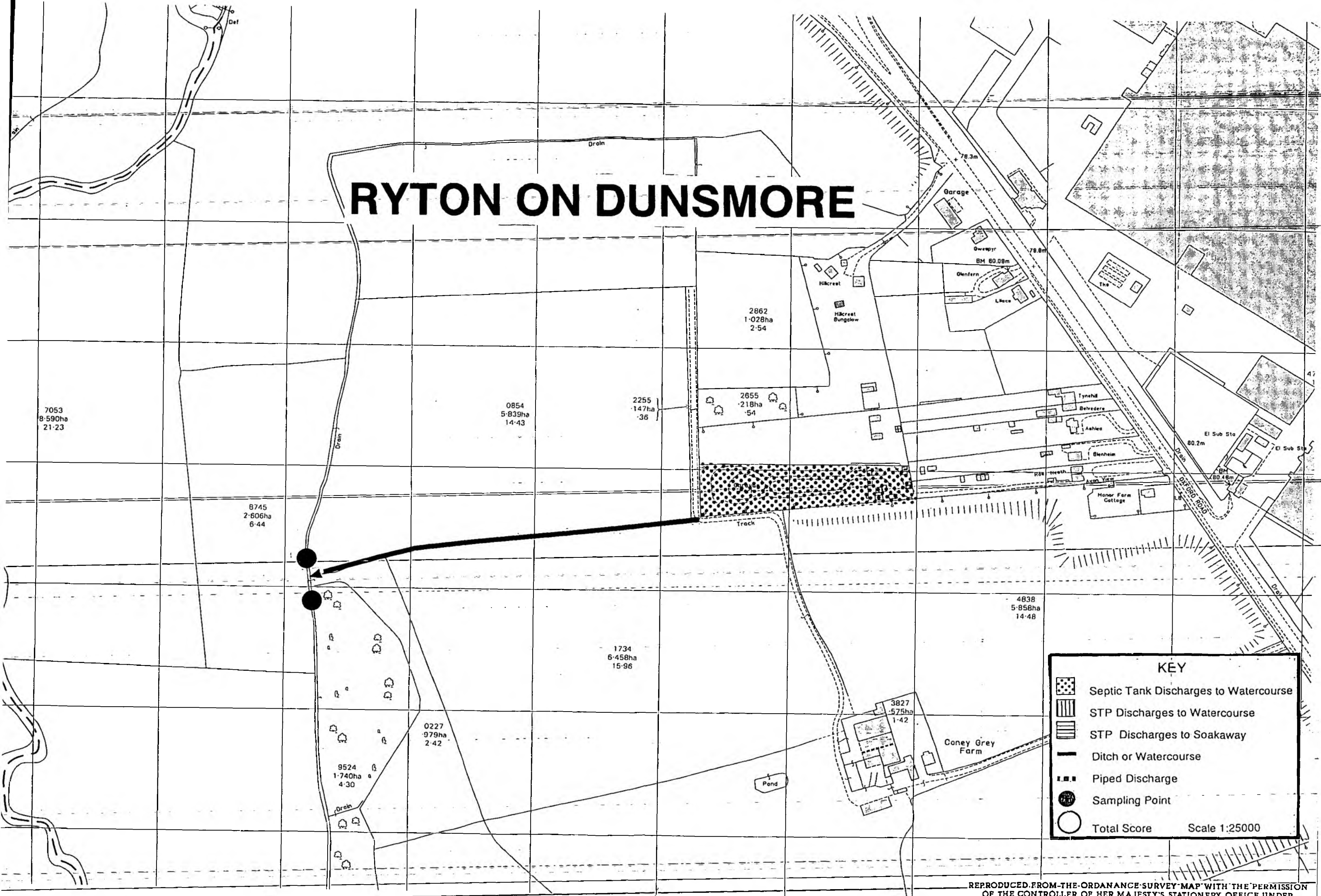
VIEW OF LOCAL SEWAGE POLLUTION
FOR RYTON ON DUNSMORE

TOTAL OF 8 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

RYTON ON DUNSMORE



9.7 STRATFORD ON AVON

Response to Questionnaire

- **Population of district:** 107,200
- **Population connected to the public sewerage system:**
Information not available.
- **Policy towards provision of sewerage:**
In April 1990 the Council adopted a policy of not operating first time sewerage requisitions by the Authority.
- **Does the council have an on going programme of first time sewerage schemes?**
No.
- **Total value of first time sewerage schemes constructed in the last ten years.**

Henley in Arden (Beaudesert Lane)	1982-85	Cost Unknown
Stratford upon Avon (Bordon Hill)	1983-85	£73,500
Dorsington Foul Water Sew	1985-87	£112,000
Tanworth in Arden (Ladbroke Hall Farm)	1987-90	£32,000
Pathlow, Gaydon, Aston Cantlow, Harbury (Deppers Bridge), Moreton Paddox and Tysoe.		
- **Does your council own/maintain sewage plants/ sewerage systems in its own right?**
(Not as sewerage agents)
Yes.
Klargester package sewage treatment plants owned by the Councils Housing Department at Idlicote and Liveridge Hill, Henley in Arden.

Impact Ranking Order of Villages Covered in the Survey		
Site 22.	Winderton	22
Site 21.	Kinton	16
Site 20.	Barton	12

THIS PAGE IS BLANK

9.7.1

Site 20: BARTON

IMPACT SCORE: 12

Description

Barton is situated south east of Bidford-on-Avon, on the South bank of the River Avon (NGR: SO 105 512).

Soil Drainage Characteristics

The village lies on alluvium gravel overlying sandstone, and drains to the River Avon. Under the Groundwater Vulnerability Classification this area has been given Non-Aquifer status.

Development

Development has been in the form of infilling and minor consolidation. There has been a number of applications for barn conversions in recent years. Over the past six year period two properties have been built.

Foul Drainage

Overflows from septic tanks and direct foul sewage connections from properties along Welford Road discharge via a drain to the River Avon. The discharge has a deemed consent. The mobile homes at the site to the east of the village, are served by a package treatment plant that has a consented discharge to the River Avon.

Pollution

Polluted conditions were detected at one point in the village, with a contribution from at least five properties. At the scoring point water quality samples were indicative of a Class 2 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
0.04	6.0	21	83

Environmental Health Complaints

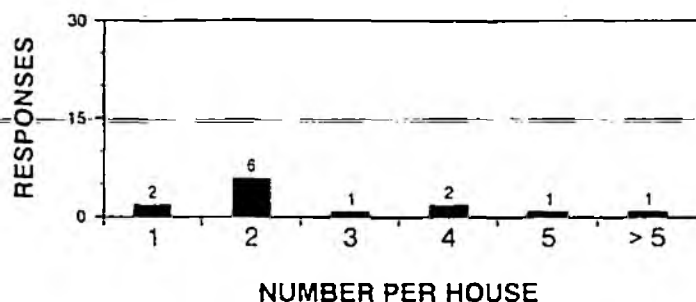
Stratford on Avon District Council receive occasional environmental health complaints from this village.

VILLAGE NAME: BARTON

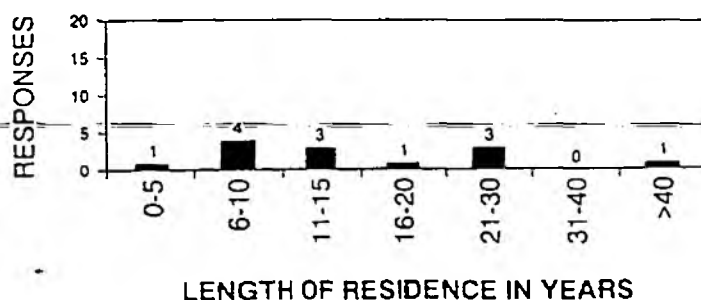
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	1-5	1
NO OF DISCHARGE POINTS	1-2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	3-4	2
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100M	1
B.O.D. 10M D/S OF SCORING POINT	5-9	2
AMMONIA 10M D/S OF SCORING POINT	<0.7	1
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	>60	1
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	OUTLET	1
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		12

NUMBER OF QUESTIONNAIRES SENT OUT:	21
NUMBER OF QUESTIONNAIRES RETURNED:	13
PERCENTAGE OF QUESTIONNAIRES RETURNED:	61%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	30%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	61%

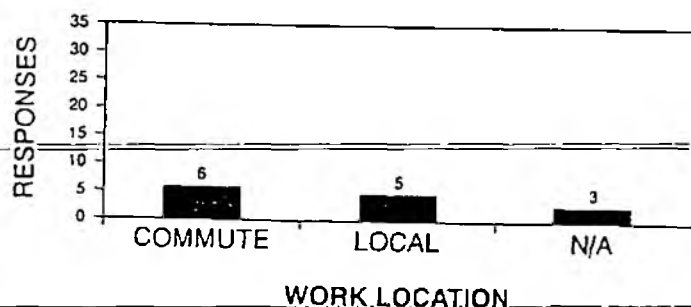
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property*SIZE OF HOUSEHOLD
FOR BARTON

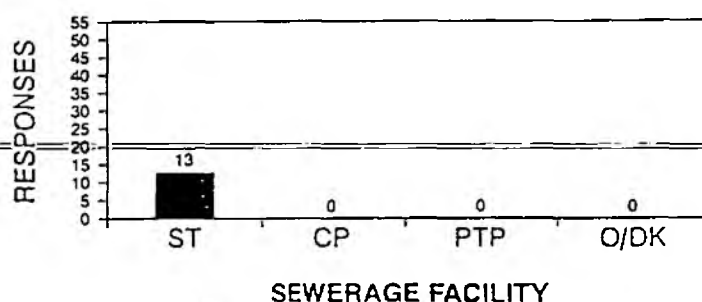
TOTAL OF 13 RESPONSES

*Qu.4: Length of Residence in the Village*LENGTH OF RESIDENCE
FOR BARTON

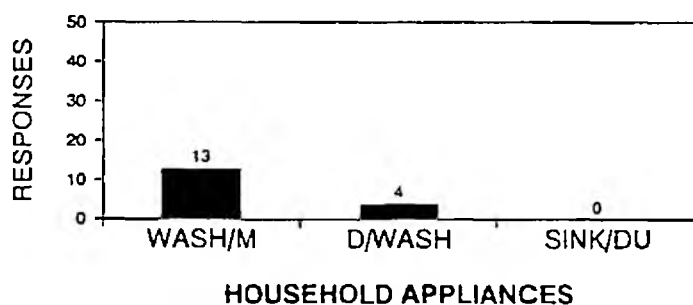
TOTAL OF 13 RESPONSES

*Qu.5: Work Location (if applicable)*WORK LOCATION
FOR BARTON

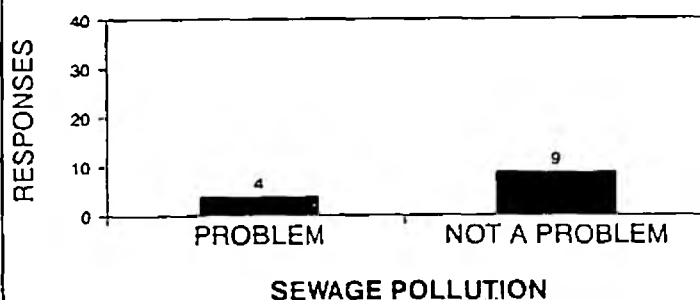
TOTAL OF 14 RESPONSES

*Qu.6: Type of Sewerage Facility*HOUSEHOLD SEWAGE SYSTEMS
FOR BARTON

TOTAL OF 13 RESPONSES

*Qu.7: Water Consuming Appliances Used*HOUSEHOLD APPLIANCES
FOR BARTON

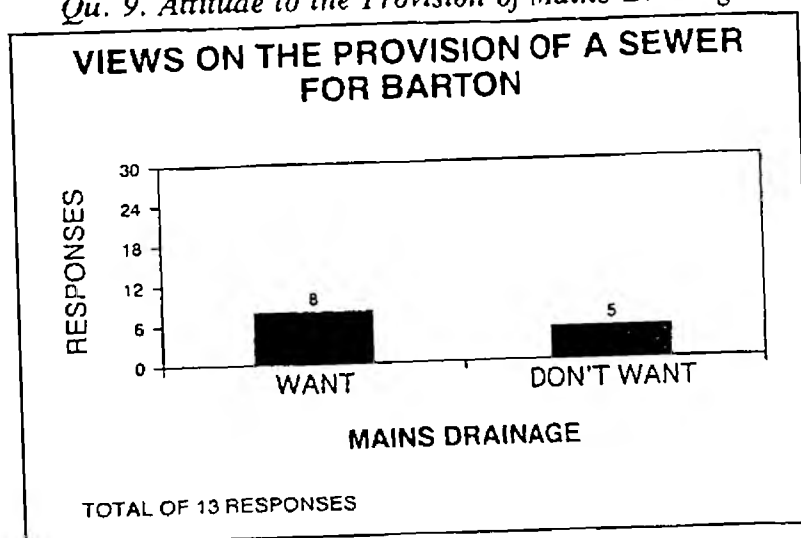
TOTAL OF 17 RESPONSES

*Qu.8: Attitude to Drainage Problems*VIEW OF LOCAL SEWAGE POLLUTION
FOR BARTON

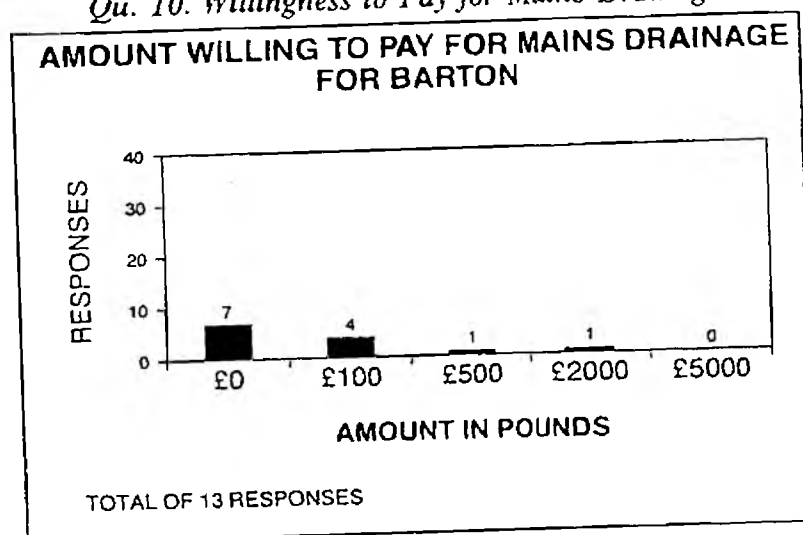
TOTAL OF 13 RESPONSES

ANALYSIS OF QUESTIONNAIRE

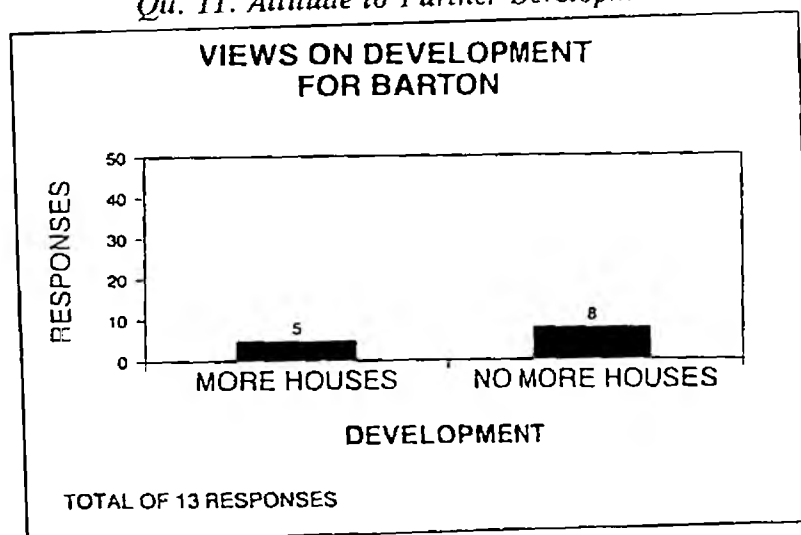
Qu. 9. Attitude to the Provision of Mains Drainage



Qu. 10. Willingness to Pay for Mains Drainage



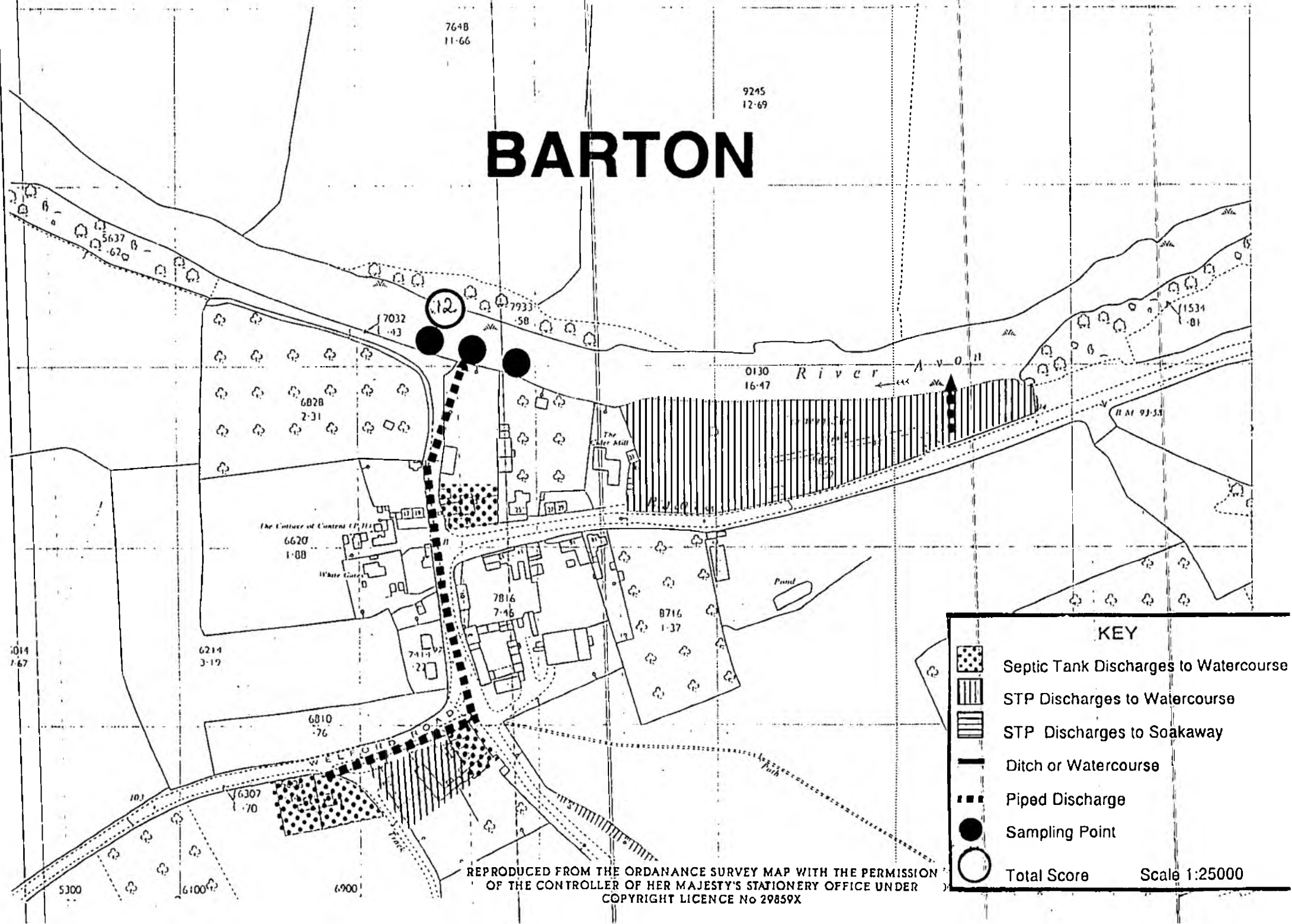
Qu. 11. Attitude to Further Development



7648
11-66

9245
12-69

BARTON



REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION
OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER
COPYRIGHT LICENCE No 29859X

9.7.2

Site 21: KINETON

IMPACT SCORE: 16

Description

The village of Kineton is situated on the River Dene, some ten miles south of Warwick (NRG: SP 335 510). Kineton has a historic core surrounded by post-war development.

Soil Drainage Characteristics

The village lies on lias clay, and drains to the River Dene. The soil type is a pelo-stagnogley soil (7.12). Under the Groundwater Vulnerability Classification this area has Non-Aquifer status.

Development

Pressure for development in Kineton is high. Two sites have been allocated for development in the Stratford on Avon District Council Local Plan. Forty five properties have been built over the past six years.

Foul Drainage

All properties in Kineton, except those at the far end of the Banbury Road, and connected to the main sewer. Those properties east of the school, have septic tank systems that connect to a drain that discharges to the River Dene.

Pollution

Polluted conditions were detected at two points in the village with contribution from twelve properties. At the scoring point water quality samples were indicative of a Class 1A watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
0.11	1.5	2.0	81

Environmental Health Complaints

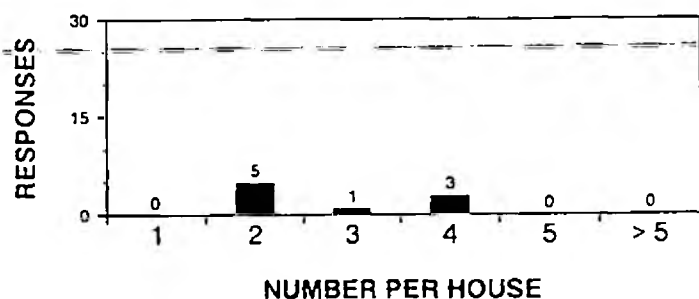
Stratford on Avon District Council receive occasional environmental health complaints from this village.

VILLAGE NAME: KINETON

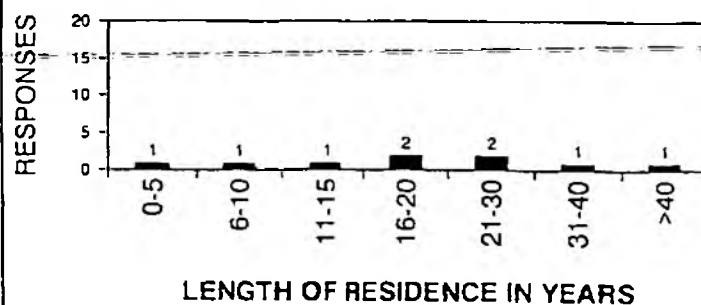
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	11-20	3
NO OF DISCHARGE POINTS	3-4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	5-8	3
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100M	1
B.O.D. 10M D/S OF SCORING POINT	<5	1
AMMONIA 10M D/S OF SCORING POINT	<0.7	1
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	>60	1
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	OUTLET	1
PUBLIC ACCESSIBILITY	HIGH	3
TOTAL SCORE		16

NUMBER OF QUESTIONNAIRES SENT OUT:	14
NUMBER OF QUESTIONNAIRES RETURNED:	9
PERCENTAGE OF QUESTIONNAIRES RETURNED:	64%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	44%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	71%

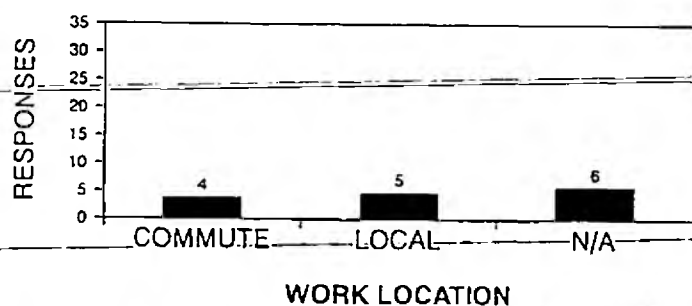
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property*SIZE OF HOUSEHOLD
FOR KINETON

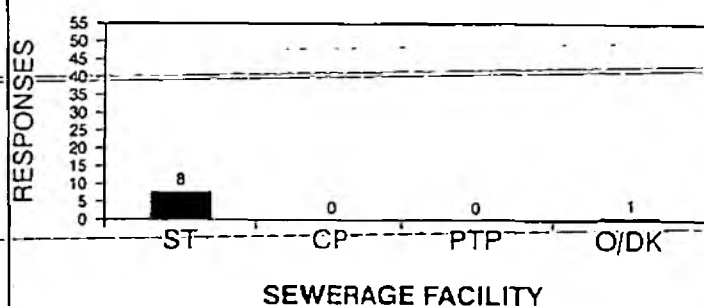
TOTAL OF 9 RESPONSES

*Qu.4: Length of Residence in the Village*LENGTH OF RESIDENCE
FOR KINETON

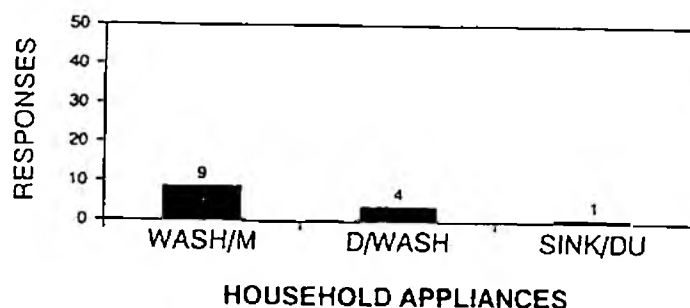
TOTAL OF 9 RESPONSES

*Qu.5: Work Location (if applicable)*WORK LOCATION
FOR KINETON

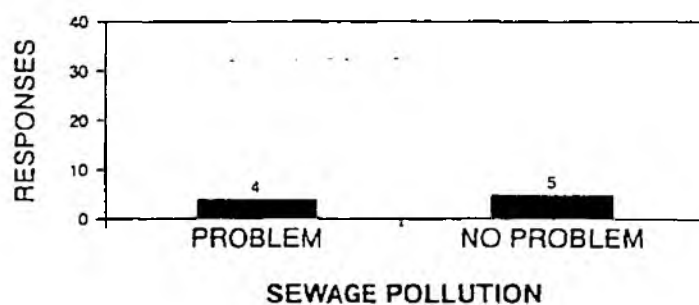
TOTAL OF 15 RESPONSES

*Qu.6: Type of Sewerage Facility*HOUSEHOLD SEWAGE SYSTEMS
FOR KINETON

TOTAL OF 9 RESPONSES

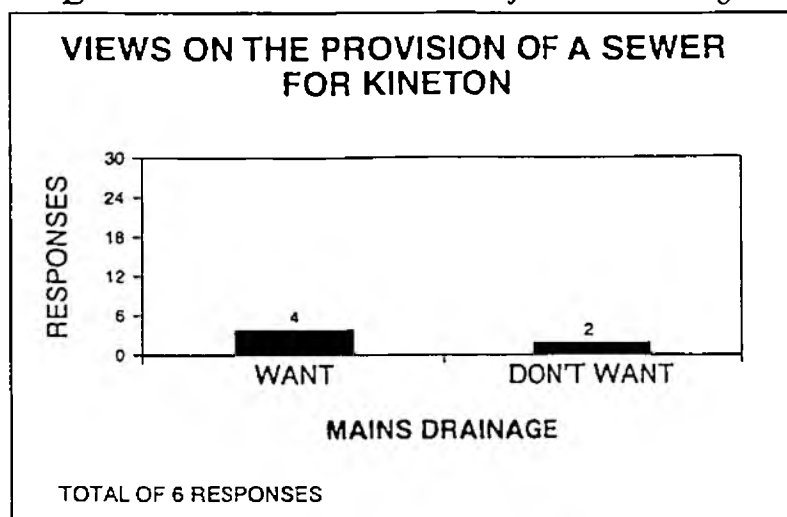
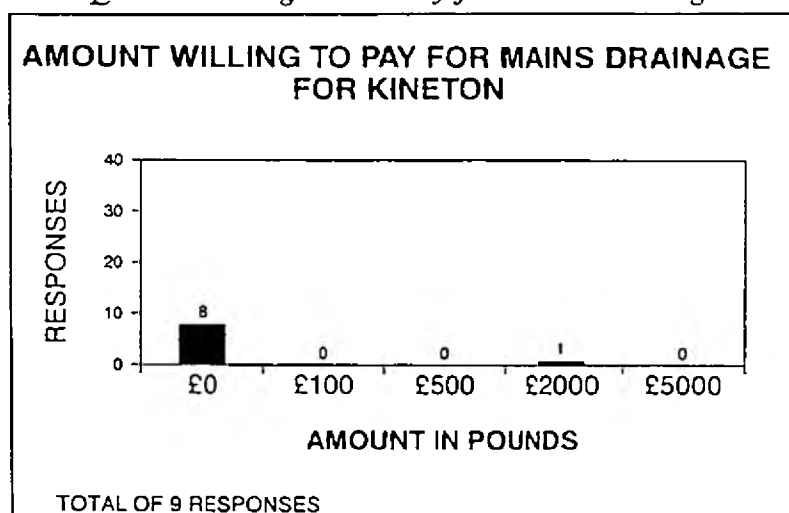
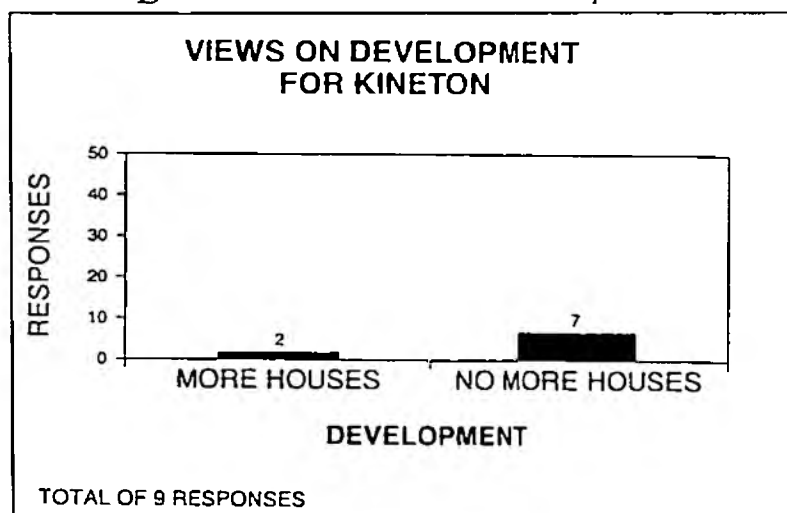
*Qu.7: Water Consuming Appliances Used*HOUSEHOLD APPLIANCES
FOR KINETON

TOTAL OF 14 RESPONSES

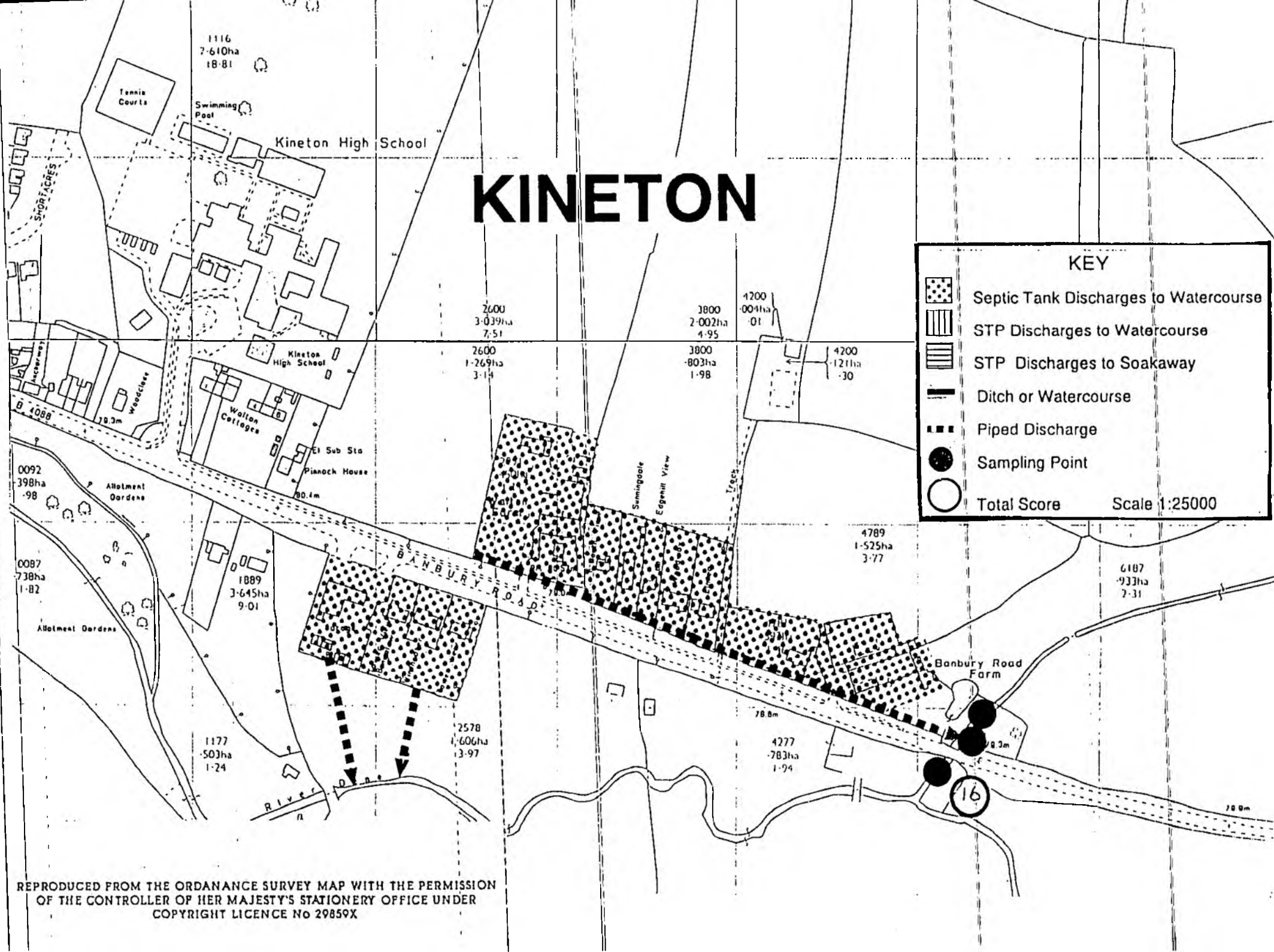
*Qu.8: Attitude to Drainage Problems*VIEW OF LOCAL SEWAGE POLLUTION
FOR KINETON

TOTAL OF 9 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

KINETON



9.7.3

Site 22: WINDERTON

IMPACT SCORE: 22

Description

Winderton is a small village lying some four miles to the east of Shipston-on-Stour (NGR: SP 328 407).

Soil Drainage Characteristics

The village lies on lias clay, and drains to a tributary of the River Stour. The soil type is a typical stagnogley soil (7.11). Under the Groundwater Vulnerability Classification this area has been designated a Non-Aquifer area.

Development

Over the past six years one property has been built in this village.

Foul Drainage

All properties in the village are served by septic tank/soakaway systems. Some septic effluent seeps into a surface water drain which discharges to a ditchcourse leading to a tributary of the River Stour.

Pollution

Polluted conditions were detected at one point in the village, with a contribution from two or three properties. At the scoring point water quality samples were indicative of a Class 4 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
30.3	22	115	58

Environmental Health Complaints

Stratford on Avon District Council receive occasional environmental health complaints from this village.

VILLAGE NAME: WINDERTON

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	1-5	1
NO OF DISCHARGE POINTS	1-3	1
NO OF HOUSES DISCHARGING AT SCORING POINT	3-4	2
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100-200M	5
B.O.D. 10M D/S OF SCORING POINT	18-40	4
AMMONIA 10M D/S OF SCORING POINT	>20	5
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	60-41	2
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		22

NUMBER OF QUESTIONNAIRES SENT OUT: 16

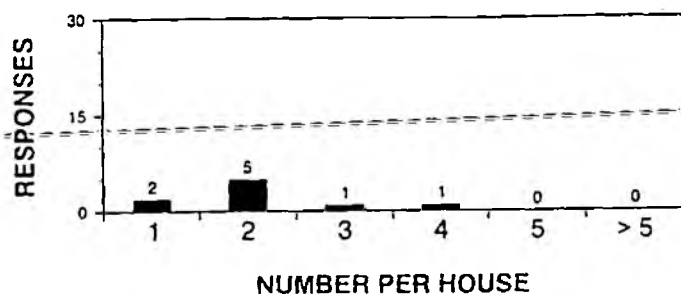
NUMBER OF QUESTIONNAIRES RETURNED: 9

PERCENTAGE OF QUESTIONNAIRES RETURNED: 56%

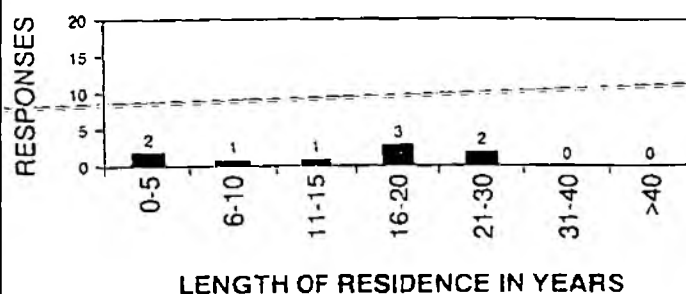
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM: 44%

PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE: 44%

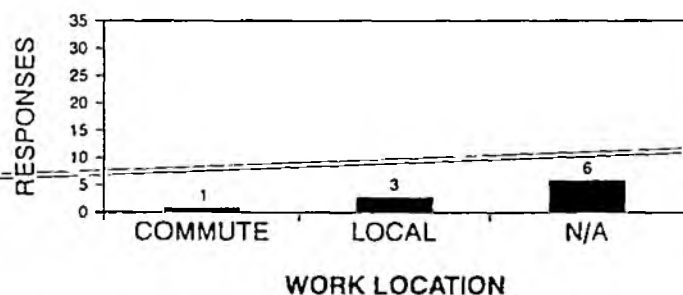
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property*SIZE OF HOUSEHOLD
FOR WINDERTON

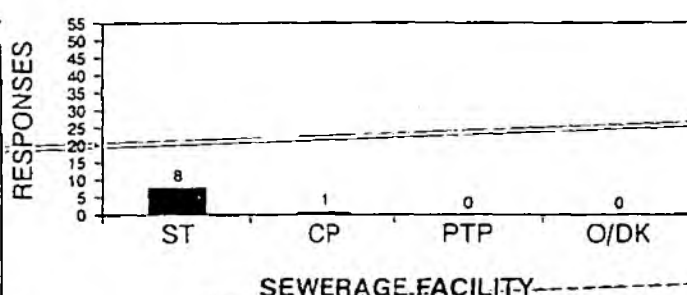
TOTAL OF 9 RESPONSES

*Qu.4: Length of Residence in the Village*LENGTH OF RESIDENCE
FOR WINDERTON

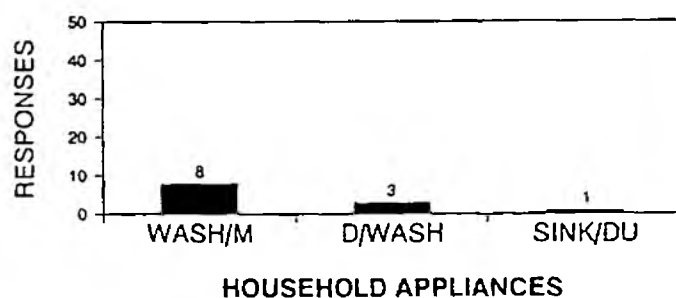
TOTAL OF 9 RESPONSES

*Qu.5: Work Location (if applicable)*WORK LOCATION
FOR WINDERTON

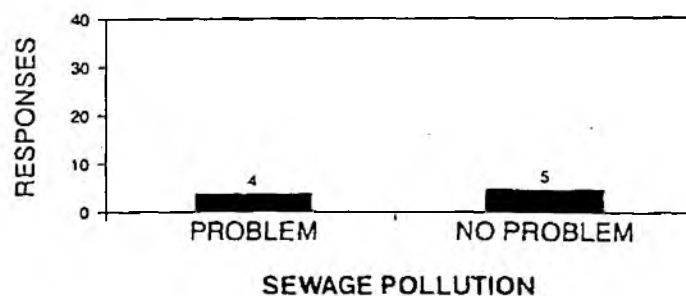
TOTAL OF 10 RESPONSES

*Qu.6: Type of Sewerage Facility*HOUSEHOLD SEWAGE SYSTEMS
FOR WINDERTON

TOTAL OF 9 RESPONSES

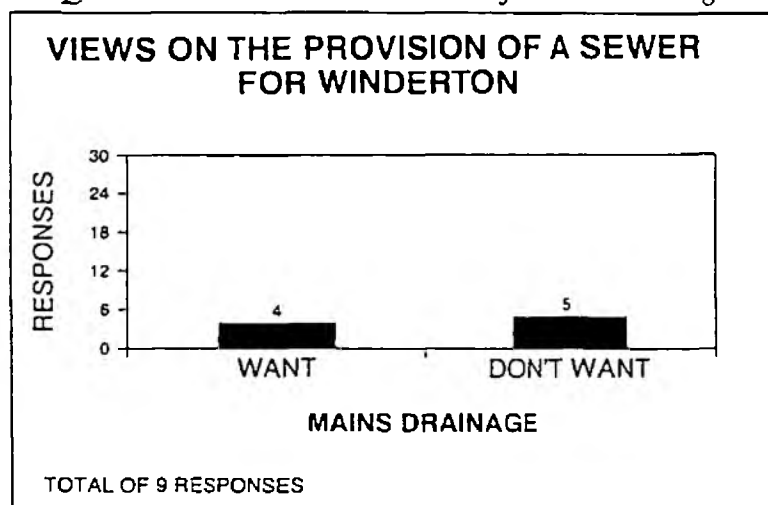
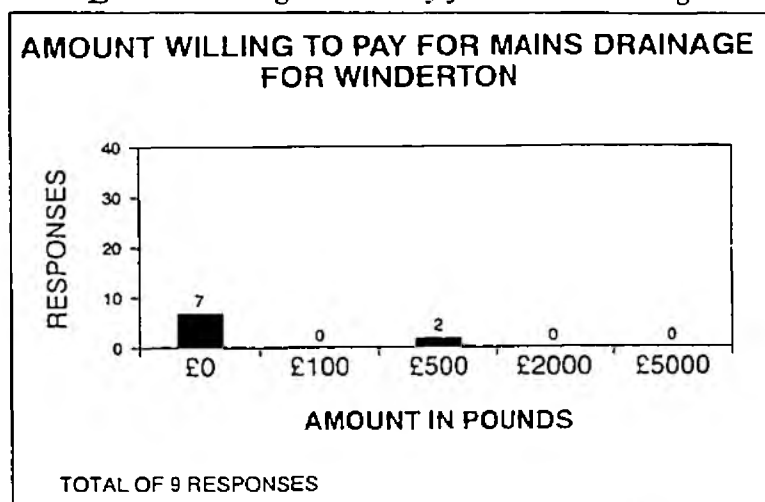
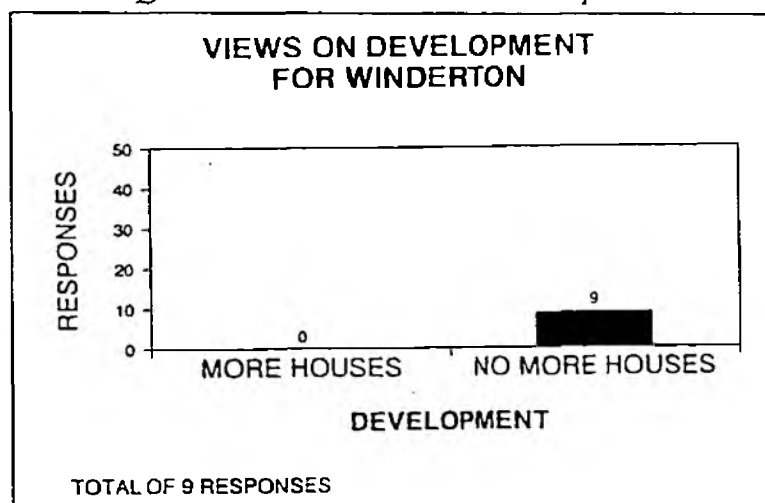
*Qu.7: Water Consuming Appliances Used*HOUSEHOLD APPLIANCES
FOR WINDERTON

TOTAL OF 12 RESPONSES

*Qu.8: Attitude to Drainage Problems*VIEW OF LOCAL SEWAGE POLLUTION
FOR WINDERTON

TOTAL OF 9 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

[illegible][illegible][illegible]

-
- WINDERTON**
- 6087
1-712ha
4-23
- 5379
834ha
2-06
- 5573
902ha
2-23
- 4572
3-135ha
7-37
- 510ha
1-26
- 7272
979ha
2-42
- 159.1m
- Hill View
- 7565
643ha
1-59
- B.M. 157.97m
- Winderton
- 6266
469ha
1-16
- 5752
542ha
1-34
- 5259
1-531ha
3-79
- 6159
202ha
50
- TCB
- Underhill Farm
- 6655
801ha
1-98
- Qynton House
- 7651
1-327ha
3-28
- B.M. 142.90m
- Spring
- Hope House
- 5451
429ha
1-06
- 5146
263ha
65
- Peter and St Paul's Church
(C of E)
- B.M. 157.56m
- 155.0m
- 142.6m
- B.M. 152.97m
- 5743
2-153ha
5-32
- Alice Hyde's Cottage
- 6639
340ha
8-1
- 5939
097ha
24
- 574
2-61ha
5-92
- 6628
2-837ha
7-01
- 8847
2-443ha
6-05
- 8337
117ha
29
- 8133
967ha
- 139.0m
- Meadow
- AV. WD 69-70
- El Sub Sta
- 6744
1-493ha
3-69
- 6949
105ha
26
- Cattle Grid
- 144.4m
- 149.7m
- Tank
- Path (Lum.)
- KEY**
- Septic Tank Discharges to Watercourse
 - STP Discharges to Watercourse
 - STP Discharges to Soakaway
 - Ditch or Watercourse
 - Piped Discharge
 - Sampling Point
 - Total Score
- Scale 1:25000
- REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER COPYRIGHT LICENCE No 29859X

9.8 STROUD DISTRICT COUNCIL

Response to Questionnaire

- Population of district 103,888
- Population connected to the public sewerage system: Approximately 70%
- Policy towards provision of sewerage?
The council's current policy is not to requisition any sewers.
- Does the council have an on-going programme of first time sewerage schemes?
No.
- Total value of first time sewerage schemes constructed in the last ten years.
None.
- Does the council own/maintain sewage plants/ sewerage systems in its own right?
(Not as sewerage agents)
The council has 3 pumping stations:
Ebley Mill
Morton Valence Public Toilets
Stonehouse Industrial Estate

Impact Ranking Order of Villages Covered in the Survey		
Site 24.	Claypits	45
Site 26.	Longney	37
Site 23.	Arlingham	38
Site 25.	Harescombe	21
Site 27.	Oakridge	-

THIS IS A BLANK PAGE

9.8.1

Site 23: ARLINGHAM

IMPACT SCORE: 38

Description

Arlingham is situated in a meandering arm of the river Severn (NGR: SO 708 106). The settlement of about ninety houses, is reasonably compact with modern development interspersed between older, more traditional buildings.

Soil Drainage Characteristics

The village lies on alluvium gravels and clay, and drains to the River Severn. The soil type is a stagnogleyic argillic brown earth (5.72). Under the Groundwater Vulnerability Classification the area has been given Non-Aquifer status.

Development

There is much pressure for development in this village, and over the past few years there have been a number of infill and estate developments. Twenty eight properties have been built over the past ten years.

Foul Drainage

The majority of the properties in the village are served by septic tank/soakaway systems. Due to the impervious nature of the clay subsoil a large proportion of these malfunction and discharge to the 'village drain' that runs parallel with Netting Lane. It has been argued that this 'village drain' is in fact a public sewer and is the subject of much dispute. The new development which is adjacent to Passage Road has its own package treatment plant, with a consented overflow to Netting Lane ditch.

Pollution

Polluted conditions were detected all the way down Netting Lane Ditch with a contribution from approximately 19 properties. At the score point water quality samples were indicative of a Class 3 watercourse (see table):

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
5.8	3.0	16	24

Environmental Health Complaints

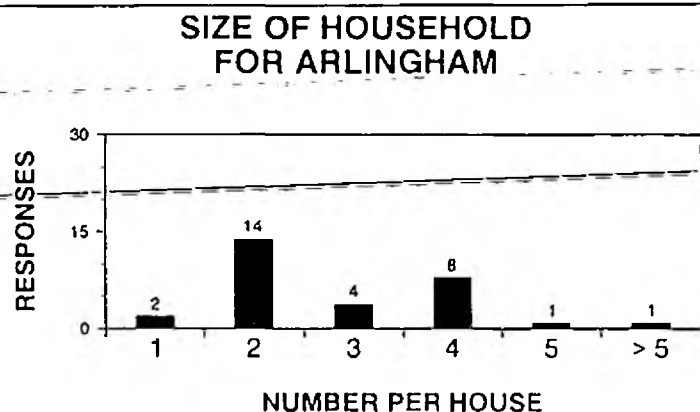
Stroud District Council receive occasional Environmental Health Complaints.

VILLAGE NAME: ARLINGHAM

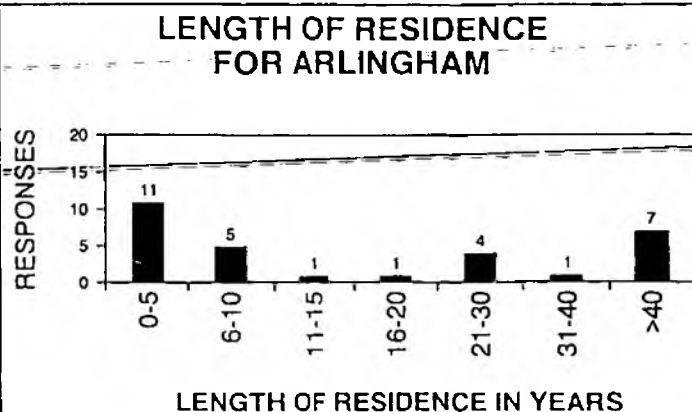
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	11-20	3
NO OF DISCHARGE POINTS	3-4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	3-4	2
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>400m	15
B.O.D. 10M D/S OF SCORING POINT	<5	1
AMMONIA 10M D/S OF SCORING POINT	5.1 - 2.0	4
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	20-10	4
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	26-50M	4
PUBLIC ACCESSIBILITY	HIGH	3
TOTAL SCORE		38

NUMBER OF QUESTIONNAIRES SENT OUT:	49
NUMBER OF QUESTIONNAIRES RETURNED:	30
PERCENTAGE OF QUESTIONNAIRES RETURNED:	61%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	44%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	34%

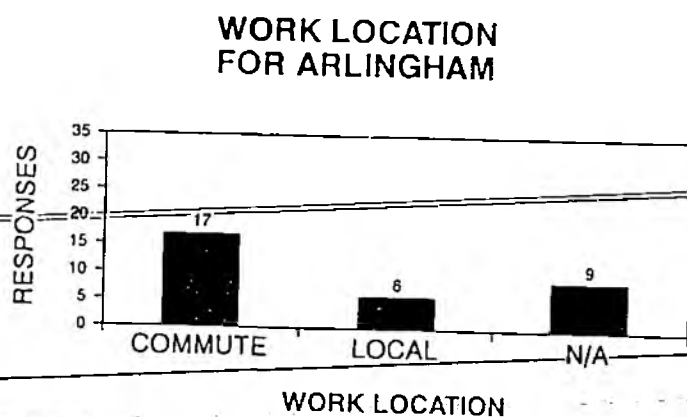
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

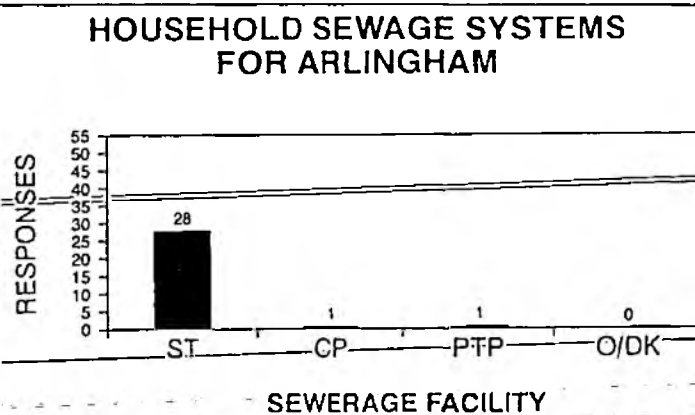
TOTAL OF 30 RESPONSES

Qu.4: Length of Residence in the Village

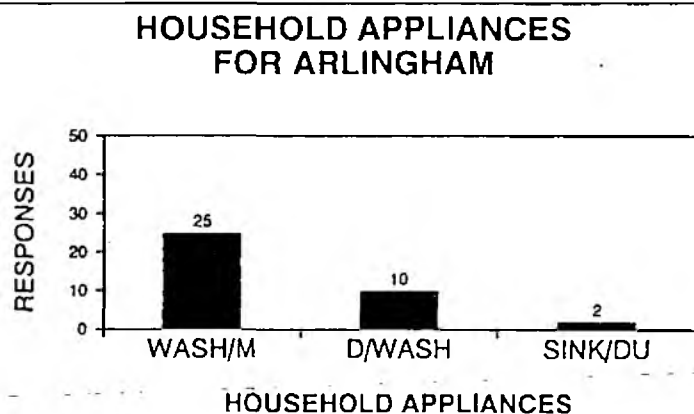
TOTAL OF 30 RESPONSES

Qu.5: Work Location (if applicable)

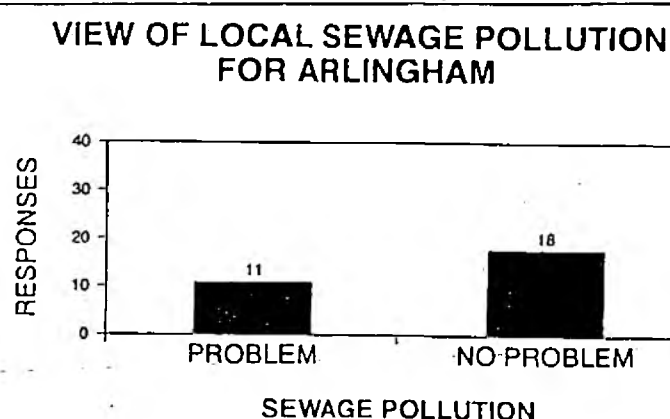
TOTAL OF 32 RESPONSES

Qu.6: Type of Sewerage Facility

TOTAL OF 30 RESPONSES

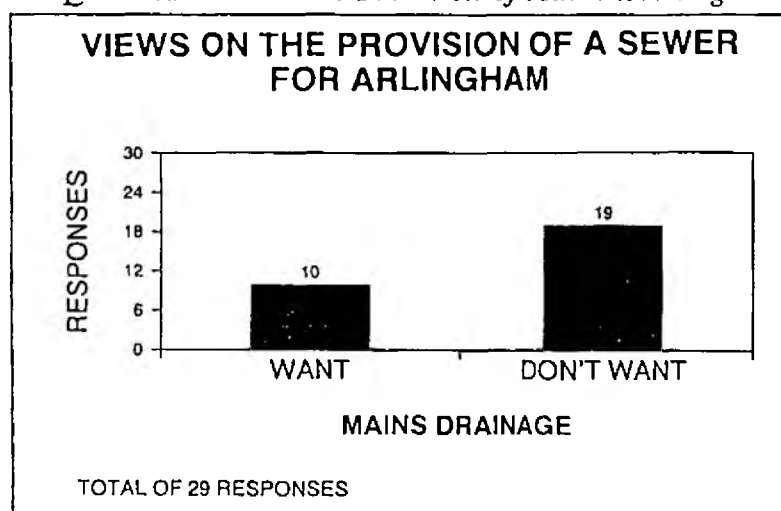
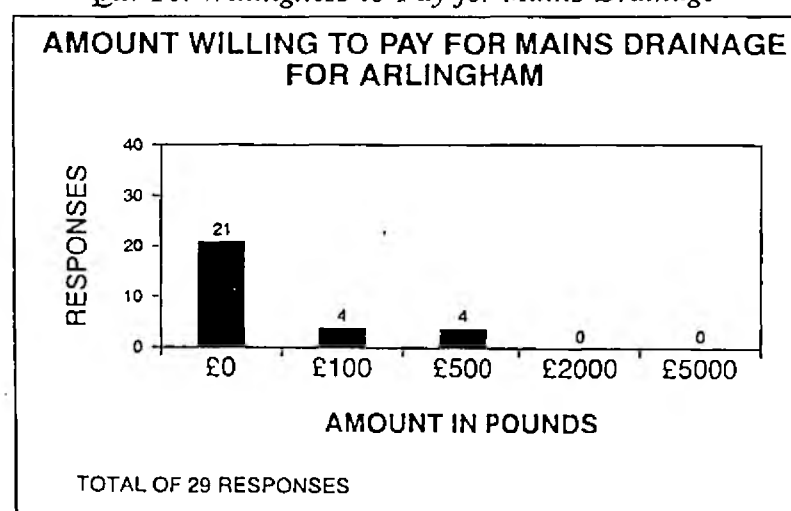
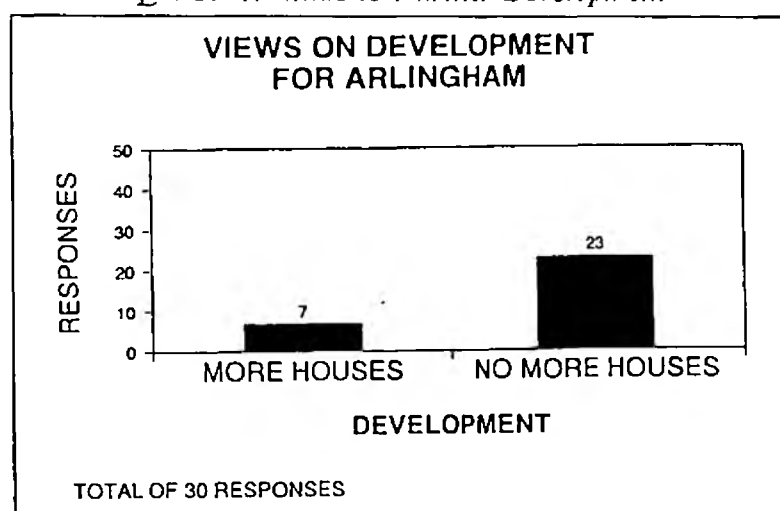
Qu.7: Water Consuming Appliances Used

TOTAL OF 37 RESPONSES

Qu.8: Attitude to Drainage Problems

TOTAL OF 29 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

9.8.2

Site 24: CLAYPITS

IMPACT SCORE: 45

Description

Claypits is situated South of Whitminster and adjacent to the A38 (NGR: SO 766 060). The village is small and linear in nature.

Soil Drainage Characteristics

The village lies on heavy clay, and drains to a tributary of the Wickster's Brook. The soil type is a typical calcareous pelosol (4.11). Under the Groundwater Vulnerability Classification the area has been given Non-Aquifer status.

Development

Over the past ten years no houses have been built in this village.

Foul Drainage

All the properties in the village have septic tank/soakaway systems. The properties in the lower part of the village have piped the overflows from their septic tank systems to a ditch running along Puddleworth Lane.

Pollution

Polluted conditions were detected at one point in the village, with contributions made from approximately seven properties. At the scoring point water quality samples were indicative of a Class 4 (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
11.3	43	28	25

Environmental Health Complaints

Stroud District Council receive occasional environmental health complaints.

VILLAGE NAME: CLAYPITS

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	6-10	2
NO OF DISCHARGE POINTS	1-2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	5-8	3
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>800	20
B.O.D. 10M D/S OF SCORING POINT	>40	5
AMMONIA 10M D/S OF SCORING POINT	5.1-20	4
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	40 - 21	3
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	26 -50M	4
PUBLIC ACCESSIBILITY	HIGH	3
TOTAL SCORE		45

NUMBER OF QUESTIONNAIRES SENT OUT: 23

NUMBER OF QUESTIONNAIRES RETURNED: 12

PERCENTAGE OF QUESTIONNAIRES RETURNED: 52%

PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM: 44%

PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE: 100%

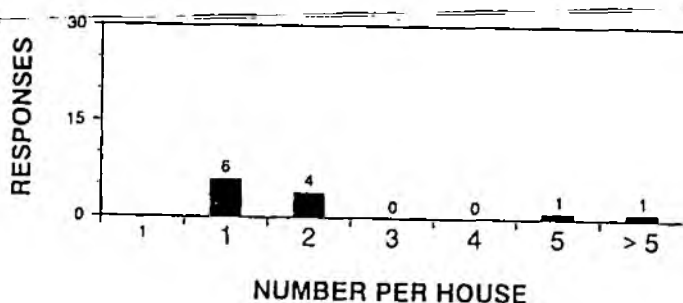
RURAL SEWAGE POLLUTION IN THE '90S CHAPTER 9

ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

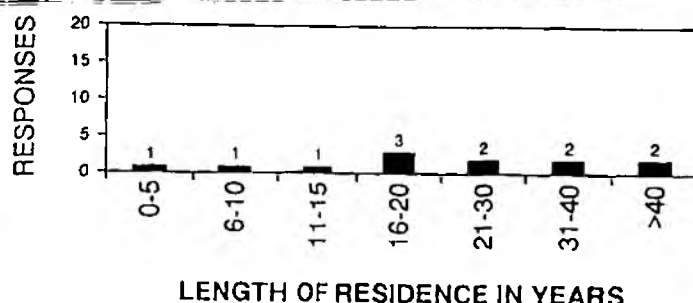
Qu.4: Length of Residence in the Village

SIZE OF HOUSEHOLD FOR CLAYPITS



TOTAL OF 12 RESPONSES

LENGTH OF RESIDENCE FOR CLAYPITS

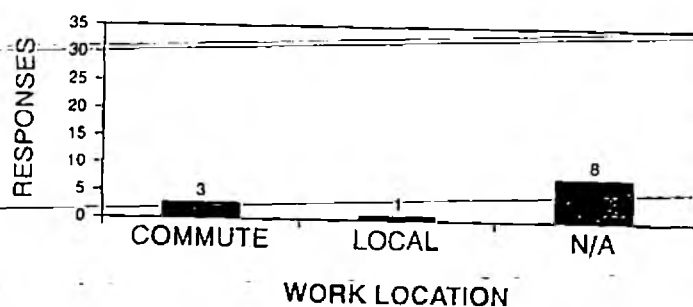


TOTAL OF 12 RESPONSES

Qu.5: Work Location (if applicable)

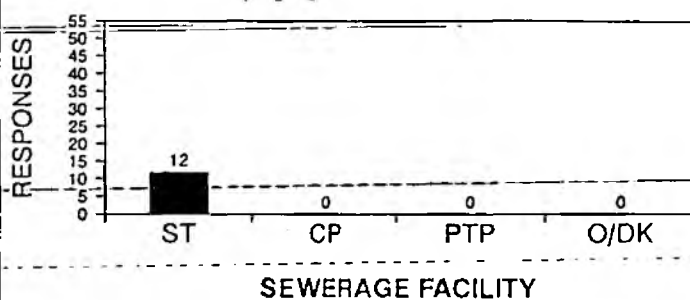
Qu.6: Type of Sewerage Facility

WORK LOCATION FOR CLAYPITS



TOTAL OF 12 RESPONSES

HOUSEHOLD SEWAGE SYSTEMS FOR CLAYPITS

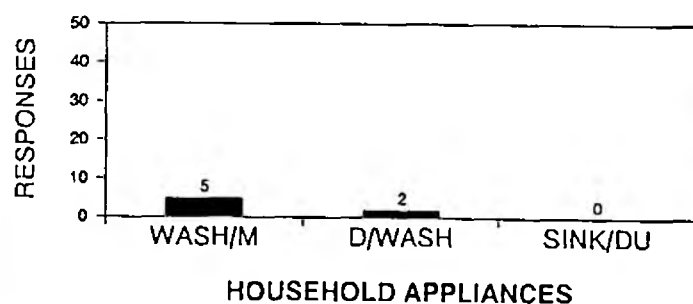


TOTAL OF 12 RESPONSES

Qu.7: Water Consuming Appliances Used

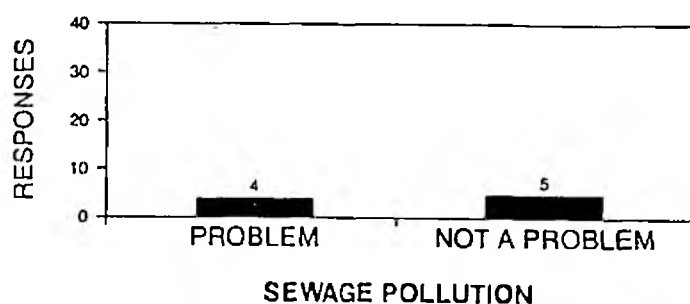
Qu.8: Attitude to Drainage Problems

HOUSEHOLD APPLIANCES FOR CLAYPITS



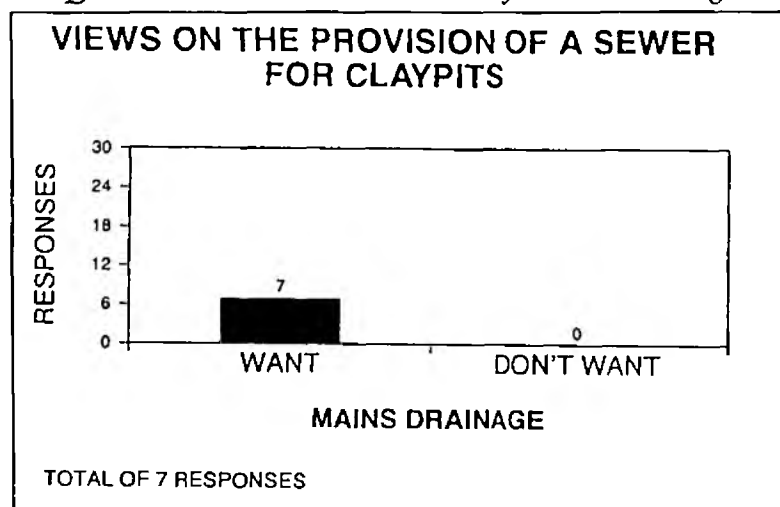
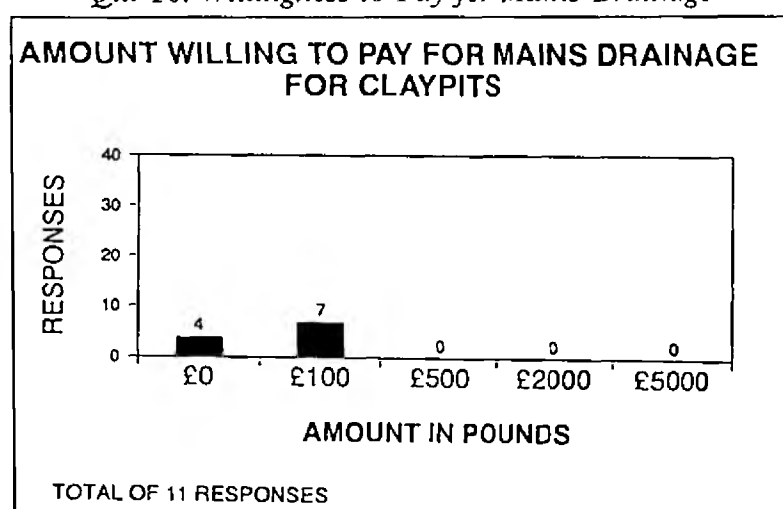
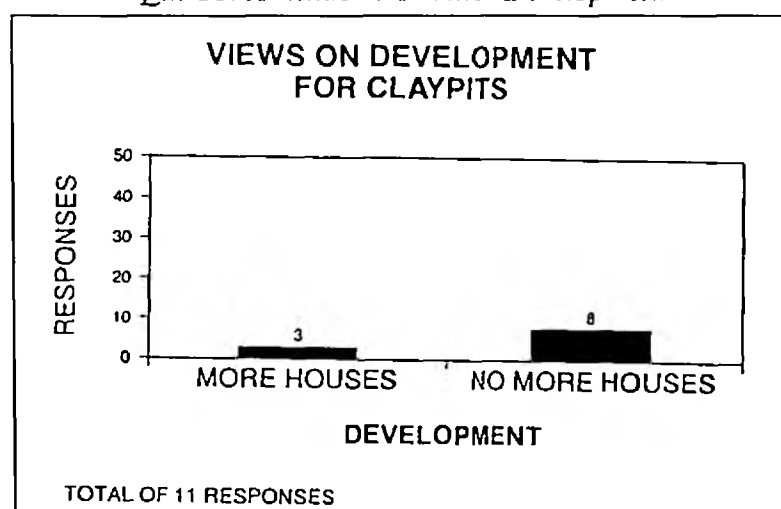
TOTAL OF 7 RESPONSES

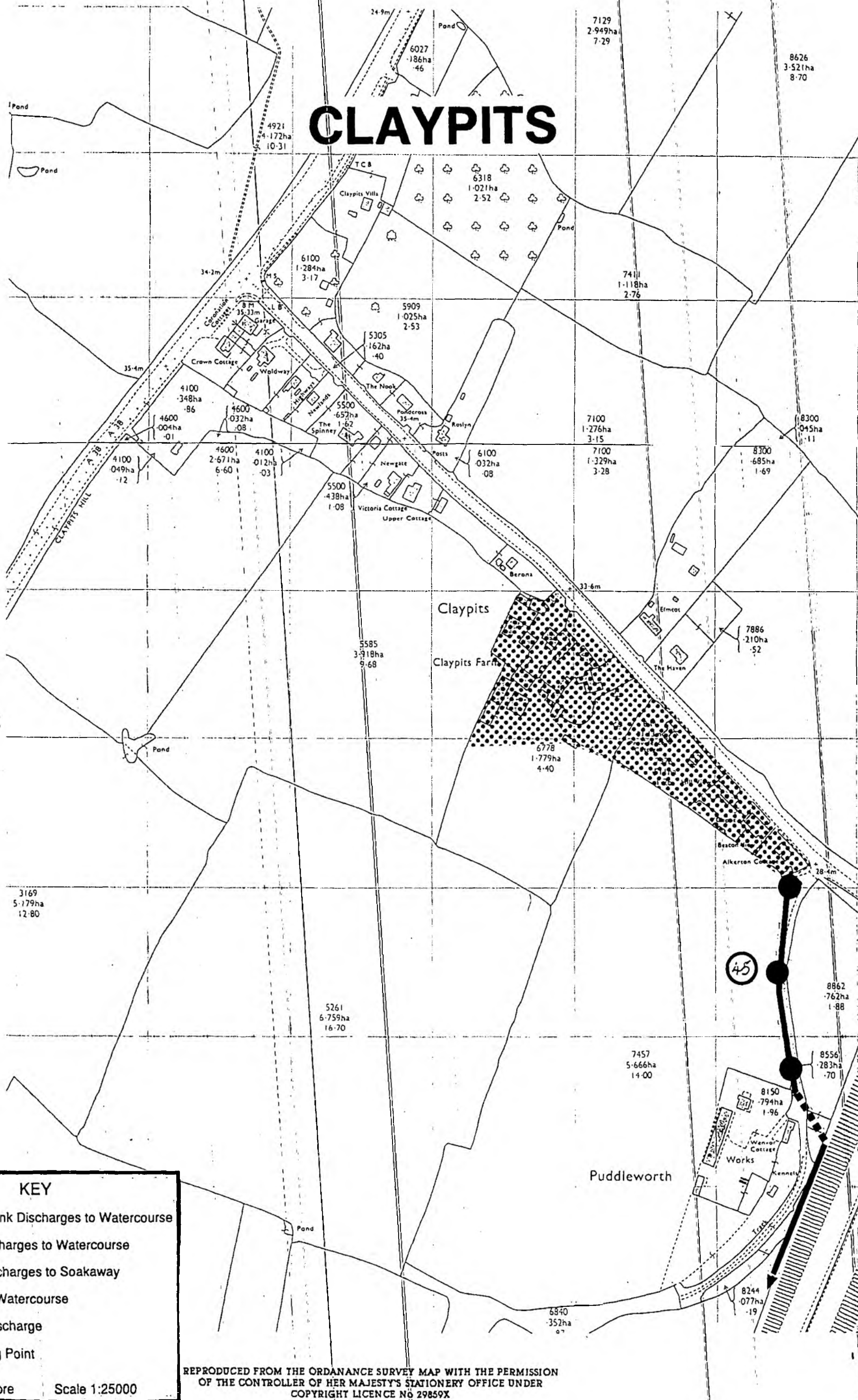
VIEW OF LOCAL SEWAGE POLLUTION FOR CLAYPITS



TOTAL OF 9 RESPONSES








ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



CLAYPITS

KEY

-  Septic Tank Discharges to Watercourse
 -  STP Discharges to Watercourse
 -  STP Discharges to Soakaway
 -  Ditch or Watercourse
 -  Piped Discharge
 -  Sampling Point
 -  Total Score
- Scale 1:25000

REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION
OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER
COPYRIGHT LICENCE NO 29859X

RURAL SEWAGE POLLUTION IN THE '90S -- CHAPTER 9

9.8.3

Site 25: HARESCOMBE

IMPACT SCORE: 21

Description

Harescombe is situated to the North of Pichcombe in a agricultural valley (NGR SO: 837 103).

Soil Characteristics

The subsoil in this area is clay, and the village drains to the Daniel's Brook. The soil type is a typical stagnogley soil (7.11). Under the Groundwater Vulnerability Classification the area has Non-Aquifer status.

Development

Pressure for development in this village is fairly high, however it is tightly restricted. Over the past ten years there has been no development.

Foul Drainage

All of the houses in the village are served by septic tank/soakaway systems, some of which malfunction due to the impervious nature of the clay subsoil.

Pollution

Polluted conditions were detected at one point in the village, downstream of 'Spring-Acre'. This location was not taken as the scoring point, due to the fact that the pollution contribution was from only one household. At the scoring point water quality samples were of good quality, and indicative of a Class 1A watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
0.33	1.0	5.0	84

Environmental Health Complaints

Stroud district council receive regular environmental health complaints from this village.

VILLAGE NAME: HARESCOMBE

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	11-20	3
NO OF DISCHARGE POINTS	3-4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	3-4	2
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>200M	10
B.O.D. 10M D/S OF SCORING POINT	<5	1
AMMONIA 10M D/S OF SCORING POINT	<0.7	1
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	>60	1
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	LOW	1
TOTAL SCORE		21

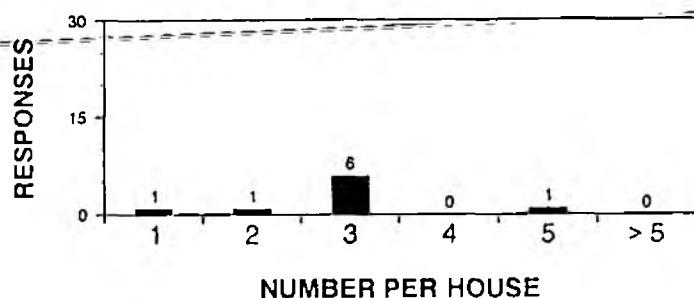
NUMBER OF QUESTIONNAIRES SENT OUT:	23
NUMBER OF QUESTIONNAIRES RETURNED:	9
PERCENTAGE OF QUESTIONNAIRES RETURNED:	39%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	12%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	57

RURAL SEWAGE POLLUTION IN THE '90S CHAPTER 9

ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

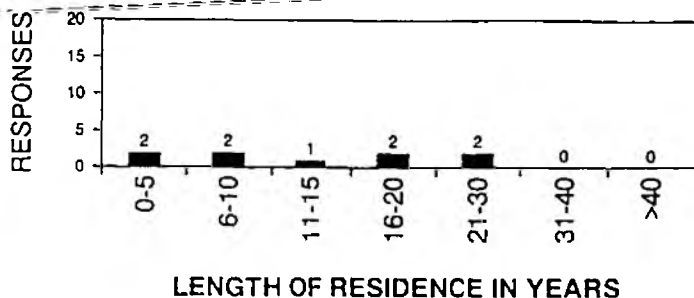
SIZE OF HOUSEHOLD FOR HARESCOMBE



TOTAL OF 9 RESPONSES

Qu.4: Length of Residence in the Village

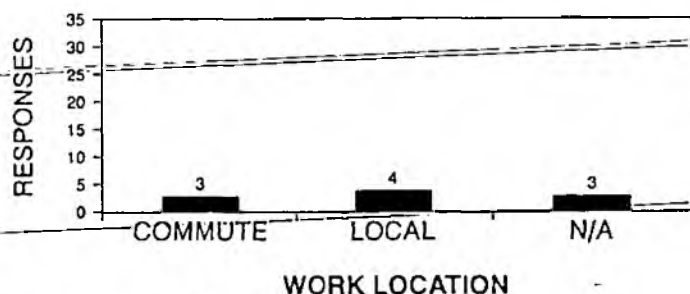
LENGTH OF RESIDENCE FOR HARESCOMBE



TOTAL OF 9 RESPONSES

Qu.5: Work Location (if applicable)

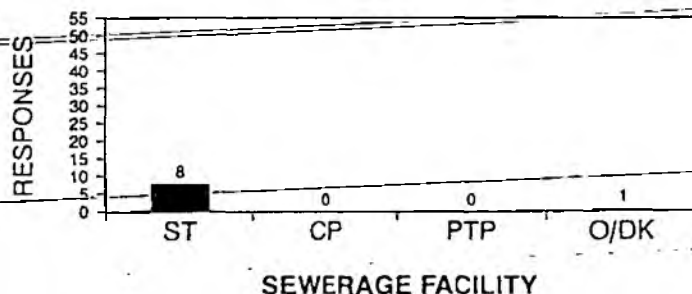
WORK LOCATION FOR HARESCOMBE



TOTAL OF 10 RESPONSES

Qu.6: Type of Sewerage Facility

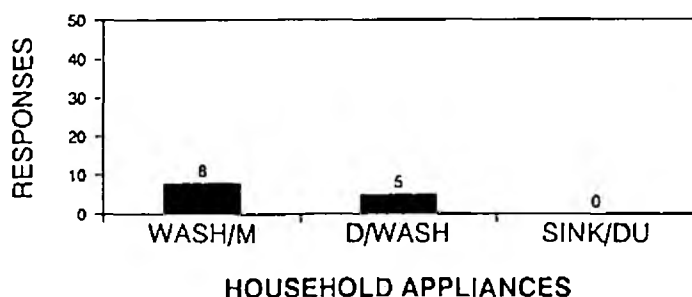
HOUSEHOLD SEWAGE SYSTEMS FOR HARESCOMBE



TOTAL OF 9 RESPONSES

Qu.7: Water Consuming Appliances Used

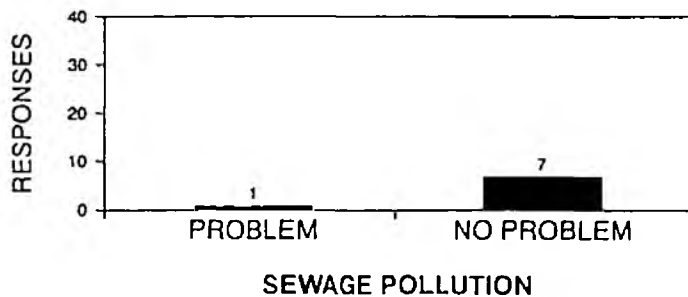
HOUSEHOLD APPLIANCES FOR HARESCOMBE



TOTAL OF 13 RESPONSES

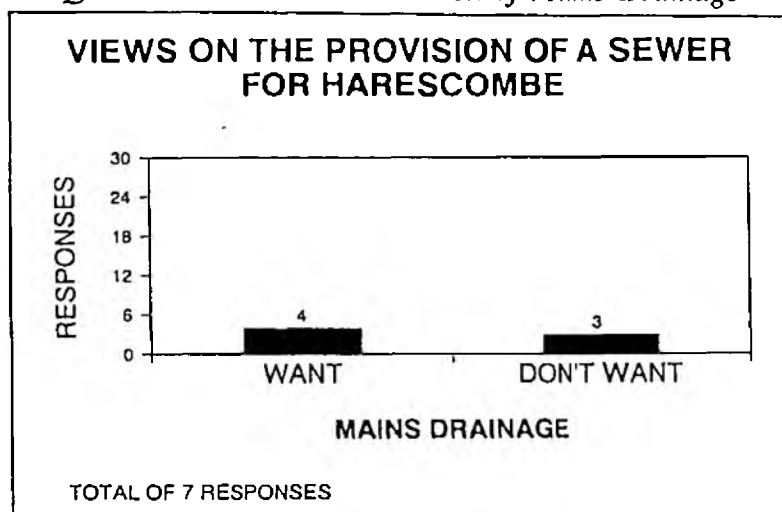
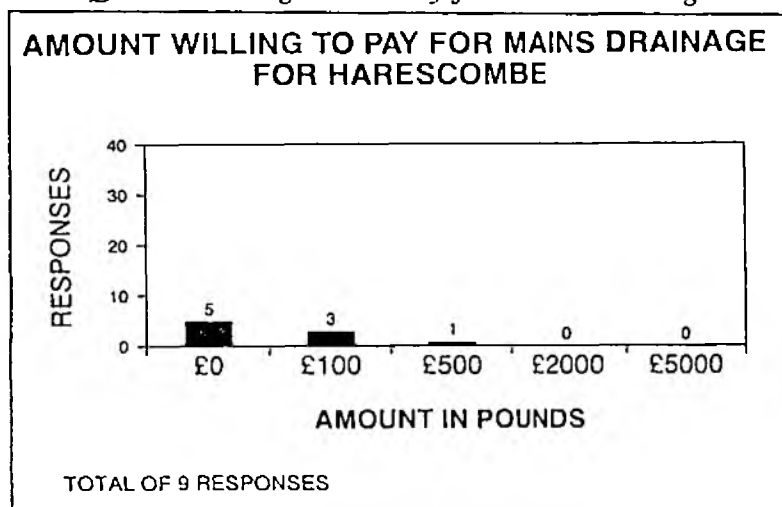
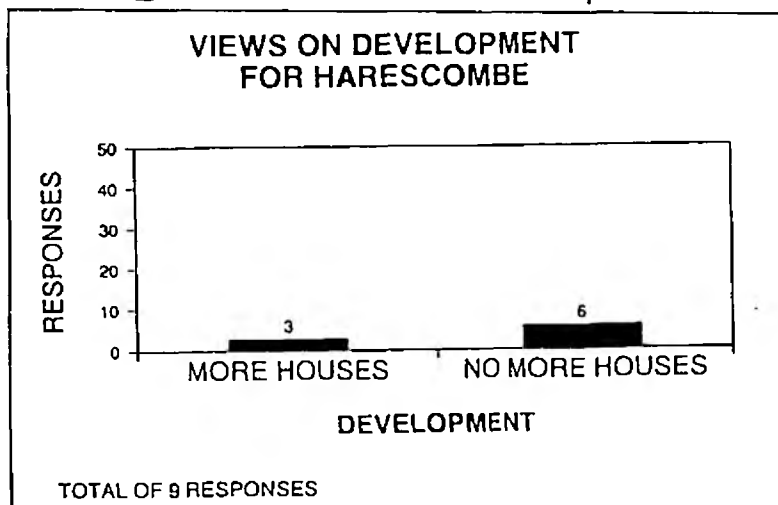
Qu.8: Attitude to Drainage Problems

VIEW OF LOCAL SEWAGE POLLUTION FOR HARESCOMBE



TOTAL OF 8 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

HARESCOMBE

KEY

- Septic Tank Discharges to Watercourse
- STP Discharges to Watercourse
- STP Discharges to Soakaway
- Ditch or Watercourse
- Piped Discharge
- Sampling Point
- Total Score








Not to Scale

REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER COPYRIGHT LICENCE No 29859X

HARESCOMBE C:P

Harescombe

KEY

-  Septic Tank Discharges to Watercourse
 STP Discharges to Watercourse
 STP Discharges to Soakaway
 Ditch or Watercourse
 Piped Discharge
 Sampling Point
 Total Score

REPRODUCED FROM THE ORDANANCE SURVEY MAP WITH THE PERMISSION
OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER
COPYRIGHT LICENCE No 29859X

9.8.4

Site 26: LONGNEY

IMPACT SCORE: 37

Description

Longney lies to the West of Hardwicke on the East bank of the River Severn (NGR SO 764 125). The population of the village has been estimated at 195 people.

Soil Drainage Characteristics

The village is situated on alluvium gravel and clay, and drains to the River Severn. The soil type is a typical calcareous pelosol soil (4.11). Under the Groundwater Vulnerability Classification this area has been given Non-Aquifer status.

Development

Development has been in the form of infilling and minor consolidation. Over the past ten years there have been five properties built, and seven applications for development have been made.

Foul Drainage

Fourteen properties to the South of the village discharge to a Severn Trent Septic Tank. This enters a drainage rhine and eventually discharges into the Severn Estuary by a pumping station operated by the Internal Drainage Board. This discharge has a descriptive consent. The rest of the village is served by septic tank/soakaway systems, some of which malfunction and discharge to Lords Rhine. A 'village drain' exists near to the old post office. Some of the properties nearby which used to discharge to this drain, have now been disconnected.

Pollution

Polluted conditions were found at four main points in the village along Lords Rhine, with contributions made from approximately nineteen properties. At the scoring point samples were indicative of a Class 4 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
15.5	39	31	18

Environmental Health Complaints

Stroud District Council receive frequent environmental health complaints from this village.

VILLAGE NAME: LONGNEY

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	11-20	3
NO OF DISCHARGE POINTS	3-4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	9-16	4
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>200M	10
B.O.D. 10M D/S OF SCORING POINT	18-40	4
AMMONIA 10M D/S OF SCORING POINT	>20	5
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	20-10	4
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	11-25m	3
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		37

NUMBER OF QUESTIONNAIRES SENT OUT: 29

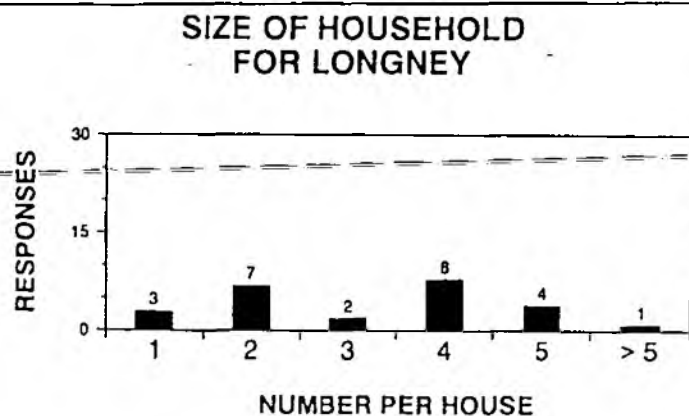
NUMBER OF QUESTIONNAIRES RETURNED: 25

PERCENTAGE OF QUESTIONNAIRES RETURNED: 86%

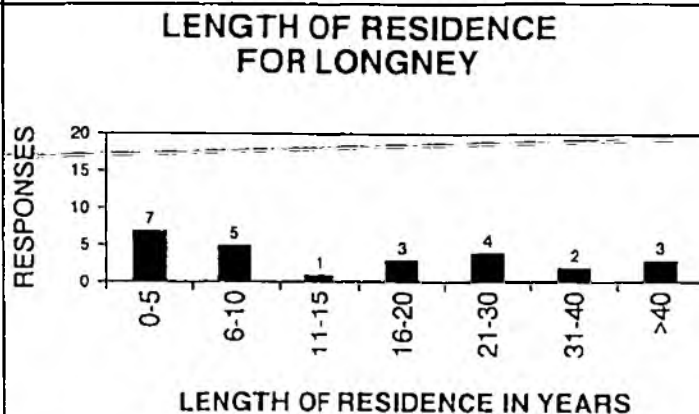
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE
POLLUTION IS A PROBLEM: 36%

PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE: 33%

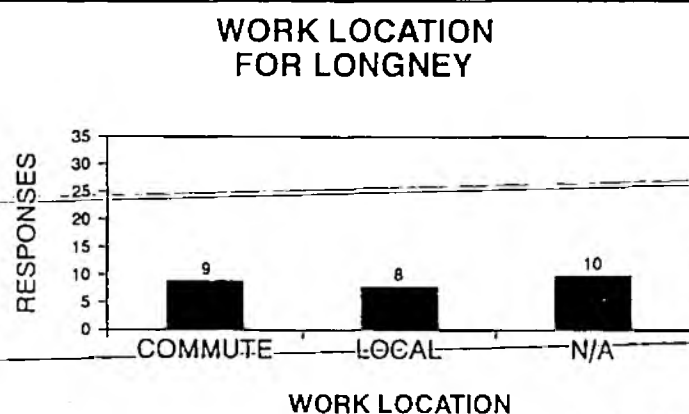
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

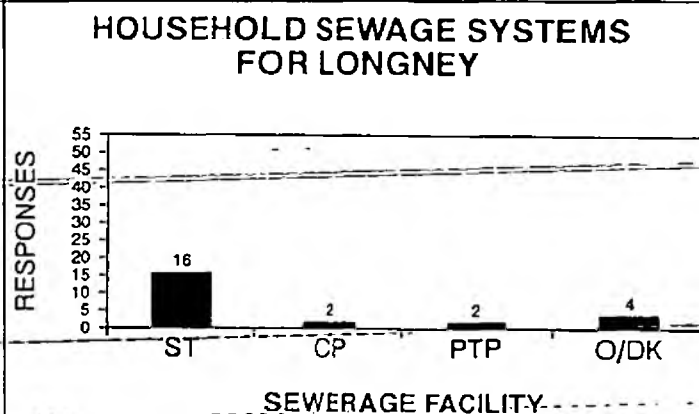
TOTAL OF 25 RESPONSES

Qu.4: Length of Residence in the Village

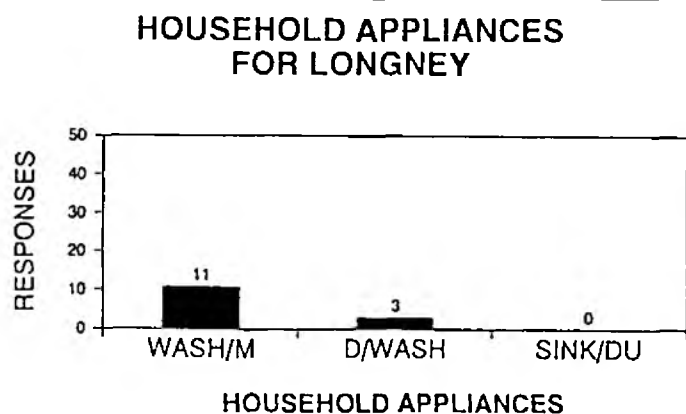
TOTAL OF 25 RESPONSES

Qu.5: Work Location (if applicable)

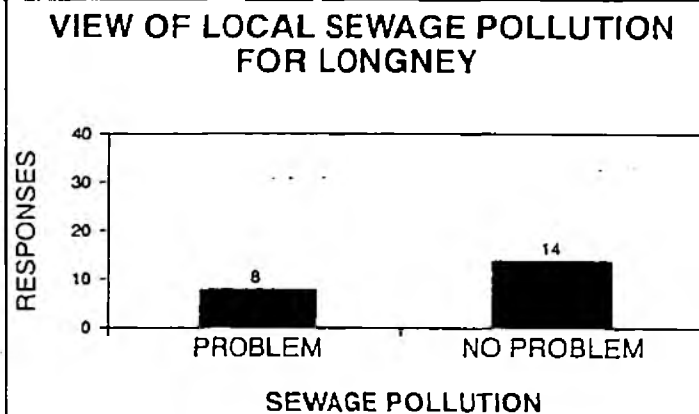
TOTAL OF 27 RESPONSES

Qu.6: Type of Sewerage Facility

TOTAL OF 24 RESPONSES

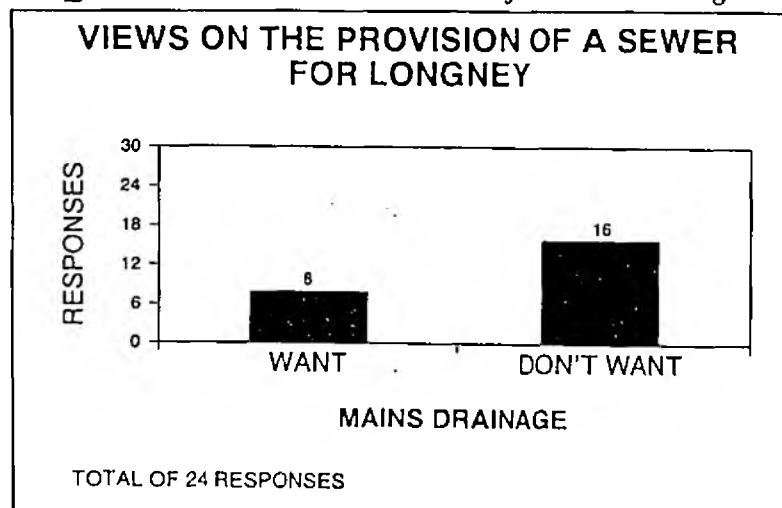
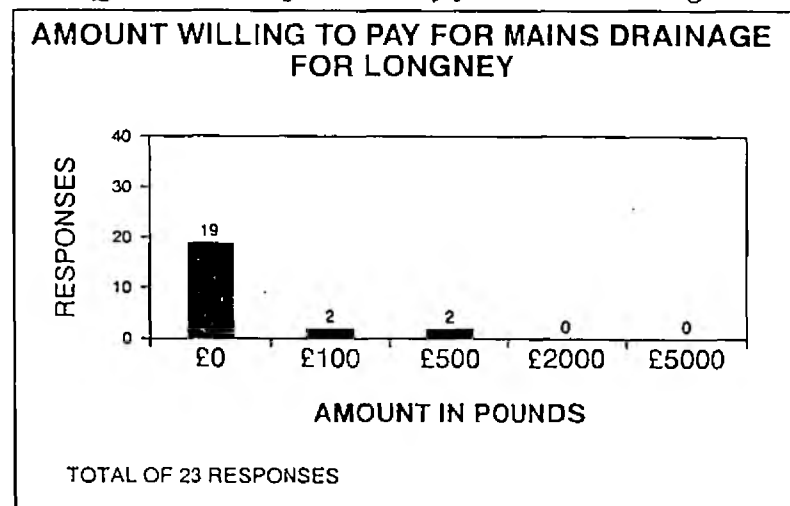
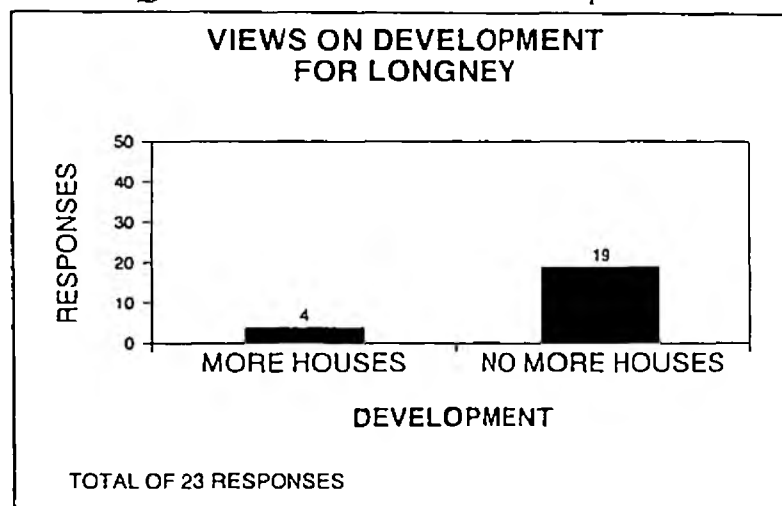
Qu.7: Water Consuming Appliances Used

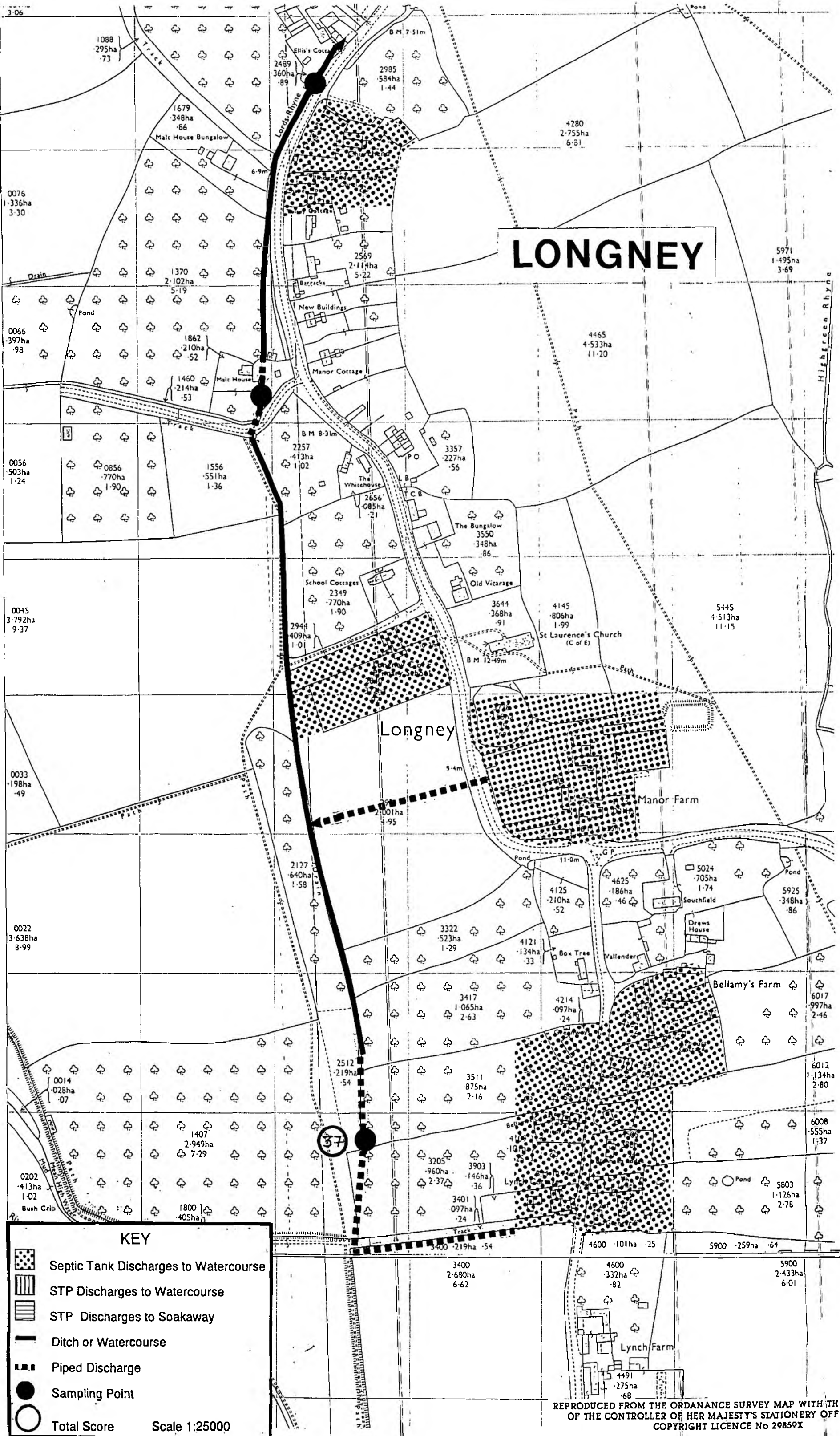
TOTAL OF 14 RESPONSES

Qu.8: Attitude to Drainage Problems

TOTAL OF 22 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



LONGNEY

Longney

Manor Farm

Bellamy's Farm

Lynch Farm

KEY

- Septic Tank Discharges to Watercourse
- STP Discharges to Watercourse
- STP Discharges to Soakaway
- Ditch or Watercourse
- Piped Discharge
- Sampling Point
- Total Score

Scale 1:25000

9.8.5**Site 27: OAKRIDGE****IMPACT SCORE: -*****Description***

Oakridge is situated to the East of Stroud, on the Northern steep sided valley of the River Frome (NGR: SO 915 032).

Soil Drainage Characteristics

Oakridge is situated on a limestone scarp, and it drains to the River Frome. The soil type is a typical calcareous pelosol (4.11). Under the Groundwater Vulnerability Classification this is a Major Aquifer area.

Development Pressure

Development pressure for this area is high. Over the past ten years there have been twelve applications made for development, and eleven granted.

Foul Drainage

The majority of properties in the village are served by septic tank/soakaway systems. Due to the fissured nature of the limestone bed-rock most of the soakaway systems are ineffective and discharge to groundwater.

Pollution

Surface water was found to be unpolluted and it was not possible to determine the degree of any groundwater pollution. For this reason it was not possible to derive a Pollution Rating Score.

Environmental Health

Stroud District Council do not receive any environmental health complaints from this village.

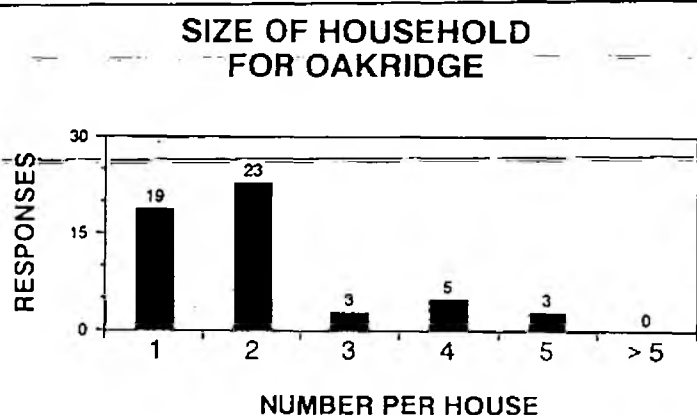
VILLAGE NAME: OAKRIDGE

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING		
NO OF DISCHARGE POINTS		
NO OF HOUSES DISCHARGING AT SCORING POINT		
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT		
B.O.D. 10M D/S OF SCORING POINT		
AMMONIA 10M D/S OF SCORING POINT		
DISSOLVED OXYGEN 10M D/S OF SCORING POINT		
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT		
PUBLIC ACCESSIBILITY		
TOTAL SCORE		--

NUMBER OF QUESTIONNAIRES SENT OUT:	73
NUMBER OF QUESTIONNAIRES RETURNED:	53
PERCENTAGE OF QUESTIONNAIRES RETURNED:	72%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	24%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	55%

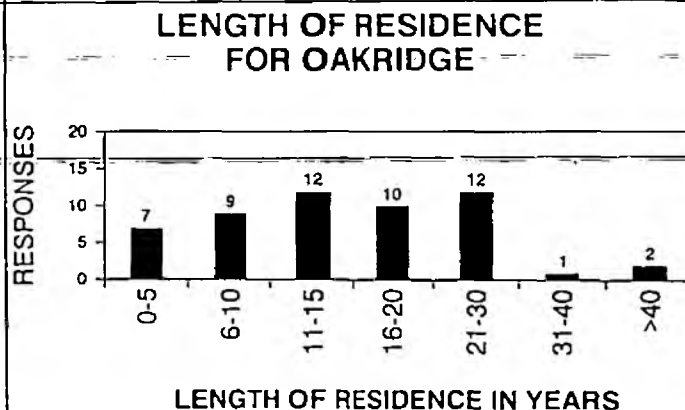
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property



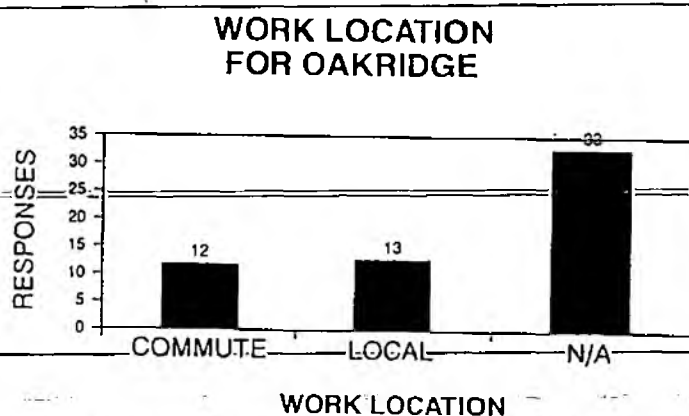
TOTAL OF 53 RESPONSES

Qu.4: Length of Residence in the Village



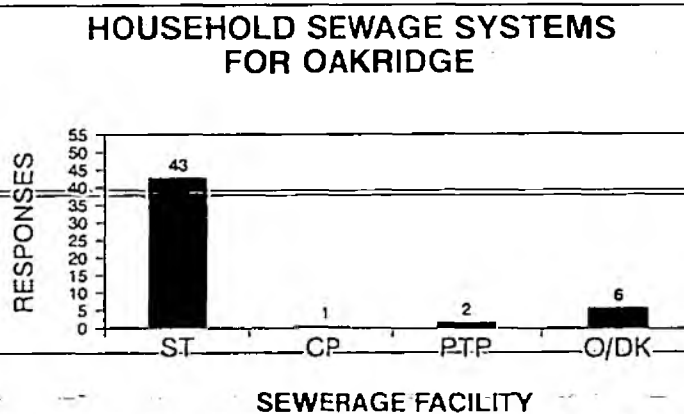
TOTAL OF 53 RESPONSES

Qu.5: Work Location (if applicable)



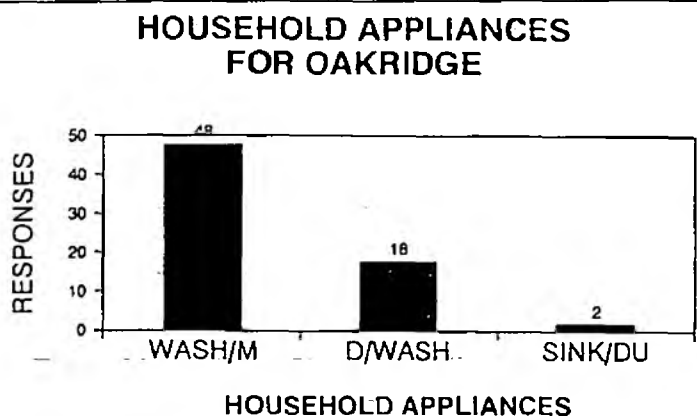
TOTAL OF 58 RESPONSES

Qu.6: Type of Sewerage Facility



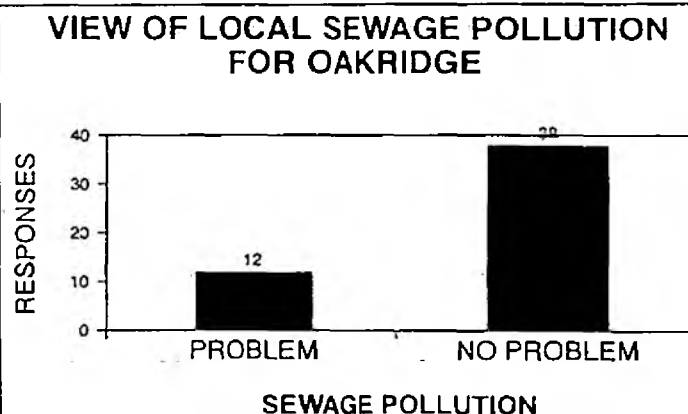
TOTAL OF 52 RESPONSES

Qu.7: Water Consuming Appliances Used



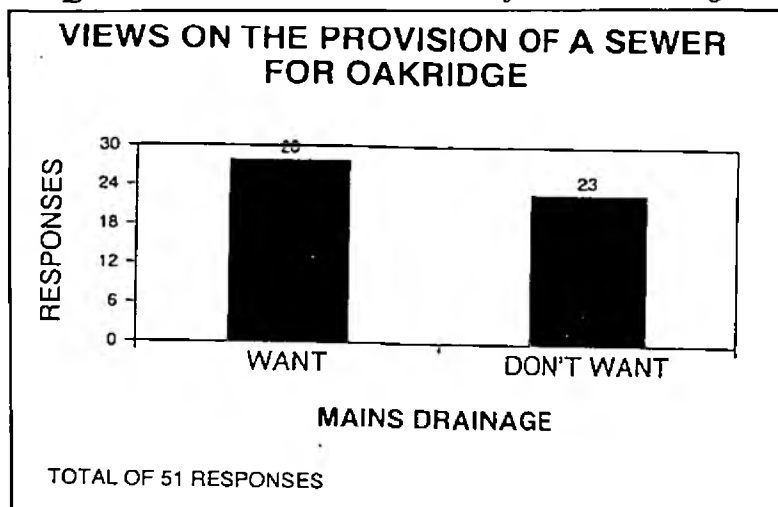
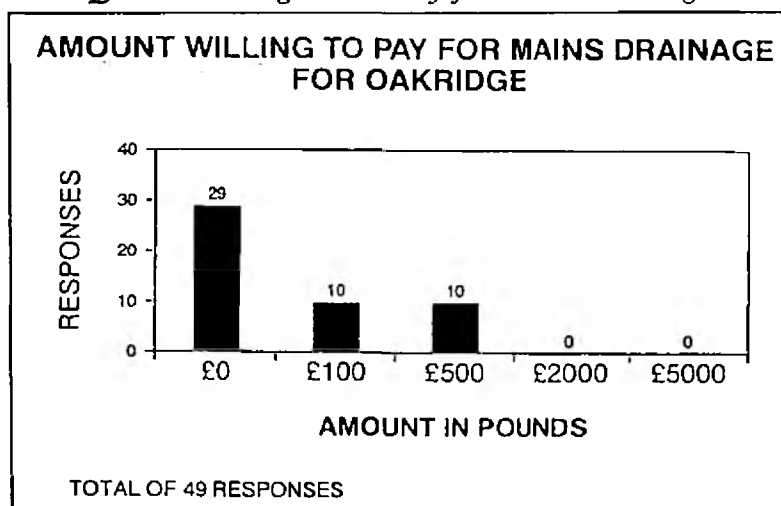
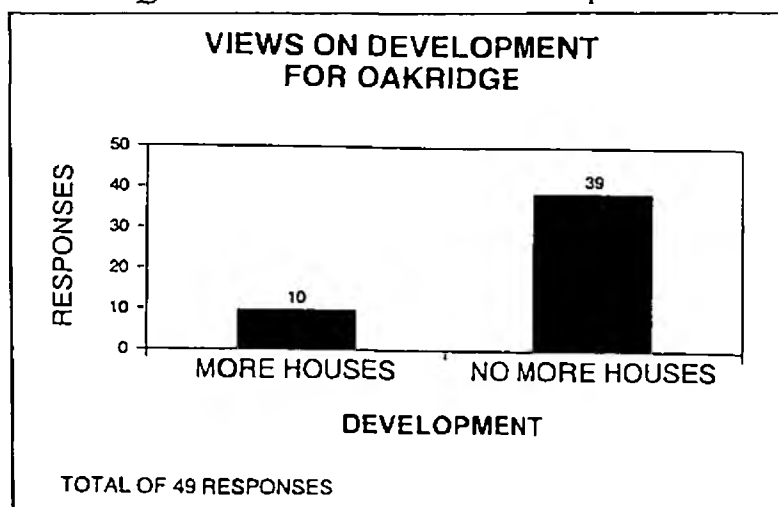
TOTAL OF 68 RESPONSES

Qu.8: Attitude to Drainage Problems

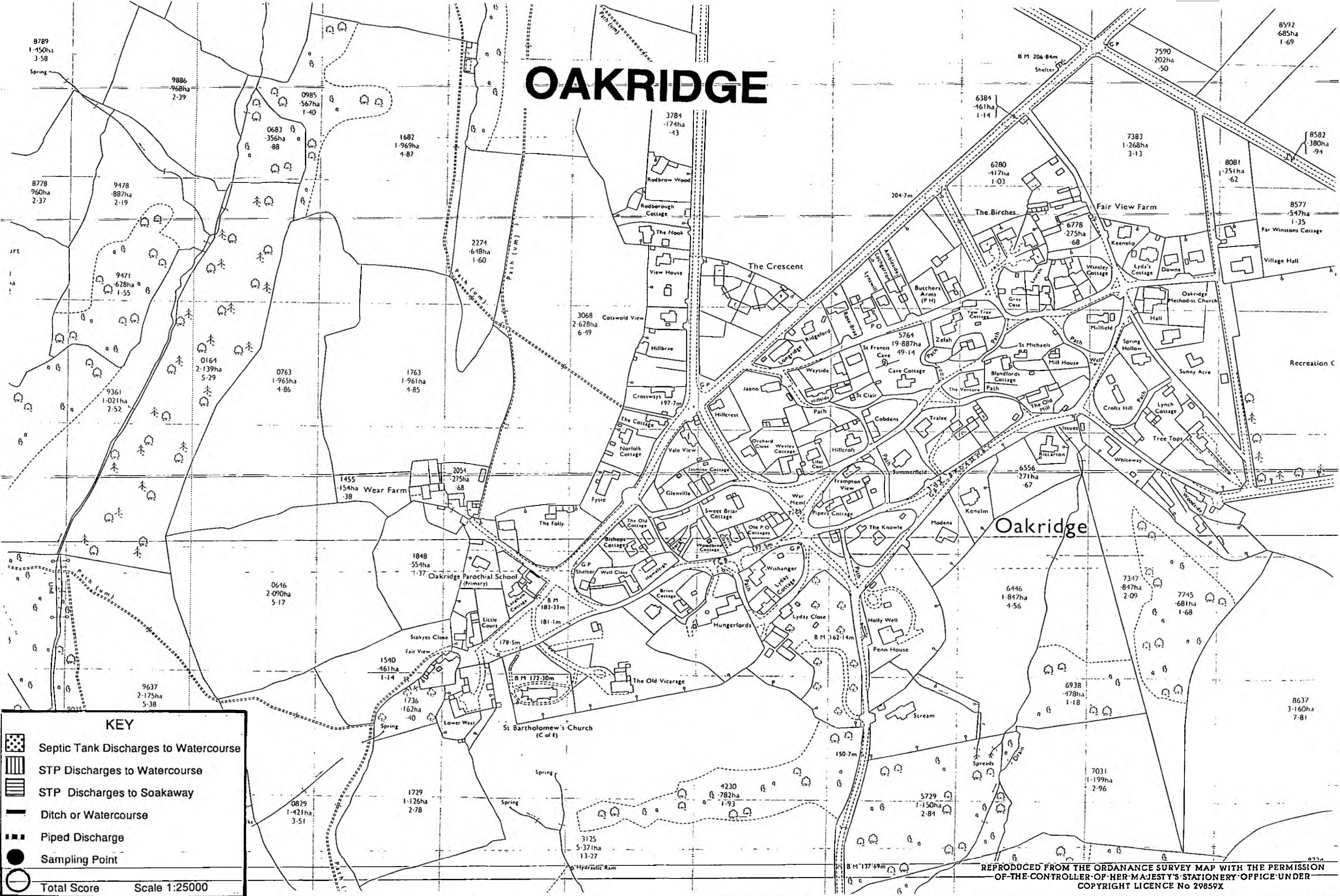


TOTAL OF 50 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

OAKRIDGE



9.9 TEWKESBURY BOROUGH COUNCIL

Response to Questionnaire

- **Population of district:** 70,700
- **Population connected to the public sewerage system:**
Approximately 63,000 properties.
- **Has your council adopted any formal policy towards provision of sewerage?**
The Council has an adopted policy on first-time sewerage and hitherto has funded the costs completely, with the exception of connection costs which have been charged to the householders. This policy is, however, held in abeyance pending the outcome of the Rural Sewerage Forum because of the pressure from other commitments.
- **Does your council have an on going programme of first time sewerage schemes?**
Yes, at an estimated cost of £2.5 million.
Walton Cardiff, Didbrook, Minsterworth, Brockhampton, Great Witcombe, Highnam (Phase 2), The Leigh, Bentham, Hasfield, Henley Bank, A46 Brockworth.
- **Total value of first time sewerage schemes constructed in the last ten years.**
£215,000
Twigworth
Butts Lane Woodmancote
Twigworth Fields
- **Does your council own/maintain sewage plants/sewerage systems in its own right?**
(Not as sewerage agents)
The council has 3 RBC's, 3 biological filter beds, and 1 septic tank.

Impact Ranking Order of Villages Covered in the Survey		
Site 34.	Walton Cardiff	37
Site 32.	Minsterworth	23
Site 28.	Bentham	23
Site 29.	Coombe Hill	23
Site 31.	Hasfield	21
Site 33.	The Leigh	20
Site 30.	Deerhurst	-

THIS IS A BLANK PAGE

9.9.1

Site 28: BENTHAM

IMPACT SCORE: 23

Description

Bentham is situated two and a half miles to the south west of Cheltenham, and to the East of Brockworth (NGR SO: 915 167).

Soil Drainage Characteristics

The village lies on heavy clay and drains to Norman's Brook. The soil type is a typical brown calcareous earth soil (5.11). Under the Groundwater Vulnerability Classification the area has been given Non-Aquifer status.

Development

There is limited development pressure for this village. Over the last ten years one property has been built.

Foul Drainage

The majority of properties in this village are served by septic tank/soakaway systems. Some of these malfunction due to the impervious nature of the clay subsoil and leach into a small stream that leads to the Norman's Brook.

Pollution

Polluted conditions were detected at three main points along Dog Lane, with a contribution from six properties. At the scoring point water quality samples were indicative of a Class 2 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
1.8	5	81	63

Environmental Health Complaints

Tewkesbury Borough Council receive regular environmental health complaint from this village.

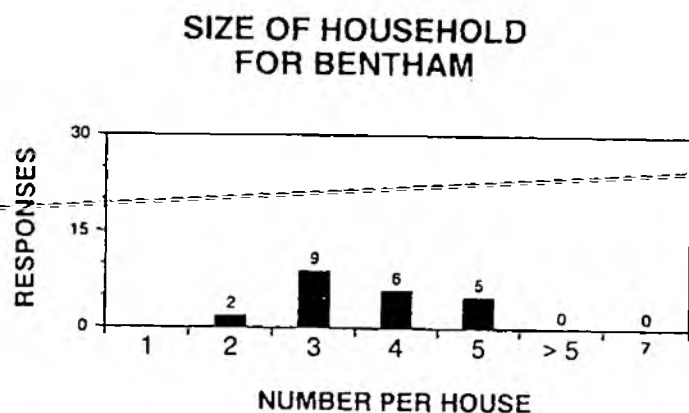
VILLAGE NAME: BENTHAM

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	6-10	2
NO OF DISCHARGE POINTS	5-8	3
NO OF HOUSES DISCHARGING AT SCORING POINT	1-2	1
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>200M	10
B.O.D. 10M D/S OF SCORING POINT	5-9	2
AMMONIA 10M D/S OF SCORING POINT	0.7-2.5	2
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	>60	1
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		23

NUMBER OF QUESTIONNAIRES SENT OUT:	29
NUMBER OF QUESTIONNAIRES RETURNED:	22
PERCENTAGE OF QUESTIONNAIRES RETURNED:	75%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	59%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	61%

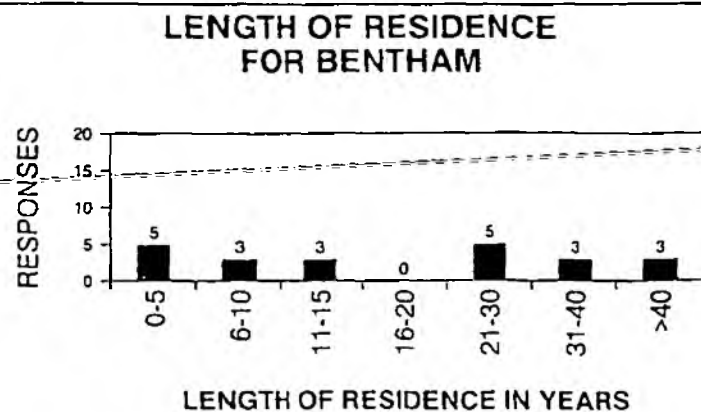
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property



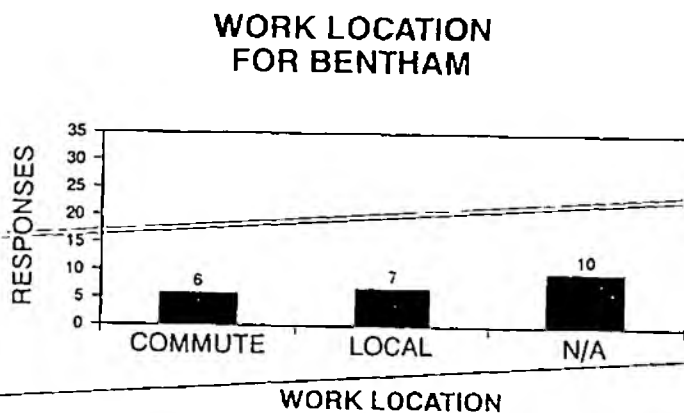
TOTAL OF 22 RESPONSES

Qu.4: Length of Residence in the Village



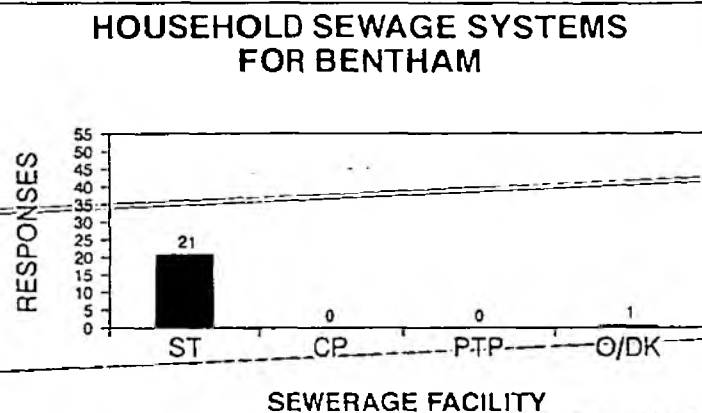
TOTAL OF 22 RESPONSES

Qu.5: Work Location (if applicable)



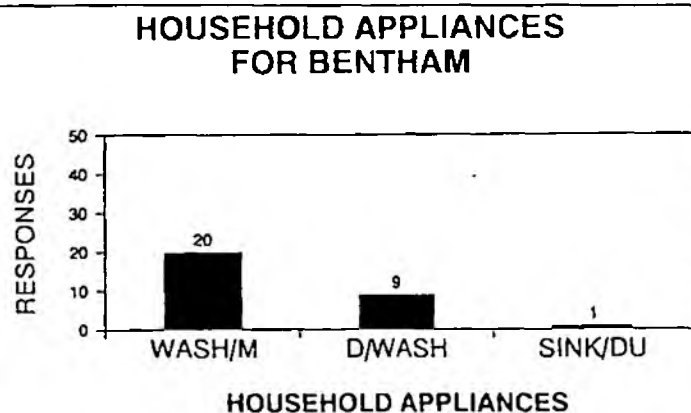
TOTAL OF 23 RESPONSES

Qu.6: Type of Sewerage Facility



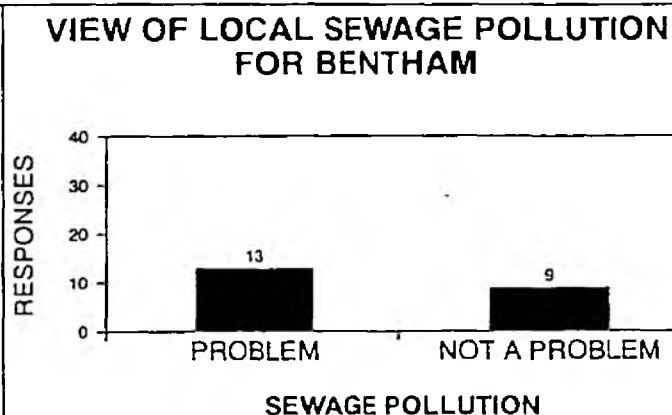
TOTAL OF 22 RESPONSES

Qu.7: Water Consuming Appliances Used



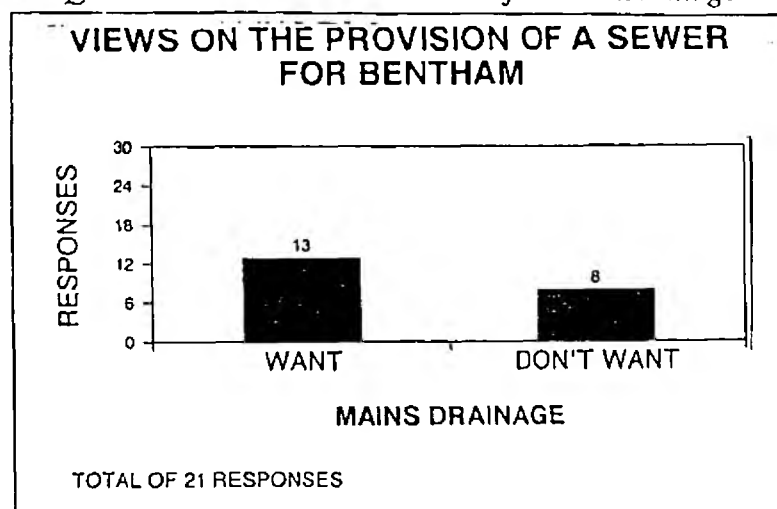
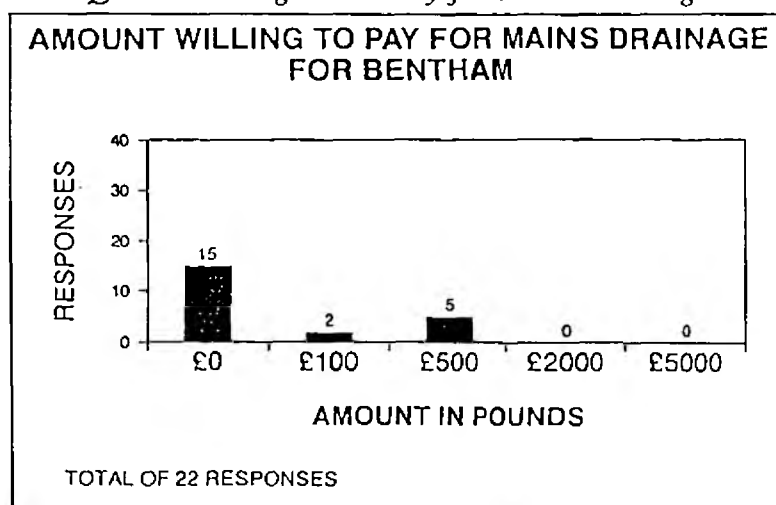
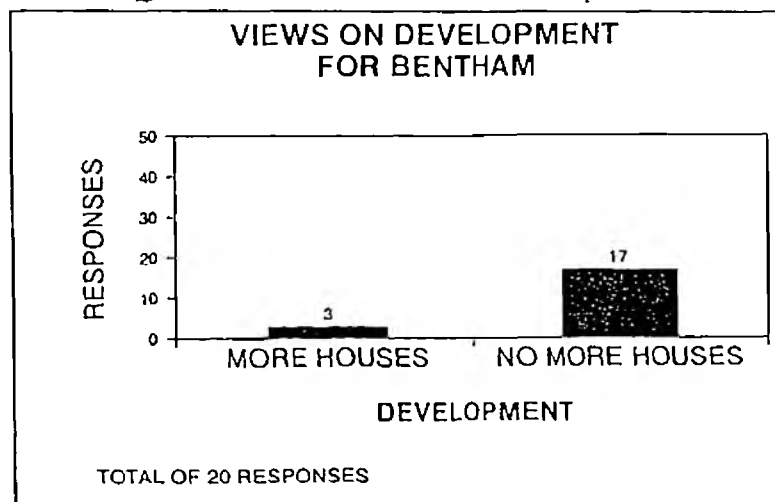
TOTAL OF 30 RESPONSES

Qu.8: Attitude to Drainage Problems










TOTAL OF 22 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

BENTHAM

KEY

-  Septic Tank Discharges to Watercourse
-  STP Discharges to Watercourse
-  STP Discharges to Soakaway
-  Ditch or Watercourse
-  Piped Discharge
-  Sampling Point
-  Total Score

Scale 1:25000

21

9.9.2

Site 29: COOMBE HILL

IMPACT SCORE: 23

Description

Coombe Hill is centred around the junction between the A38 Tewkesbury to Gloucester Road, and the A4019 (NGR: SO 889 271). The population of the village has been estimated at 60 people.

Soil Drainage Characteristics

The village lies on alluvium gravel, and drains via a network of ditches to the Coombe Hill Canal. The soil type is a pelo-alluvial gley soil (8.13). Under the Groundwater Vulnerability classification this area has been given Non-Aquifer status.

Development

Over the past ten years two properties have been built.

Foul Drainage

All properties are served by septic tank/soakaway systems. Seven properties at the end of Wharf Lane have a piped discharge of septic effluent to a ditch leading to the Coombe Hill Canal. This old 'village drain' has been accepted as a public sewer.

Pollution

Polluted conditions were detected at one point in the village, with a contribution from seven properties. At the score point, water quality samples were indicative of a Class 4 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
4.70	288	235	45

Environmental Health Complaints

No information available.

NAME OF VILLAGE: COOMBE HILL

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	6-10	2
NO OF DISCHARGE POINTS	1-2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	5-8	3
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100-200	5
B.O.D. 10M D/S OF SCORING POINT	>40	5
AMMONIA 10M D/S OF SCORING POINT	2.6-5.0	3
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	60-41	2
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		23

NUMBER OF QUESTIONNAIRES SENT OUT: 20

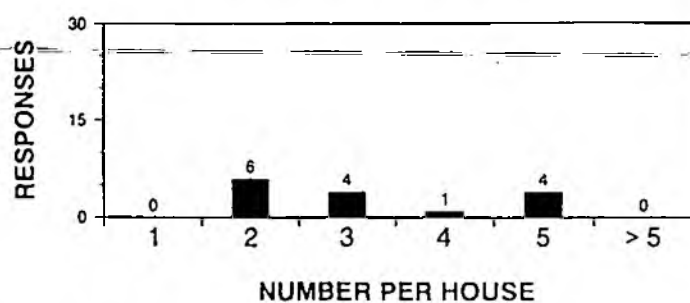
NUMBER OF QUESTIONNAIRES RETURNED: 15

PERCENTAGE OF QUESTIONNAIRES RETURNED: 75%

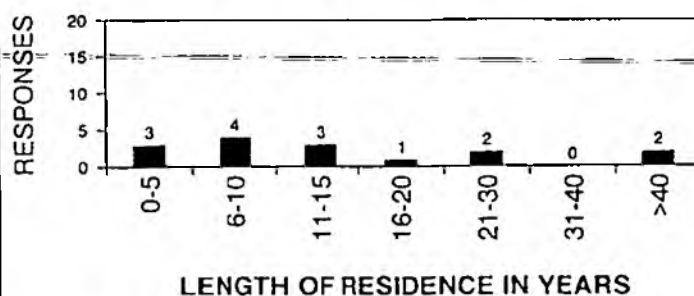
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM: 13%

PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE: 23%

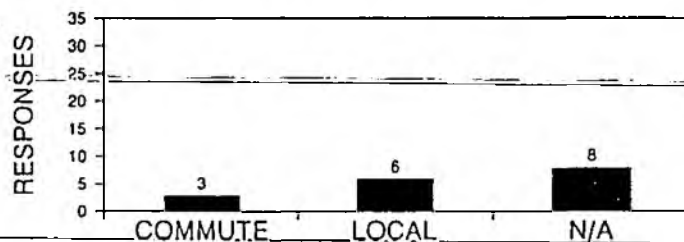
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property*SIZE OF HOUSEHOLD
FOR COOMBE HILL

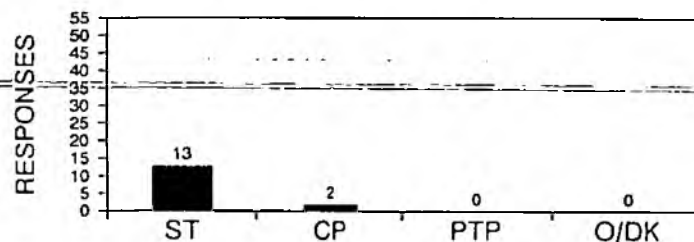
TOTAL OF 15 RESPONSES

*Qu.4: Length of Residence in the Village*LENGTH OF RESIDENCE
FOR COOMBE HILL

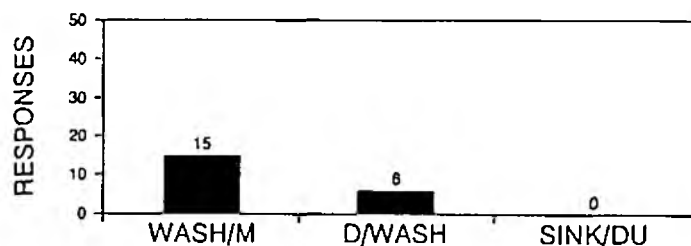
TOTAL OF 15 RESPONSES

*Qu.5: Work Location (if applicable)*WORK LOCATION
FOR COOMBE HILL

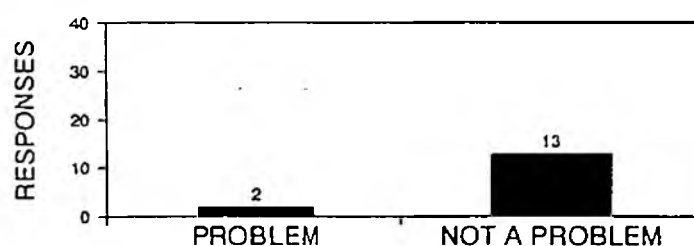
TOTAL OF 17 RESPONSES

*Qu.6: Type of Sewerage Facility*HOUSEHOLD SEWAGE SYSTEMS
FOR COOMBE HILL

TOTAL OF 15 RESPONSES

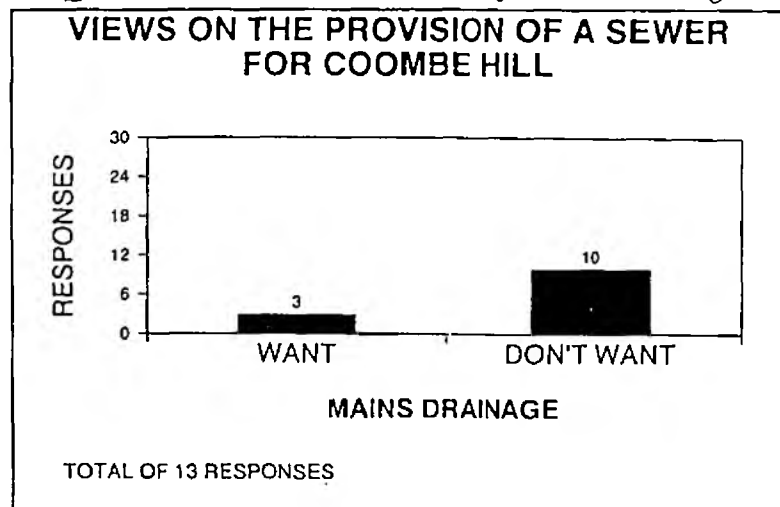
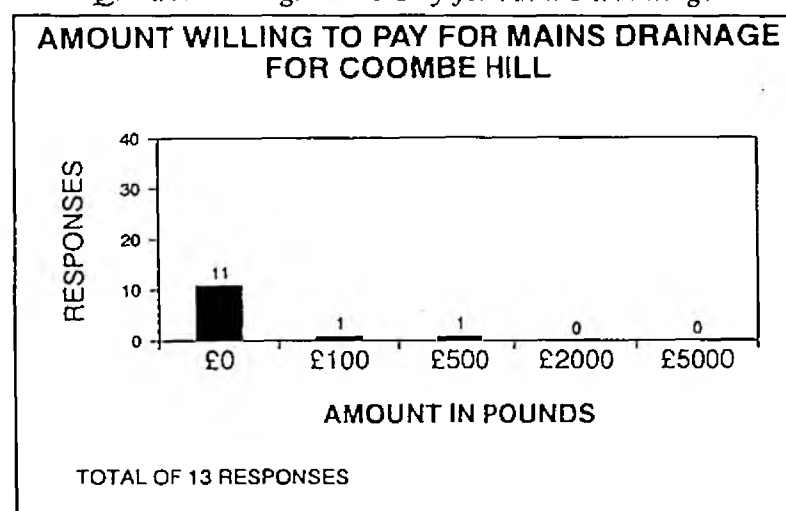
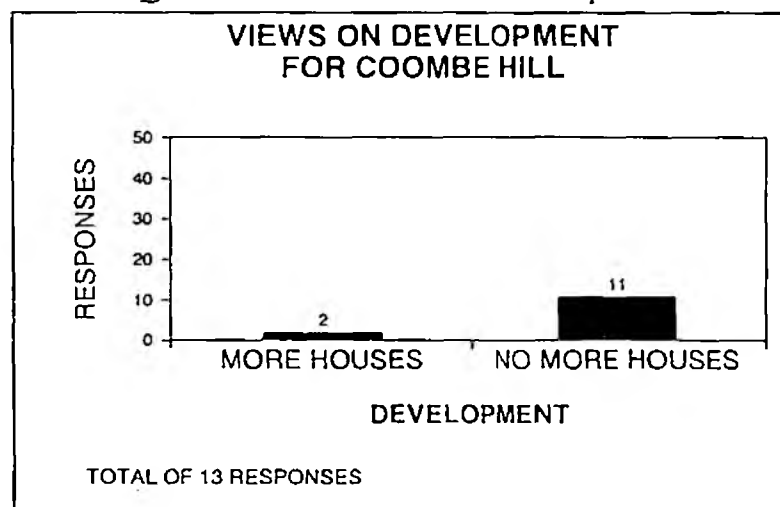
*Qu.7: Water Consuming Appliances Used*HOUSEHOLD APPLIANCES
FOR COOMBE HILL

TOTAL OF 21 RESPONSES

*Qu.8: Attitude to Drainage Problems*VIEW OF LOCAL SEWAGE POLLUTION
FOR COOMBE HILL

TOTAL OF 15 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

COOMBE HILL

Map showing land parcels, buildings, and water features. A sampling point is marked with a black dot and the number 23. The map includes a key for symbols and a scale of 1:25000.

KEY

- Septic Tank Discharges to Watercourse
- STP Discharges to Watercourse
- STP Discharges to Soakaway
- Ditch or Watercourse
- Piped Discharge
- Sampling Point
- Total Score

Scale 1:25000

REPRODUCED FROM THE ORDANANCE SURVEY MAP WITH THE PERMISSION
OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER
COPYRIGHT LICENCE No 29859X

9.9.3

Site 30: DEERHURST

IMPACT SCORE: -

Description

Deerhurst lies two miles to the South of Tewkesbury, on the East bank of the River Severn (NGR: SO 870 298). The village is centred around Odda's Chapel and Deerhurst-Priory.

Soil Drainage Characteristics

The village lies on alluvium gravel, and drains via a series of ditchcourses to the River Severn. Under the Groundwater Vulnerability Classification this area has been given Non-Aquifer status.

Development

Development pressure for this area is low. Over the past ten years three properties have been built.

Foul Drainage

All properties in the village are served by septic tank/soakaway systems. Historiacally, there is a 'village drain' that runs through the village picking up some of the foul effluent. However, the outlet of this drain has not been found.

Pollution

Polluted conditions were not detected at any point in the village. For this reason, water samples were not taken.

Environmental Health Complaints

Tewkesbury District Council do not receive any environmental health complaints from this village.

VILLAGE NAME: DEERHURST

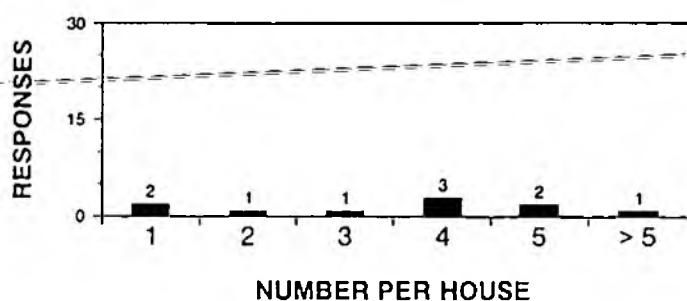
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING		
NO OF DISCHARGE POINTS		
NO OF HOUSES DISCHARGING AT SCORING POINT		
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT		
B.O.D. 10M D/S OF SCORING POINT		
AMMONIA 10M D/S OF SCORING POINT		
DISSOLVED OXYGEN 10M D/S OF SCORING POINT		
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT		
PUBLIC ACCESSIBILITY		
TOTAL SCORE		--

NUMBER OF QUESTIONNAIRES SENT OUT:	16
NUMBER OF QUESTIONNAIRES RETURNED:	10
PERCENTAGE OF QUESTIONNAIRES RETURNED:	62%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	50%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	80%

ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

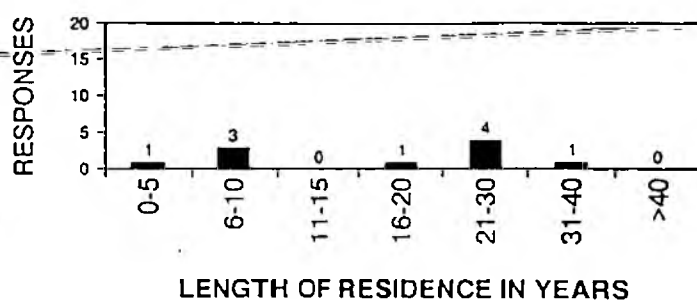
SIZE OF HOUSEHOLD FOR DEERHURST



TOTAL OF 10 RESPONSES

Qu.4: Length of Residence in the Village

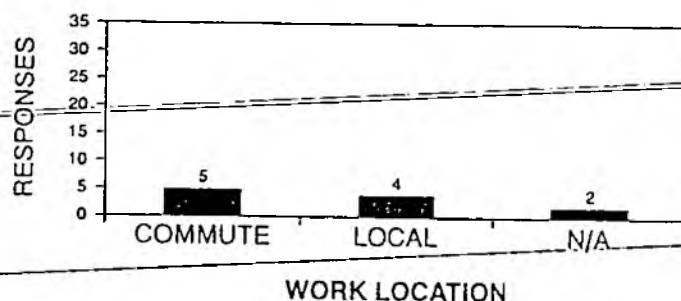
LENGTH OF RESIDENCE FOR DEERHURST



TOTAL OF 10 RESPONSES

Qu.5: Work Location (if applicable)

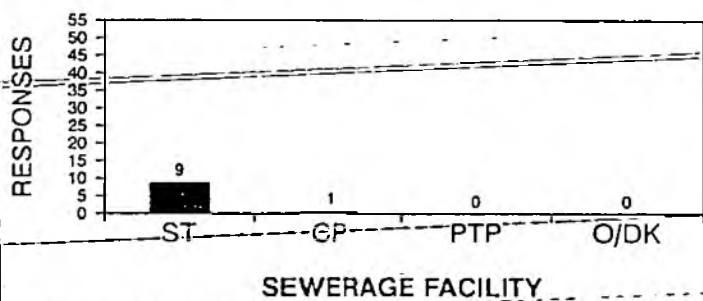
WORK LOCATION FOR DEERHURST



TOTAL OF 11 RESPONSES

Qu.6: Type of Sewerage Facility

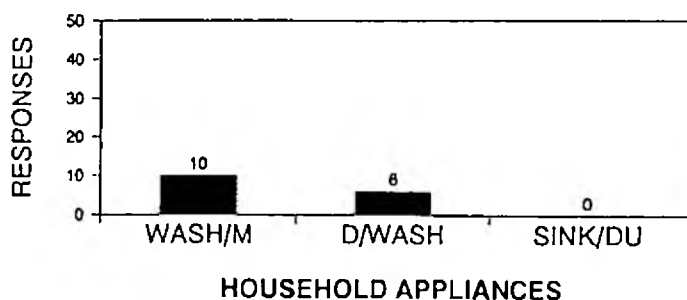
HOUSEHOLD SEWAGE SYSTEMS FOR DEERHURST



TOTAL OF 10 RESPONSES

Qu.7: Water Consuming Appliances Used

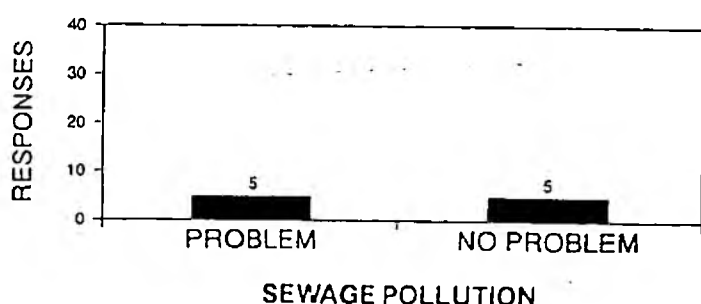
HOUSEHOLD APPLIANCES FOR DEERHURST



TOTAL OF 16 RESPONSES

Qu.8: Attitude to Drainage Problems

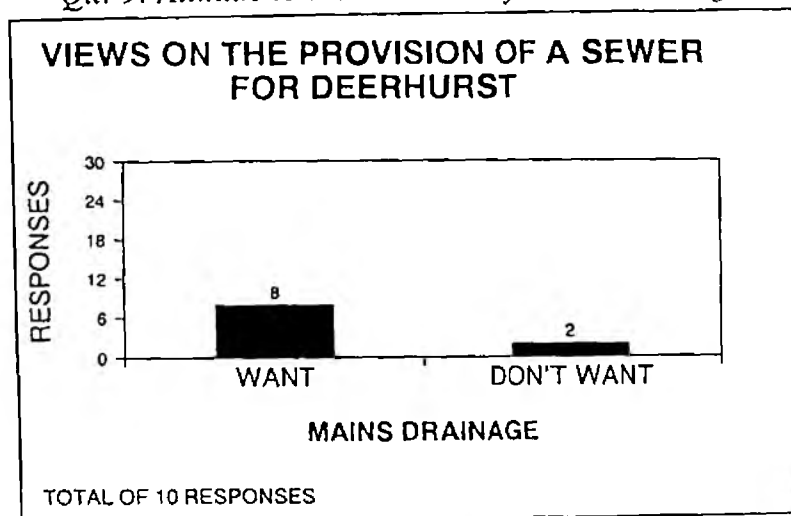
VIEW OF LOCAL SEWAGE POLLUTION FOR DEERHURST



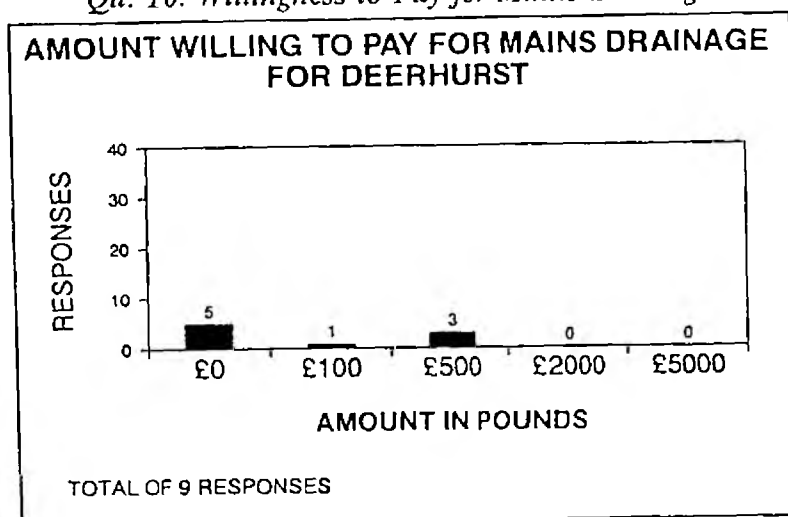
TOTAL OF 10 RESPONSES

ANALYSIS OF QUESTIONNAIRE

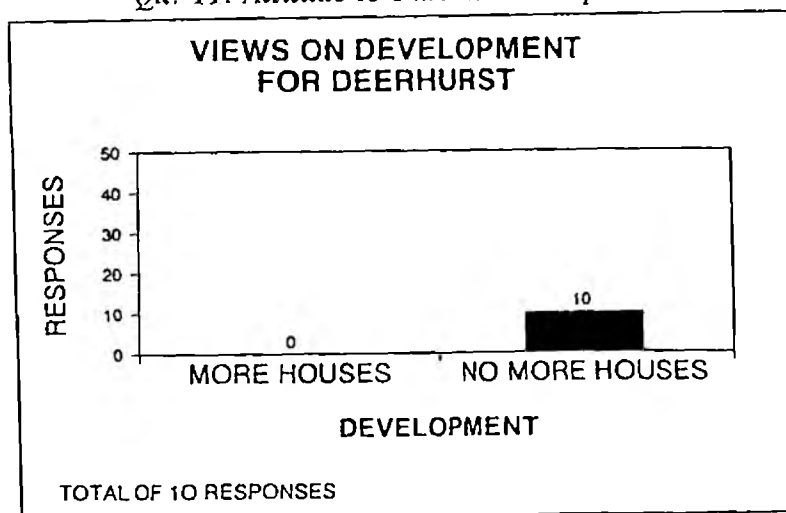
Qu. 9. Attitude to the Provision of Mains Drainage



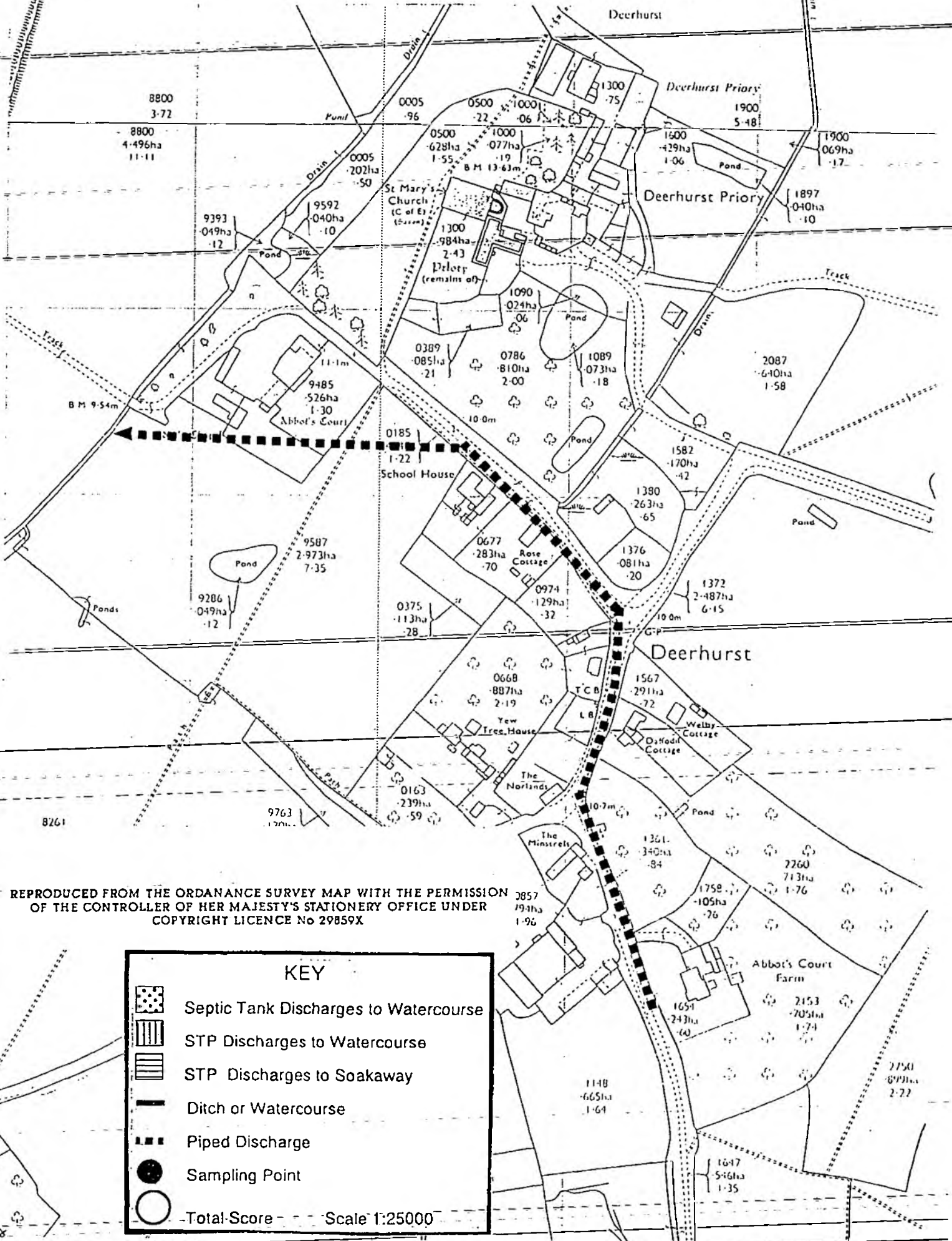
Qu. 10. Willingness to Pay for Mains Drainage



Qu. 11. Attitude to Further Development



DEERHURST



9.9.4

Site 31: HASFIELD

IMPACT SCORE: 21

Description

Hasfield is situated South West of Tewkesbury, one mile to the West of Haw Bridge (NGR: SO 825 275). The large area of grassland overlying alluvial soils surrounding this village has been designated as a SSSI. Parts of the site are of botanical interest while the whole area, which floods each year, is an important refuge for wintering wildfowl, and is one of three remaining sites in the Severn Vale.

Soil Drainage Characteristics

The village lies on alluvial gravels and mudstone, and drains to a series of rhines leading to the River Severn. Under the Groundwater Vulnerability Classification the area has been assigned Non-Aquifer status.

Development

Development pressure for this area is low. Over the past ten years one property has been built.

Foul Drainage

There is a 'village drain' that picks up most of the septic effluent from this village. This is a consented discharge and drains to a rhine.

Pollution

Polluted conditions were detected at one point in the village, with a contribution from approximately 16 properties. At the scoring point water quality samples were indicative of a Class 2 watercourse (see table).

WATER-QUALITY-INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
1.42	7.5	272	46

Environmental Health Complaints

Tewkesbury Borough Council receive occasional environmental health complaints from this village.

VILLAGE NAME: HASFIELD

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	11-20	3
NO OF DISCHARGE POINTS	1-2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	>16	5
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100-200	5
B.O.D. 10M D/S OF SCORING POINT	5-9	2
AMMONIA 10M D/S OF SCORING POINT	0.7-2.5	2
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	60-41	2
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	LOW	1
TOTAL SCORE		21

NUMBER OF QUESTIONNAIRES SENT OUT: 15

NUMBER OF QUESTIONNAIRES RETURNED: 8

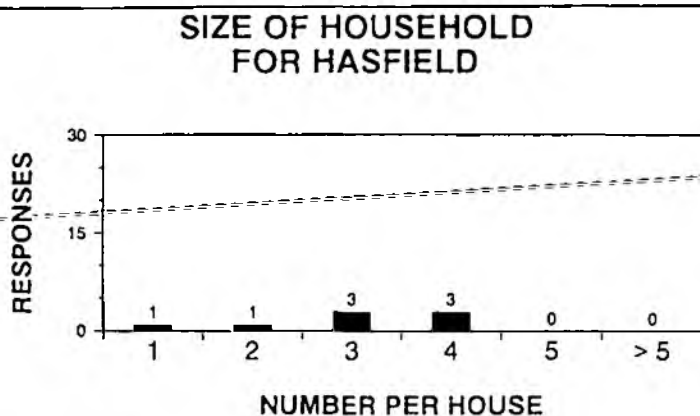
PERCENTAGE OF QUESTIONNAIRES RETURNED: 53%

PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE
POLLUTION IS A PROBLEM: 33%

PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE: 42%

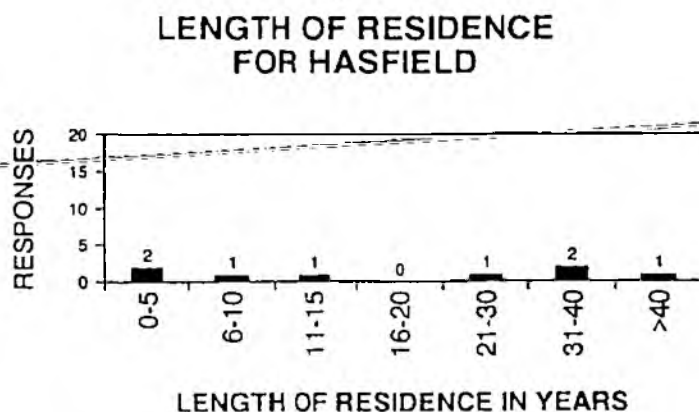
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property



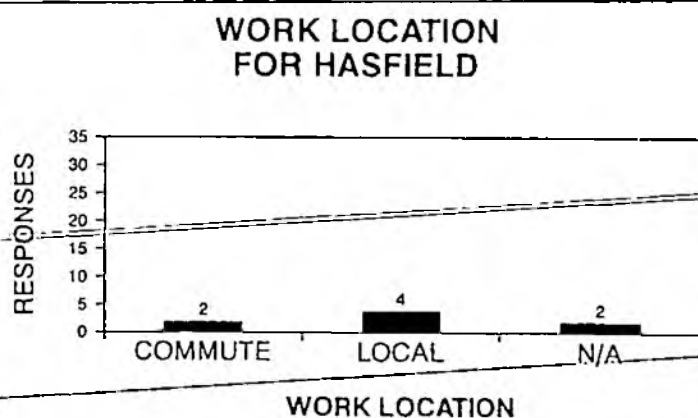
TOTAL OF 8 RESPONSES

Qu.4: Length of Residence in the Village



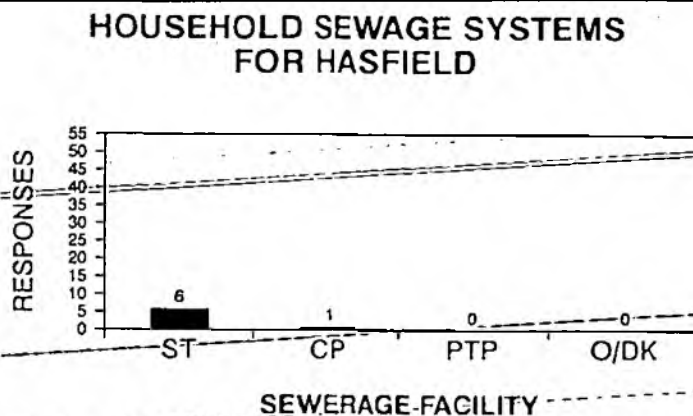
TOTAL OF 8 RESPONSES

Qu.5: Work Location (if applicable)



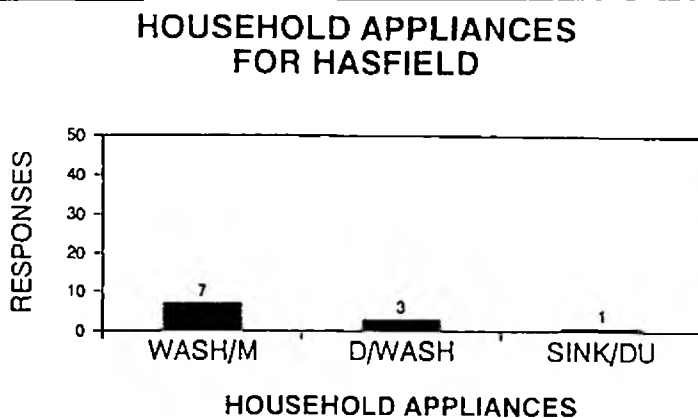
TOTAL OF 8 RESPONSES

Qu.6: Type of Sewerage Facility



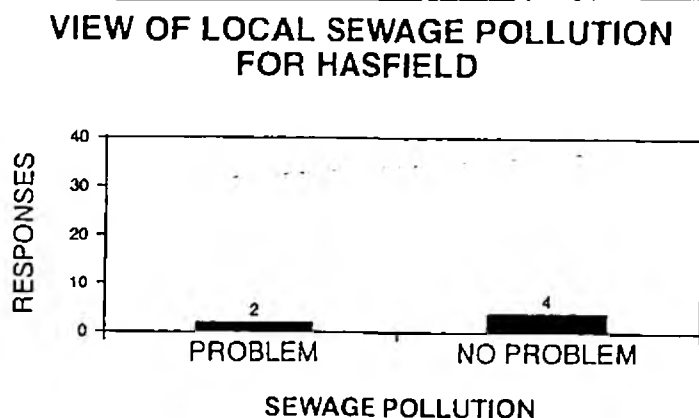
TOTAL OF 7 RESPONSES

Qu.7: Water Consuming Appliances Used



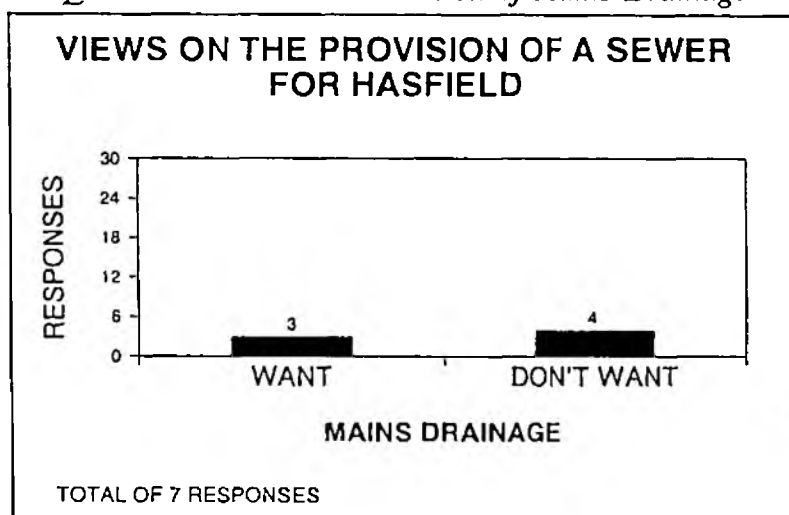
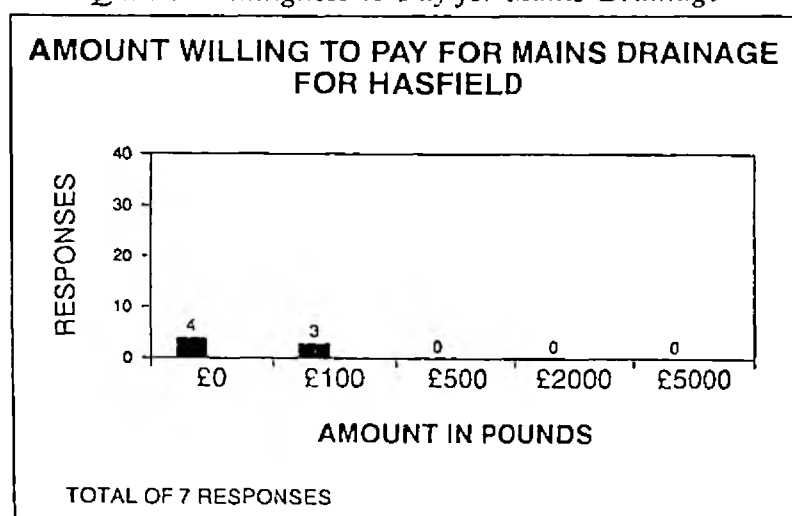
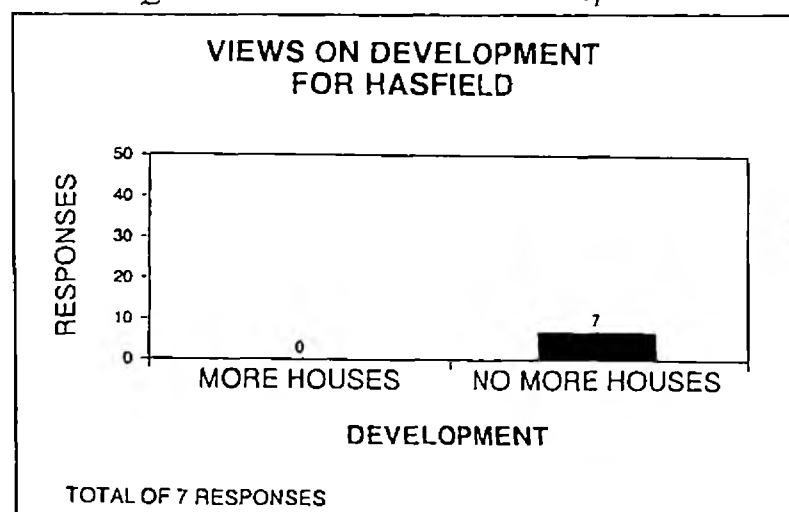
TOTAL OF 11 RESPONSES

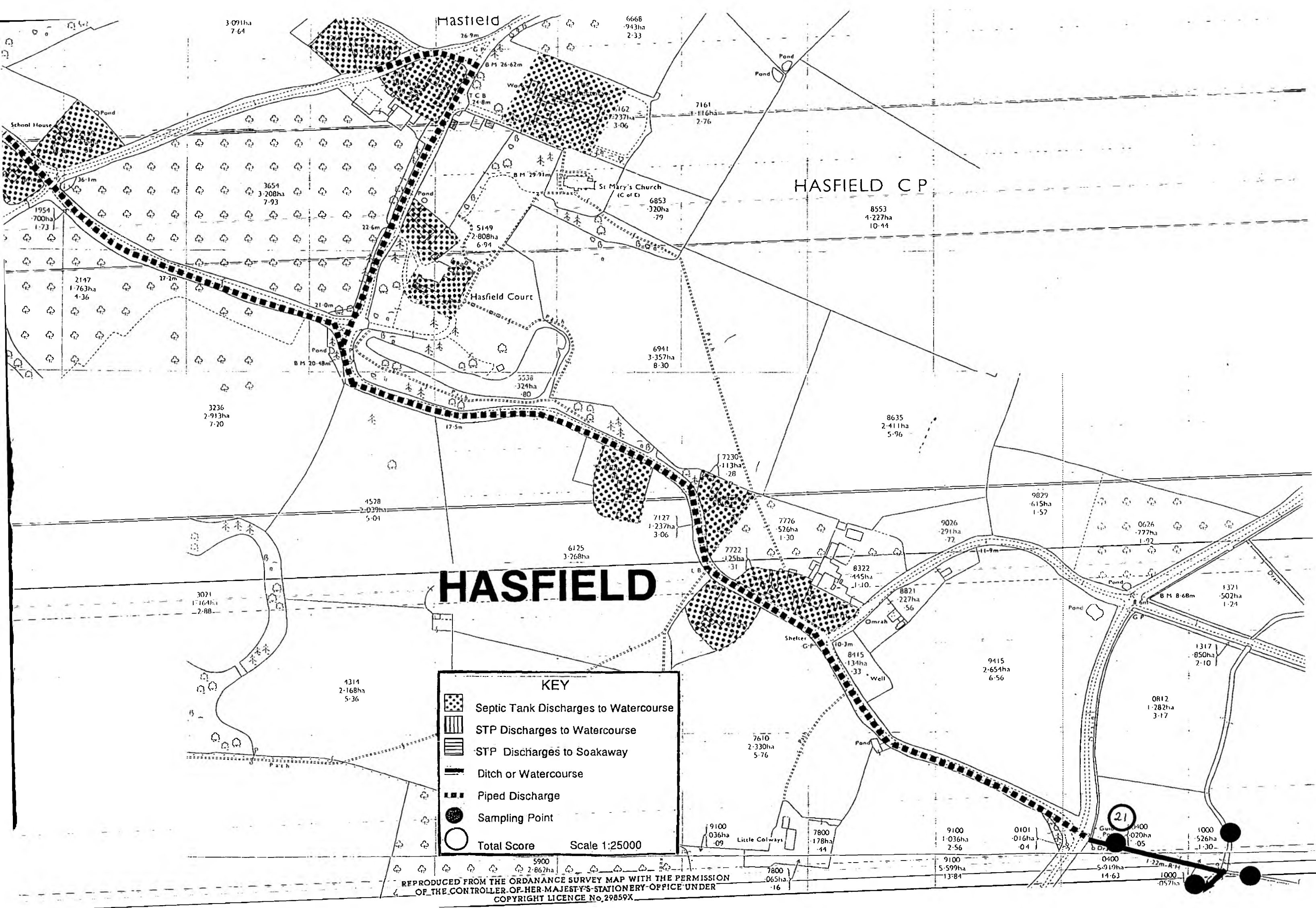
Qu.8: Attitude to Drainage Problems



TOTAL OF 6 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



9.9.5

Site 32: MINSTERWORTH

IMPACT SCORE: 23

Description

Minsterworth is situated to the west of Gloucester, and lies between the A48 Gloucester to Chepstow Road and the River Severn (NGR SO 780 170). The population of the village has been estimated at 273.

Soil Drainage Characteristics

The village lies on clay and gravel and drains to the River Severn. The soil type is a typical calcareous pelosol (4.11). Under the Groundwater Vulnerability Classification the area has been given Non-Aquifer status.

Development

Over the past ten years ten properties have been built in this area.

Foul Drainage

The majority of properties in Minsterworth are served by septic tank/soakaway systems. Due to the impervious nature of the clay subsoil some of these malfunction and leach to the ditchcourses. The Apple Tree Public House has installed a small package treatment plant, which has a consented discharge to the ditchcourse.

Pollution

Polluted conditions were detected at five points in the village, with contributions from 18 properties. At the scoring point water quality samples were indicative of a Class 4 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
51.6	80	207	40

Environmental Health Complaints

Tewkesbury Borough Council receive regular environmental health complaints from this village.

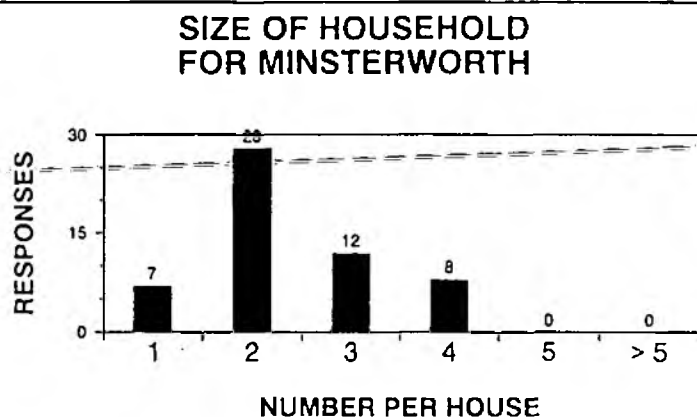
VILLAGE NAME: MINSTERWORTH

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	11-20	3
NO OF DISCHARGE POINTS	5-8	3
NO OF HOUSES DISCHARGING AT SCORING POINT	3-4	2
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100M	1
B.O.D. 10M D/S OF SCORING POINT	>40	5
AMMONIA 10M D/S OF SCORING POINT	>20	5
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	40-21	3
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	LOW	1
TOTAL SCORE		23

NUMBER OF QUESTIONNAIRES SENT OUT:	62
NUMBER OF QUESTIONNAIRES RETURNED:	56
PERCENTAGE OF QUESTIONNAIRES RETURNED:	90%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	38%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	48%

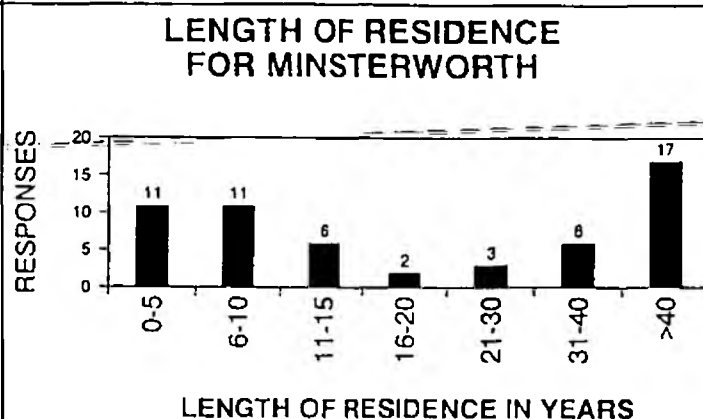
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property



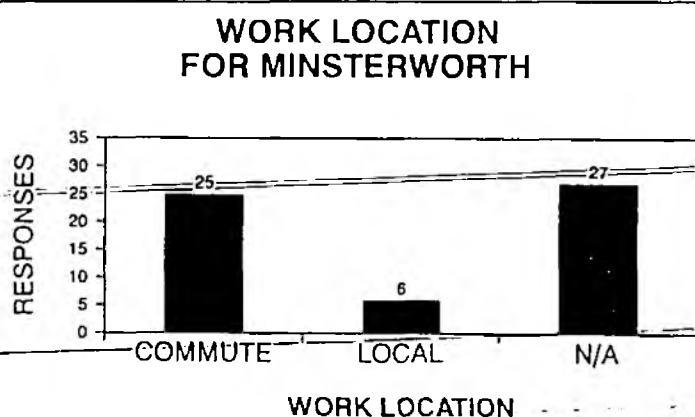
TOTAL OF 55 RESPONSES

Qu.4: Length of Residence in the Village



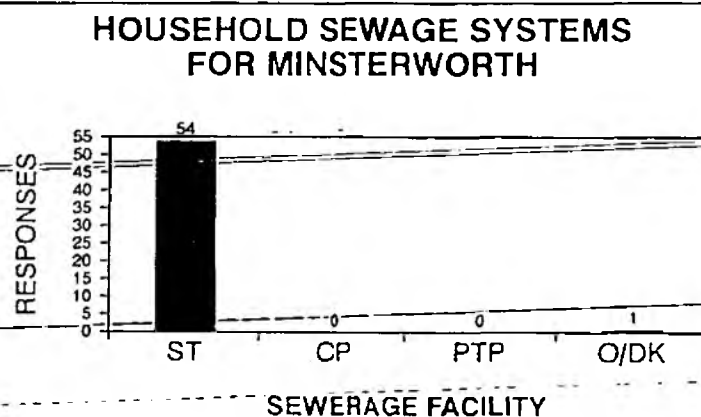
TOTAL OF 56 RESPONSES

Qu.5: Work Location (if applicable)



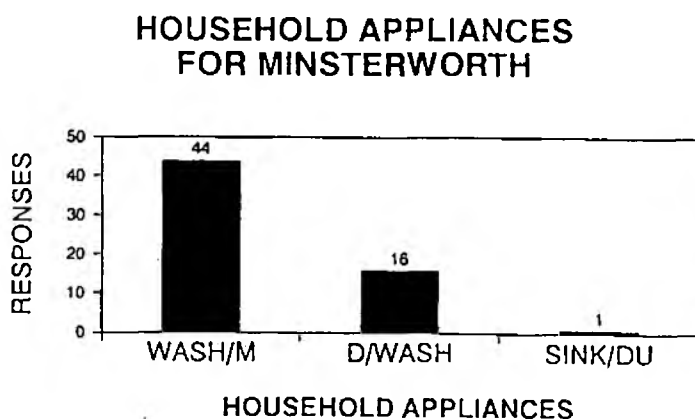
TOTAL OF 58 RESPONSES

Qu.6: Type of Sewerage Facility



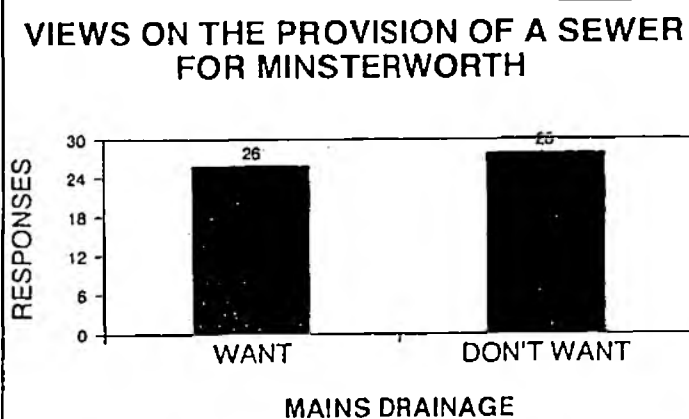
TOTAL OF 55 RESPONSES

Qu.7: Water Consuming Appliances Used



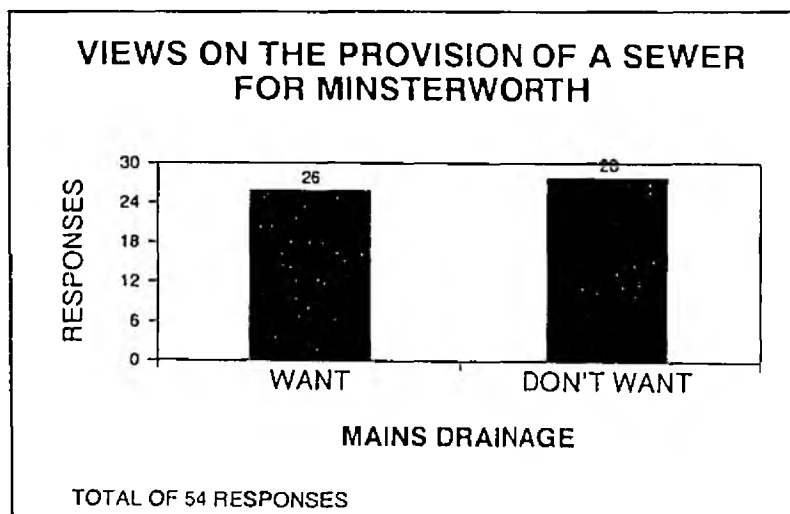
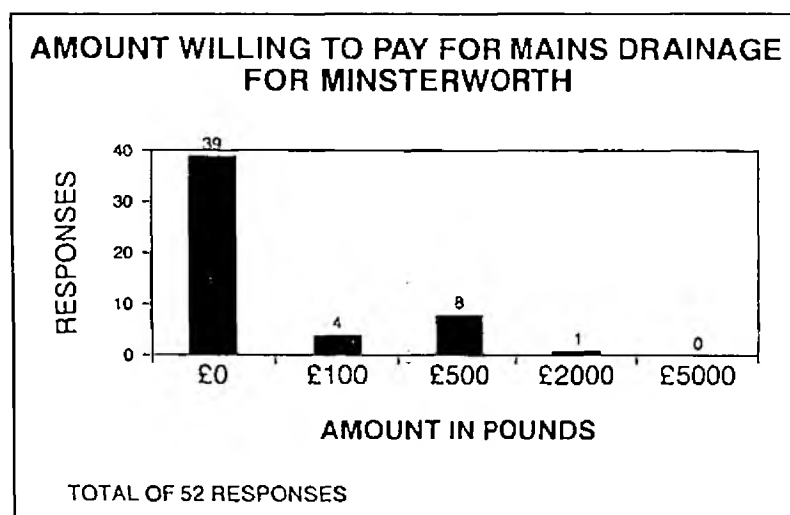
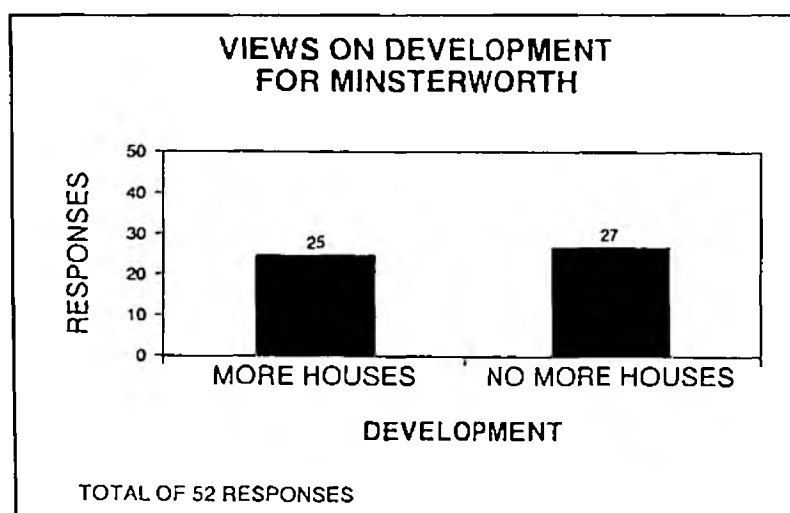
TOTAL OF 61 RESPONSES

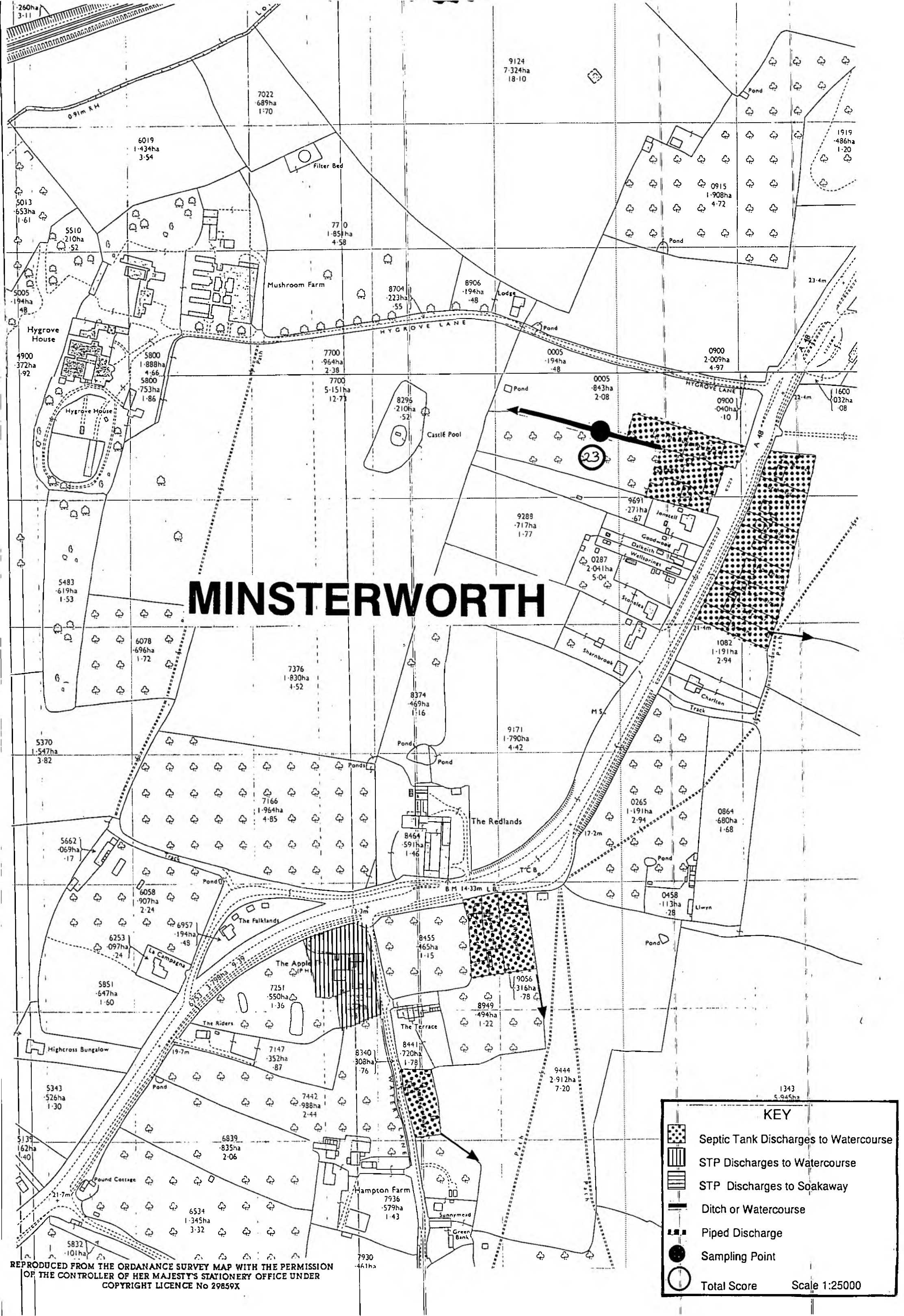
Qu.8: Attitude to Drainage Problems



TOTAL OF 54 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



9.9.6

Site 33: THE LEIGH

IMPACT SCORE: 20

Description

The Leigh is situated south-west of Tewkesbury adjacent to the A38 Tewkesbury to Gloucester Road. The village has a population estimated at 55 people.

Soil Drainage Characteristics

The village lies on sandstone, and drains to via a series of ditched to the Coombe Hill Canal. The soil type is a pelo-alluvial gley soil (8.13). Under the Groundwater Vulnerability Classification the area has been given Non-Aquifer status.

Development

Over the past three years three houses have been built in this village.

Foul Drainage

All the properties in the village are served by septic tank/soakaway systems. Due to the impervious nature of the clay subsoil some of these malfunction and leach to the ditchcourses.

Pollution

Polluted conditions were detected at two points in the village with a contribution from 5 properties. At the scoring point water quality samples were indicative of a Class 4 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
11.5	8.0	34	53

Environmental Health Complaints

Tewkesbury Borough council receive occasional environmental health complaints from this village.

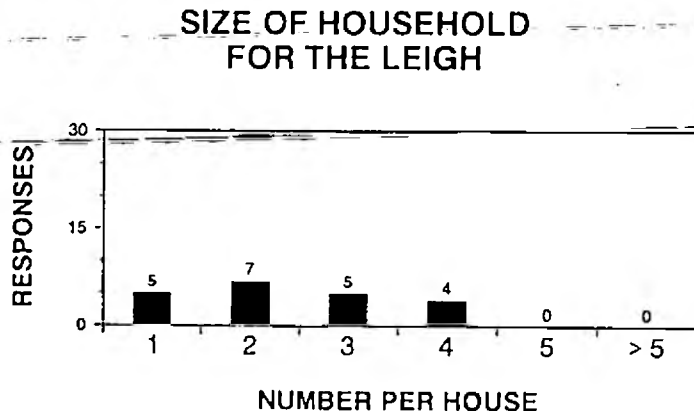
VILLAGE NAME: THE LEIGH

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	1-5	1
NO OF DISCHARGE POINTS	1-2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	1-2	1
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100-200M	5
B.O.D. 10M D/S OF SCORING POINT	5-9	2
AMMONIA 10M D/S OF SCORING POINT	5.1-20	4
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	60-41	2
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	10M	2
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		20

NUMBER OF QUESTIONNAIRES SENT OUT:	24
NUMBER OF QUESTIONNAIRES RETURNED:	21
PERCENTAGE OF QUESTIONNAIRES RETURNED:	87%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	28%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	20%

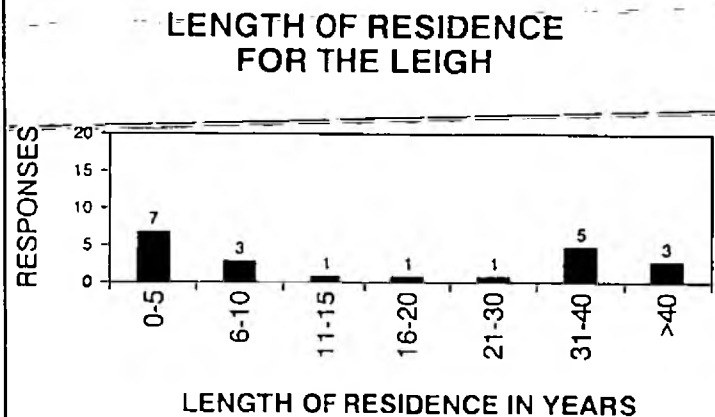
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property



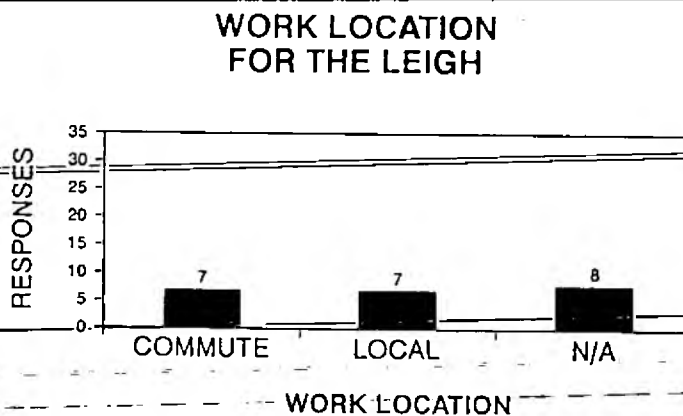
TOTAL OF 21 RESPONSES

Qu.4: Length of Residence in the Village



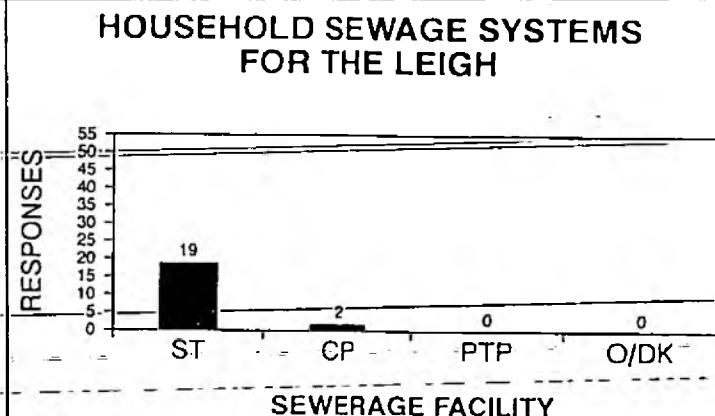
TOTAL OF 21 RESPONSES

Qu.5: Work Location (if applicable)



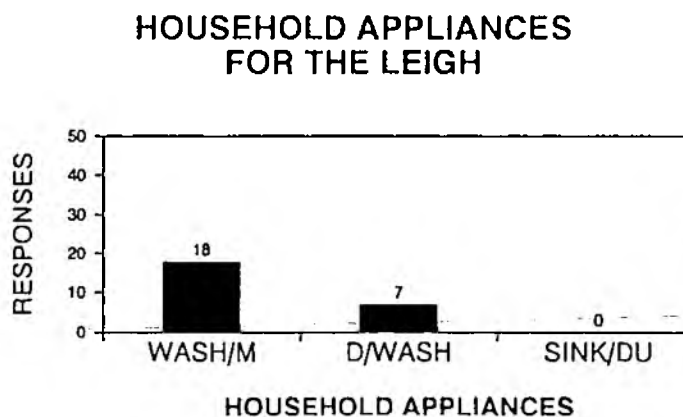
TOTAL OF 22 RESPONSES

Qu.6: Type of Sewerage Facility



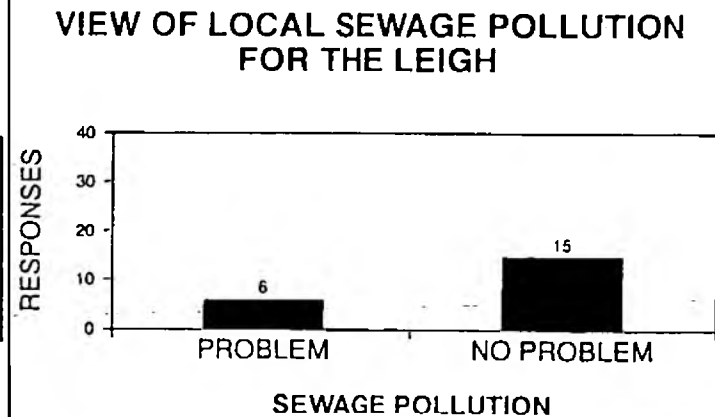
TOTAL OF 21 RESPONSES

Qu.7: Water Consuming Appliances Used



TOTAL OF 25 RESPONSES

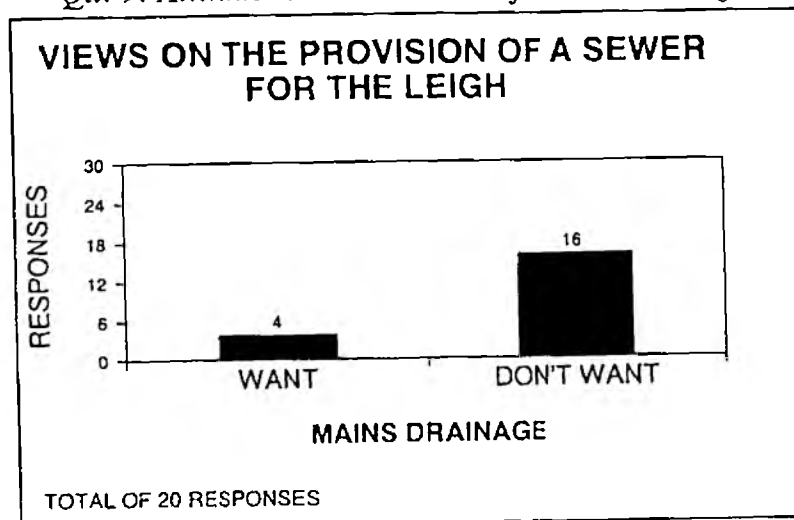
Qu.8: Attitude to Drainage Problems



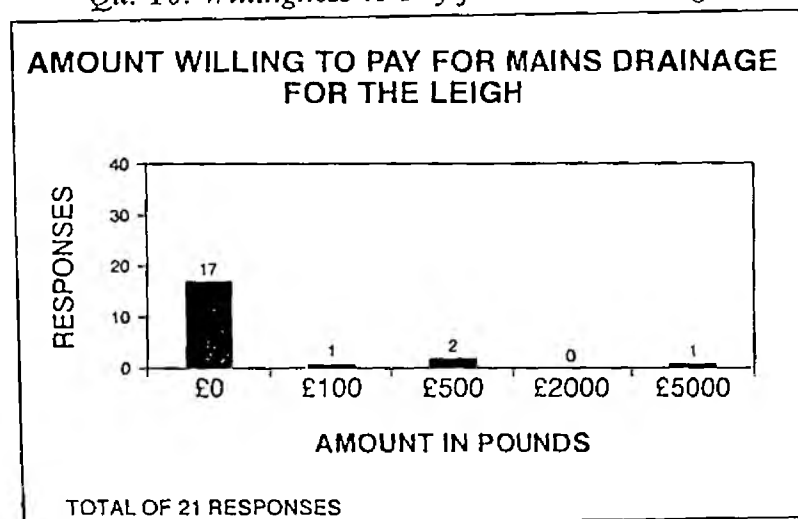
TOTAL OF 21 RESPONSES

ANALYSIS OF QUESTIONNAIRE

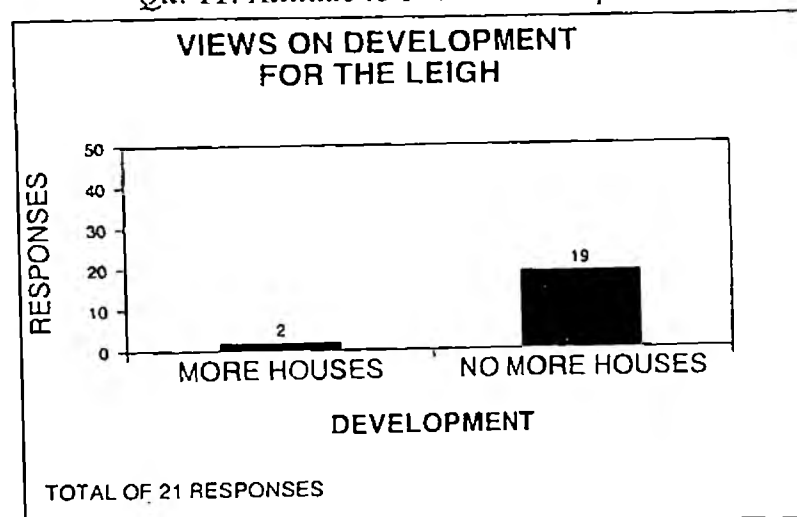
Qu. 9. Attitude to the Provision of Mains Drainage

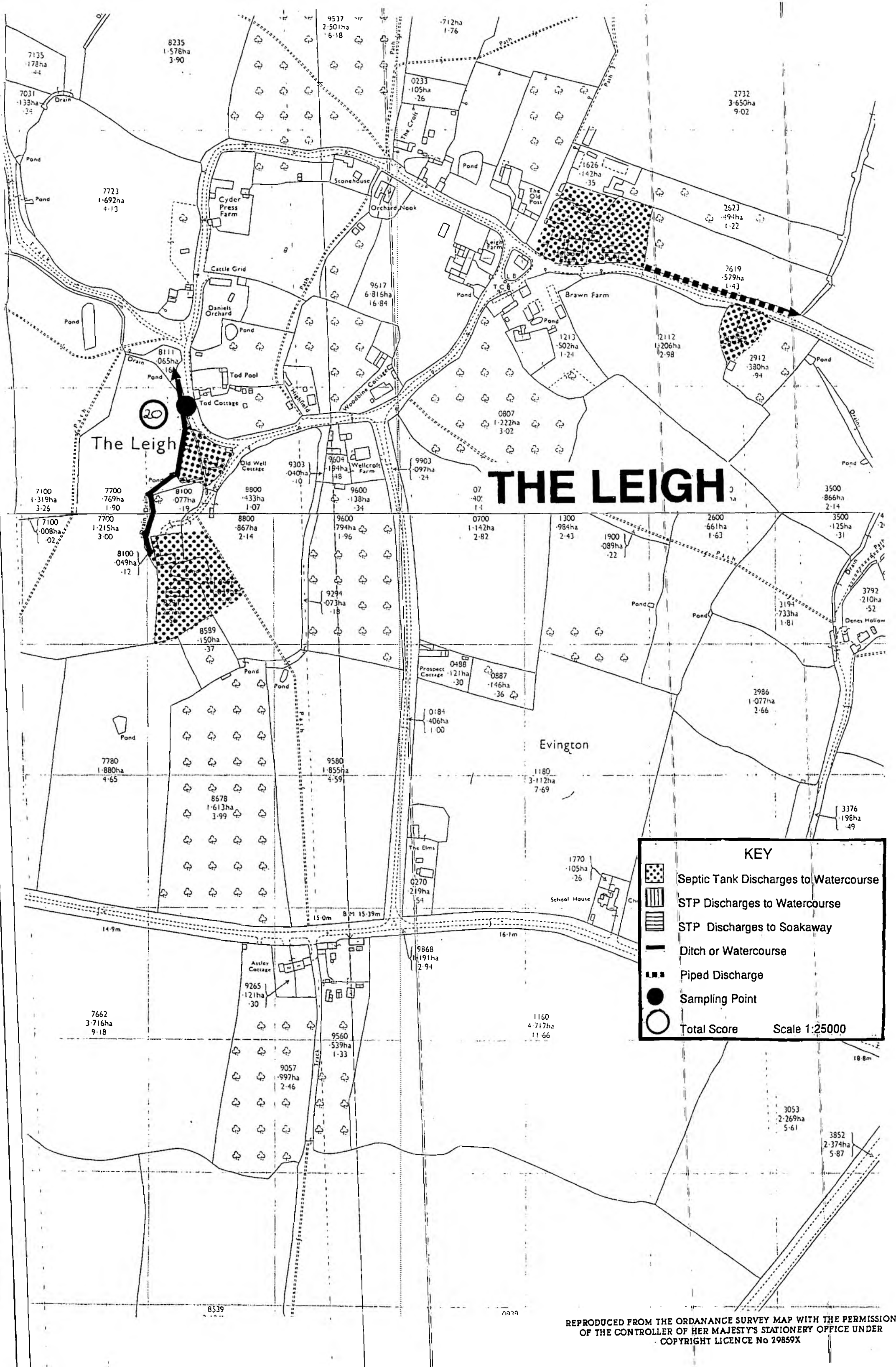


Qu. 10. Willingness to Pay for Mains Drainage



Qu. 11. Attitude to Further Development





9.9.7

Site 34: WALTON CARDIFF

IMPACT SCORE: 37

Description

Walton Cardiff is situated half a mile south of Tewkesbury to the west of the M5 (NGR O:908 323). The population of the village has been estimated at 43 people.

Soil Drainage Characteristics

The village lies on lias and mudstone and drains to the Tirlle Brook. The soil type is a pelo-alluvial gley soil (8.13). Under the Groundwater Vulnerability Classification the area has been given Non-Aquifer status.

Development

Development pressure for this area is high, although restricted by flood plain. Over the past ten years three houses have been built.

Foul Drainage

The majority of properties in the village are served by septic tank/soakaway systems. The barn conversion at Walton Cardiff Farm have sealed cesspits. The dwellings to the south of the village discharge septic effluent to a 'village drain' that connects to a ditchcourse.

Pollution

Polluted conditions were detected at two points in the village, with a contribution from 10 properties. At the scoring point water quality samples were indicative of a Class 4 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
32.1	54	48	11

Environmental Health Complaints

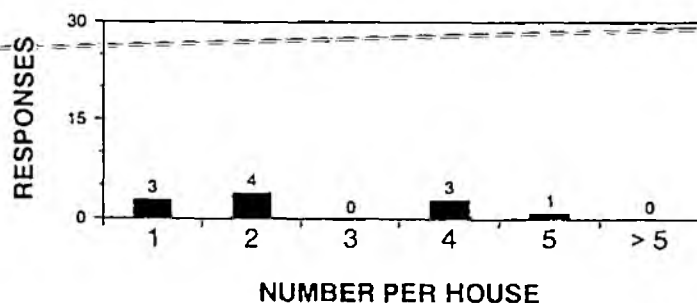
Tewkesbury Borough Council receive occasional environmental health complaints from this village.

VILLAGE NAME: WALTON CARDIFF

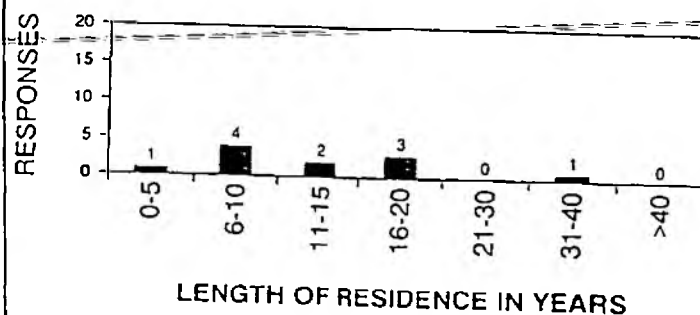
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	6-10	2
NO OF DISCHARGE POINTS	1-5	1
NO OF HOUSES DISCHARGING AT SCORING POINT	5-8	3
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>200	10
B.O.D. 10M D/S OF SCORING POINT	>40	5
AMMONIA 10M D/S OF SCORING POINT	>20	5
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	20-10	4
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	26-50M	4
PUBLIC ACCESSIBILITY	HIGH	3
TOTAL SCORE		37

NUMBER OF QUESTIONNAIRES SENT OUT:	16
NUMBER OF QUESTIONNAIRES RETURNED:	11
PERCENTAGE OF QUESTIONNAIRES RETURNED:	68%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	81%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	72%

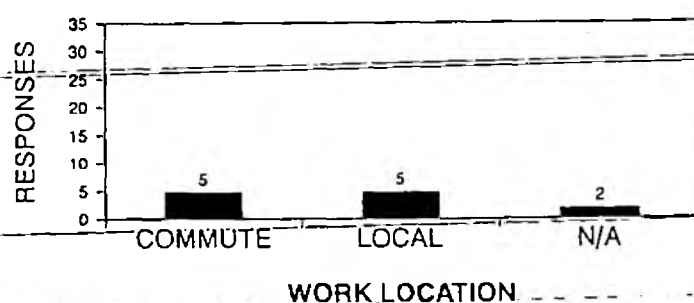
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property*SIZE OF HOUSEHOLD
FOR WALTON CARDIFF

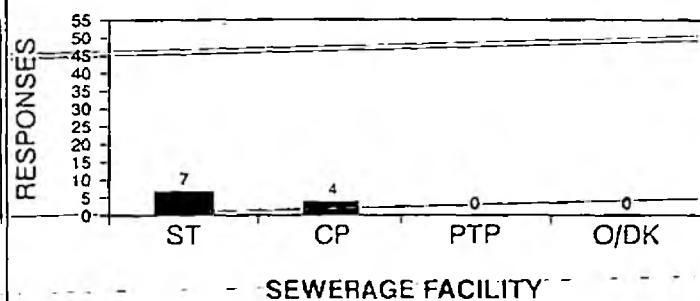
TOTAL OF 11 RESPONSES

*Qu.4: Length of Residence in the Village*LENGTH OF RESIDENCE
FOR WALTON CARDIFF

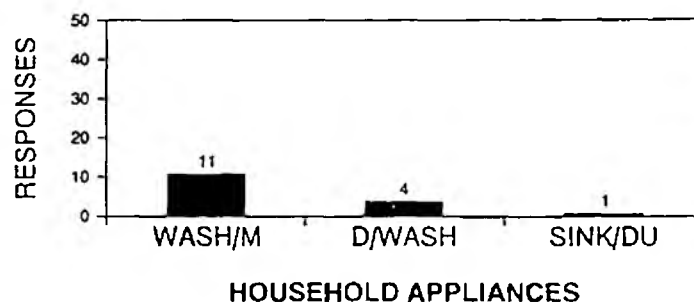
TOTAL OF 11 RESPONSES

*Qu.5: Work Location (if applicable)*WORK LOCATION
FOR WALTON CARDIFF

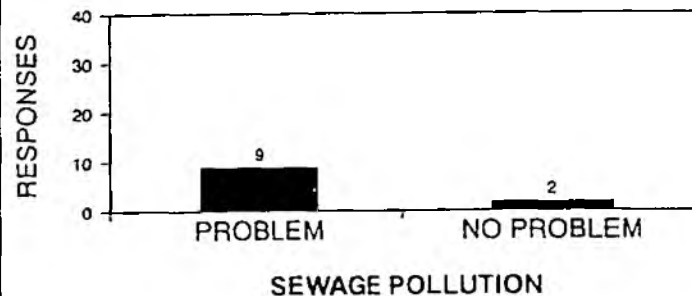
TOTAL OF 12 RESPONSES

*Qu.6: Type of Sewerage Facility*HOUSEHOLD SEWAGE SYSTEMS
FOR WALTON CARDIFF

TOTAL OF 11 RESPONSES

*Qu.7: Water Consuming Appliances Used*HOUSEHOLD APPLIANCES
FOR WALTON CARDIFF

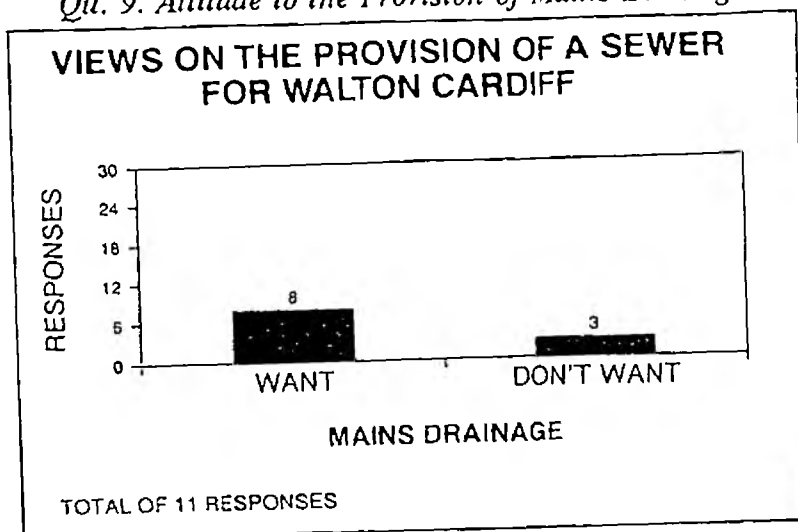
TOTAL OF 16 RESPONSES

*Qu.8: Attitude to Drainage Problems*VIEW OF LOCAL SEWAGE POLLUTION
FOR WALTON CARDIFF

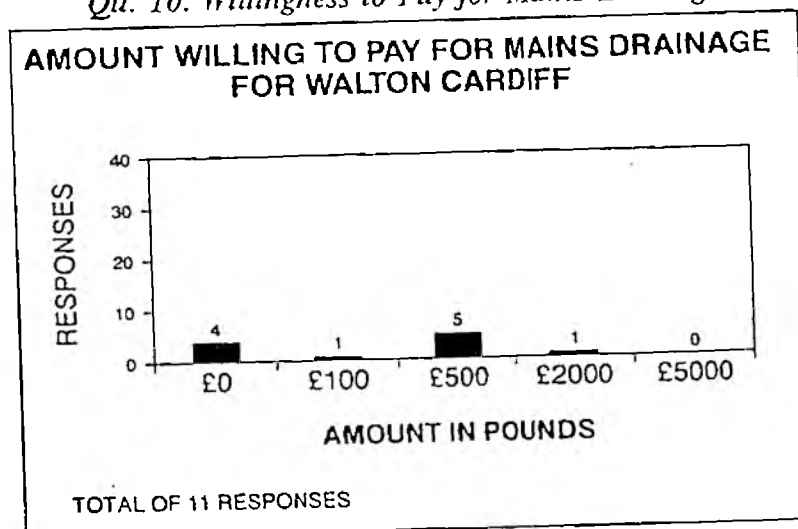
TOTAL OF 11 RESPONSES

ANALYSIS OF QUESTIONNAIRE

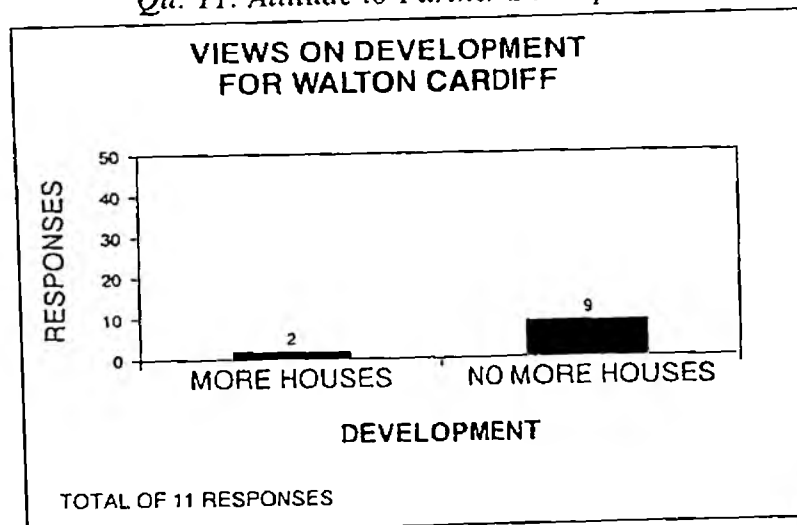
Qu. 9. Attitude to the Provision of Mains Drainage



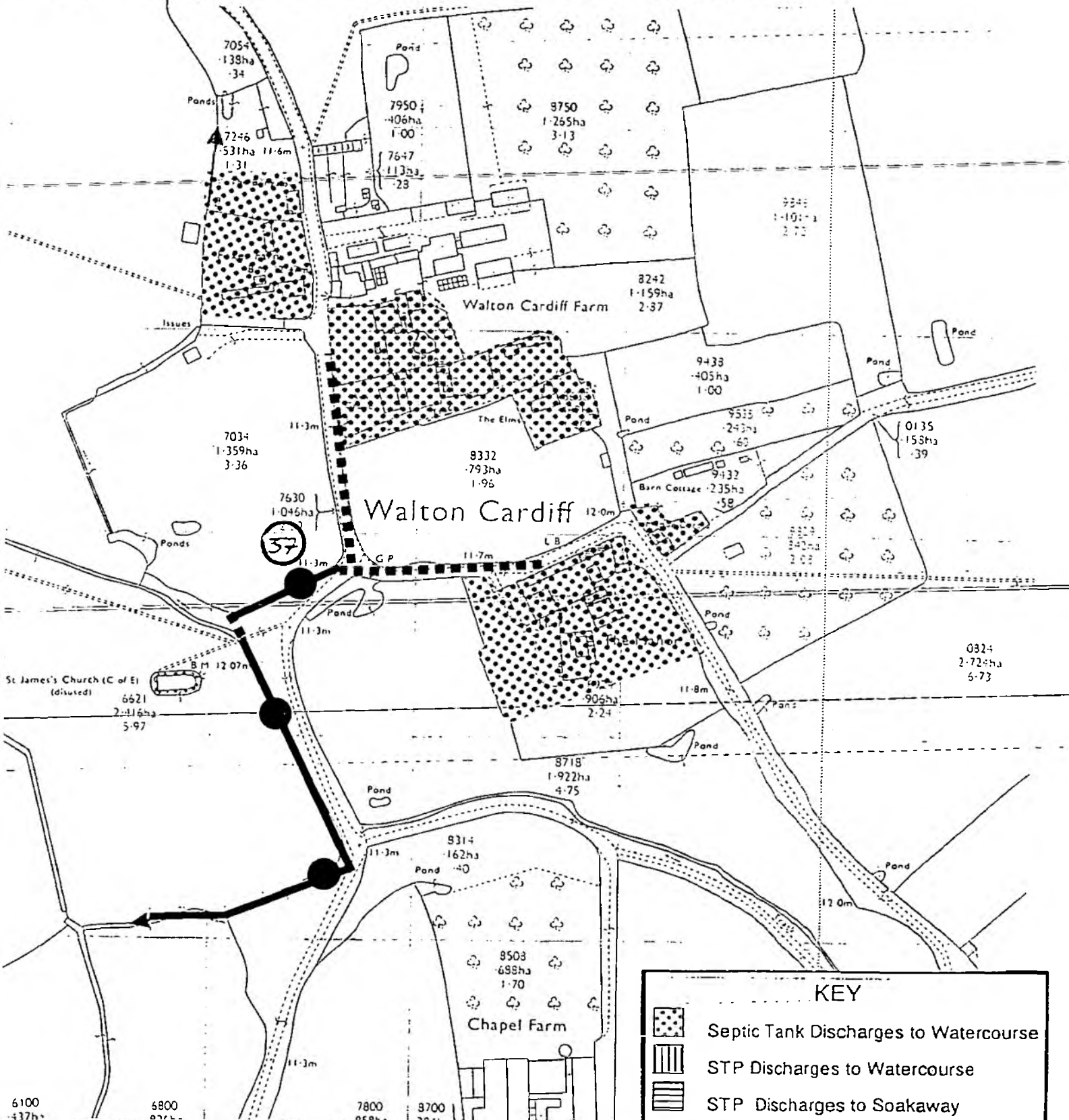
Qu. 10. Willingness to Pay for Mains Drainage



Qu. 11. Attitude to Further Development



WALTON CARDIFF



REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER COPYRIGHT LICENCE No 29859X

9.10 WARWICK DISTRICT COUNCIL

Response to Questionnaire

- **Population of district:** 114,900
- **Population connected to the public sewerage system:**
No information available.
- **Policy towards provision of sewerage?**
The provision of sewerage must be requisitioned and the Council will not sponsor unless the residents or Parish Council undertake to meet costs.
- **Does the council have an on going programme of first time sewerage schemes?**
No.
- **Total value of first time sewerage schemes constructed in the last ten years.**
No.
- **Does the council own/maintain sewage plants/ sewerage systems in its own right?**
(Not as sewerage agents)
Yes. Jephson Garden P.S, Edmonscote Track P.S, Newbold Common P.S, Castle Farm P.S, Oakley Wood P.S and private sewers serving council properties.

Impact Ranking Order of Villages Covered in the Survey

Site 37.	Wasperton	25
Site 36.	Blackdown	-
Site 35.	Ashow	-

THIS IS A BLANK PAGE

9.10.1

Site 35: ASHOW

IMPACT SCORE: -----

Description

Ashow is situated one mile south east of Kenilworth on the West bank of the River Avon (NGR: SP 312 703). The population of the village has been estimated at 107 people (31.12.91).

Soil Drainage Characteristics

The village lies on alluvium gravel overlying sandstone, and drains to the River Avon. The soil type is a brown earth (5.41). Under the Ground Water Vulnerability classification this area has been given Minor Aquifer status.

Development

The village has been classified as a Conservation Area, and development is restricted. Over the last ten year period two properties have been built.

Foul Drainage

Many of the foul drainage problems in Ashow have been solved. Fourteen properties have jointly installed their own package treatment plant.

Pollution

Polluted conditions were not detected at any point in the village

Environmental Health Complaints

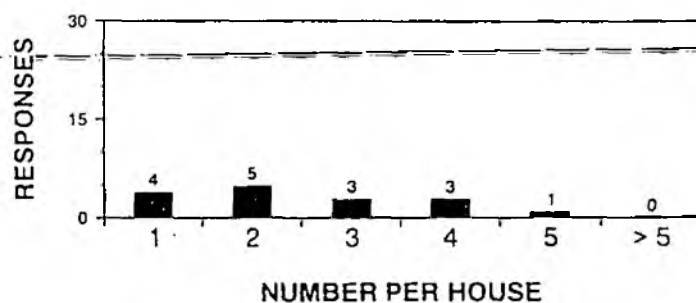
Warwick District Council do not receive any environmental health complaints from this village.

VILLAGE NAME: ASHOW

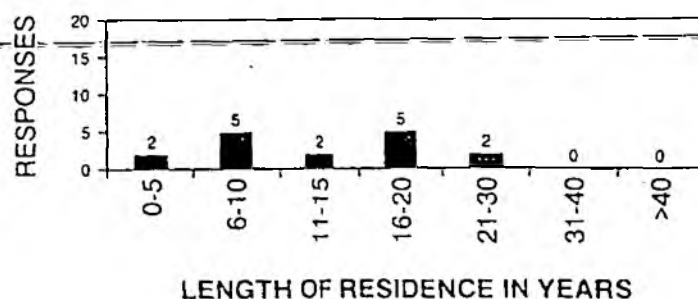
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING		
NO OF DISCHARGE POINTS		
NO OF HOUSES DISCHARGING AT SCORING POINT		
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT		
B.O.D. 10M D/S OF SCORING POINT		
AMMONIA 10M D/S OF SCORING POINT		
DISSOLVED OXYGEN 10M D/S OF SCORING POINT		
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT		
PUBLIC ACCESSIBILITY		
TOTAL SCORE		--

NUMBER OF QUESTIONNAIRES SENT OUT:	24
NUMBER OF QUESTIONNAIRES RETURNED:	16
PERCENTAGE OF QUESTIONNAIRES RETURNED:	66%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	40%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	26%

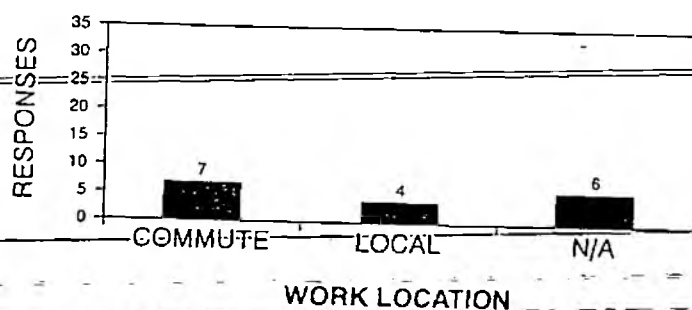
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property*SIZE OF HOUSEHOLD
FOR ASHOW

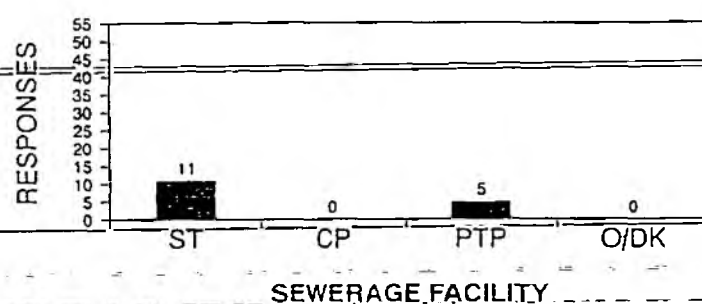
TOTAL OF 16 RESPONSES

*Qu.4: Length of Residence in the Village*LENGTH OF RESIDENCE
FOR ASHOW

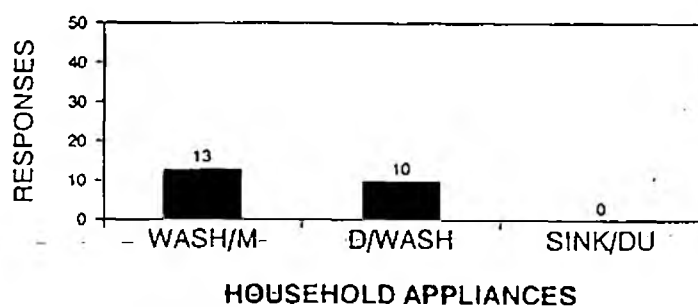
TOTAL OF 16 RESPONSES

*Qu.5: Work Location (if applicable)*WORK LOCATION
FOR ASHOW

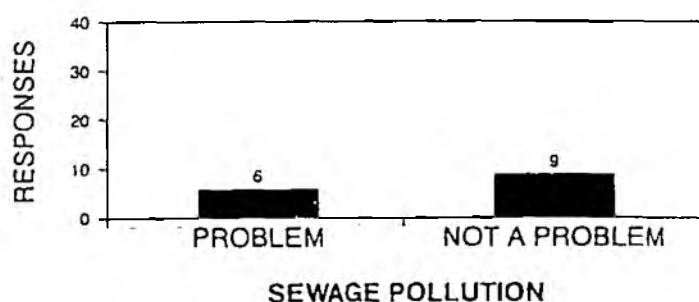
TOTAL OF 17 RESPONSES

*Qu.6: Type of Sewerage Facility*HOUSEHOLD SEWAGE SYSTEMS
FOR ASHOW

TOTAL OF 16 RESPONSES

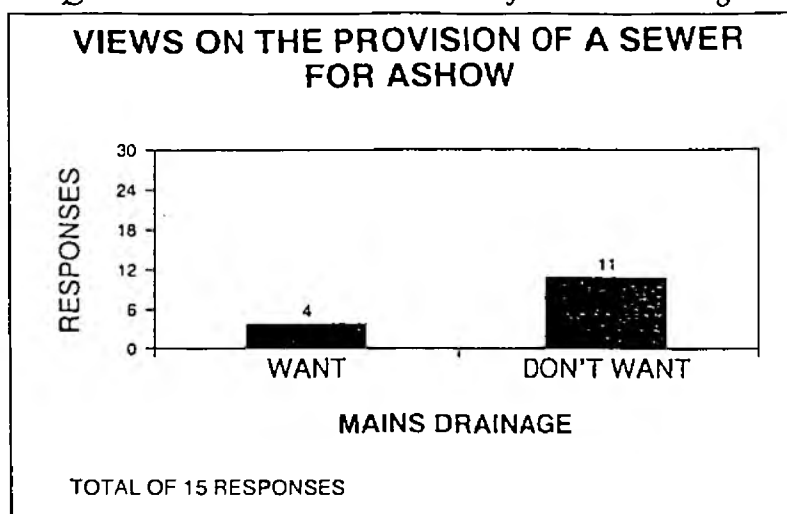
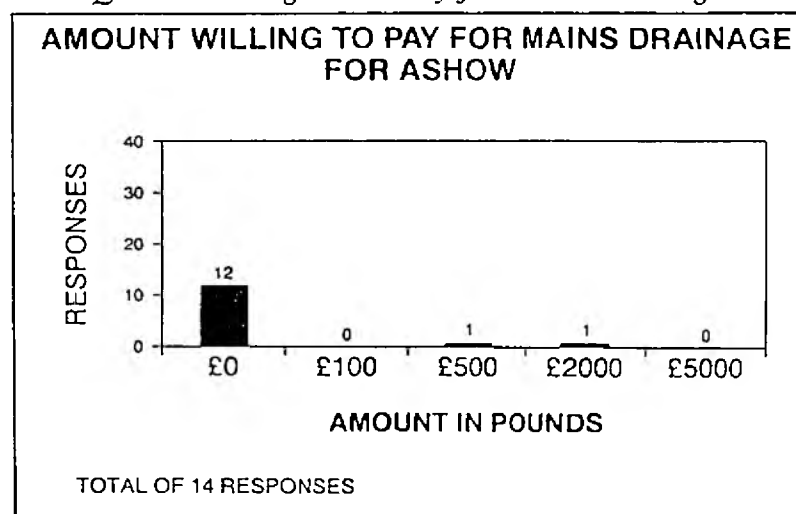
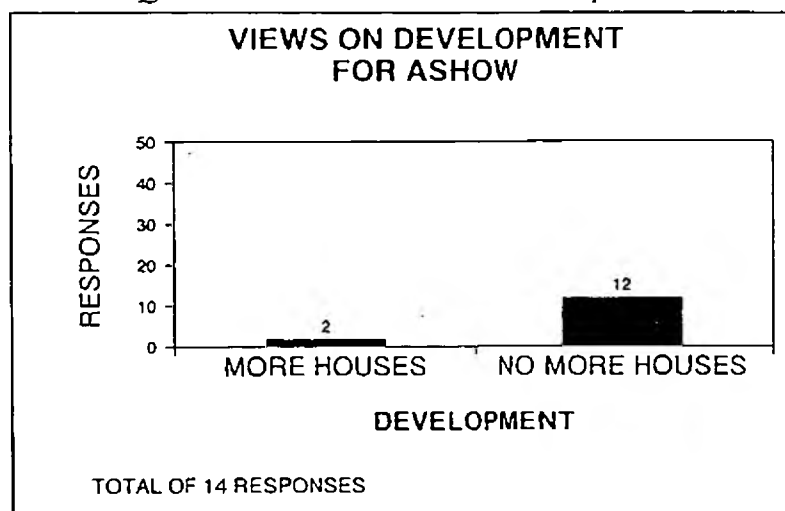
*Qu.7: Water Consuming Appliances Used*HOUSEHOLD APPLIANCES
FOR ASHOW

TOTAL OF 23 RESPONSES

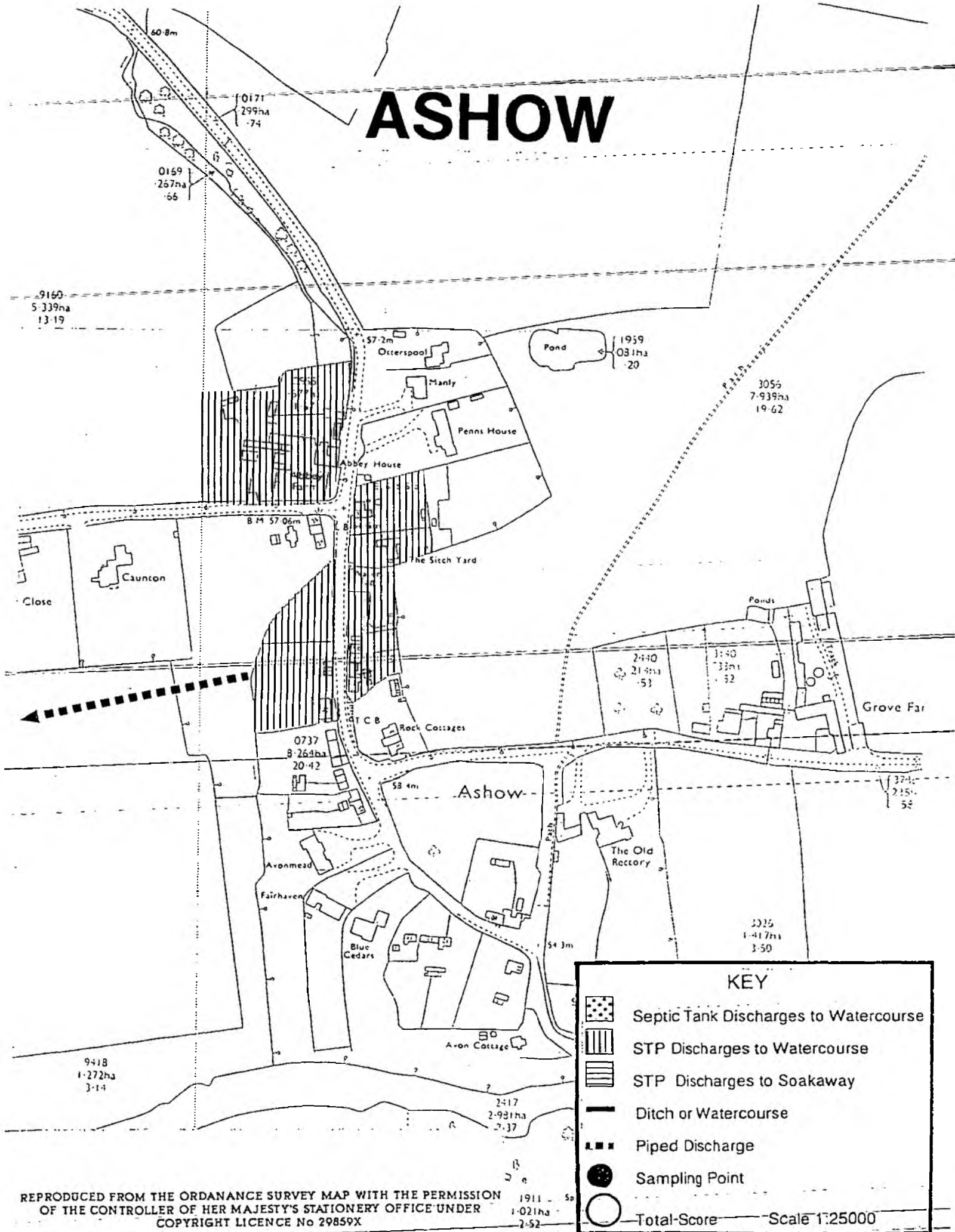
*Qu.8: Attitude to Drainage Problems*VIEW OF LOCAL SEWAGE POLLUTION
FOR ASHOW

TOTAL OF 15 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

ASHOW



9.10.2

Site 36: BLACKDOWN

IMPACT SCORE: -

Description

Blackdown is situated one mile north of Royal Leamington Spa (NGR: SP 320 688). The population of the area has been estimated at 132 (31.12.91). The area is not solely residential. There are a number of hotels, management centres, small businesses and nursing homes.

Soil Drainage Characteristics

The area lies on sandstone, and drains to the River Avon. The soil type is a brown earth (5.41). Under the Groundwater Vulnerability Classification the area has been designated as a Non-Aquifer site.

Development Pressure

The area has little development pressure. Over the past ten years one property has been built.

Foul Drainage

The main problem in this area is the proliferation of small package treatment plants which have consented discharges. Most of the small businesses such as Midland oak, Oleo Pneumatics Ltd., Helen Ley House, Kenilworth Moat House and Bromcastle Ltd. have installed package treatment plants. All the residential properties are served by septic tank/soakaway system.

Pollution

Polluted conditions were not detected at the time of the visit. All consented discharges are sampled on a regular basis by the N.R.A.

Environmental Health Complaints

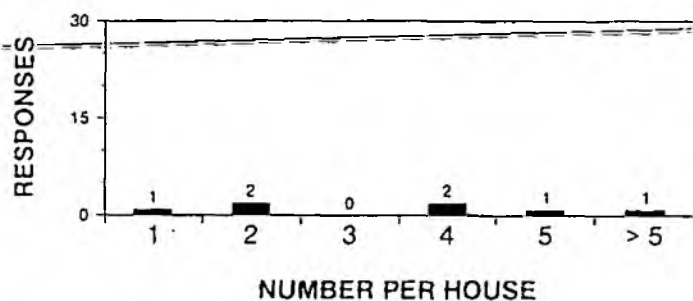
Warwick District Council have not received any environmental health complaints from this settlement.

VILLAGE NAME: BLACKDOWN

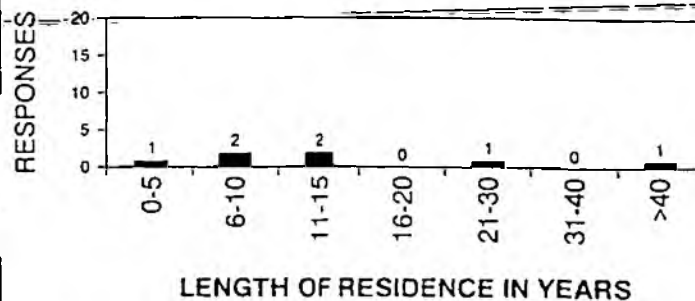
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING		
NO OF DISCHARGE POINTS		
NO OF HOUSES DISCHARGING AT SCORING POINT		
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT		
B.O.D. 10M D/S OF SCORING POINT		
AMMONIA 10M D/S OF SCORING POINT		
DISSOLVED OXYGEN 10M D/S OF SCORING POINT		
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT		
PUBLIC ACCESSIBILITY		
TOTAL SCORE		--

NUMBER OF QUESTIONNAIRES SENT OUT:	18
NUMBER OF QUESTIONNAIRES RETURNED:	7
PERCENTAGE OF QUESTIONNAIRES RETURNED:	38%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	100%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	41%

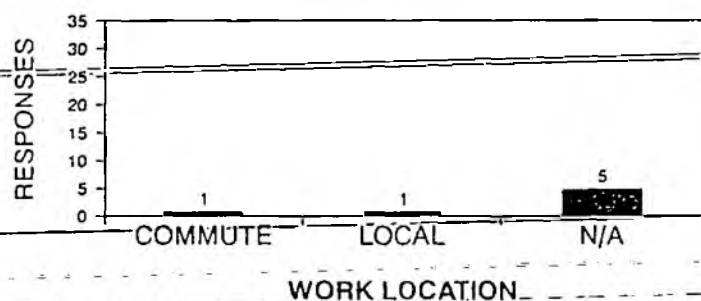
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property**Qu.4: Length of Residence in the Village*SIZE OF HOUSEHOLD
FOR BLACKDOWNLENGTH OF RESIDENCE
FOR BLACKDOWN

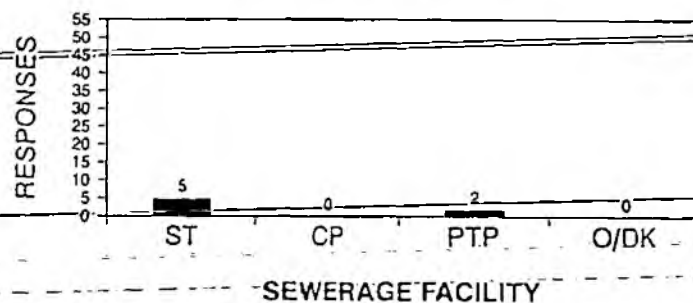
TOTAL OF 7 RESPONSES



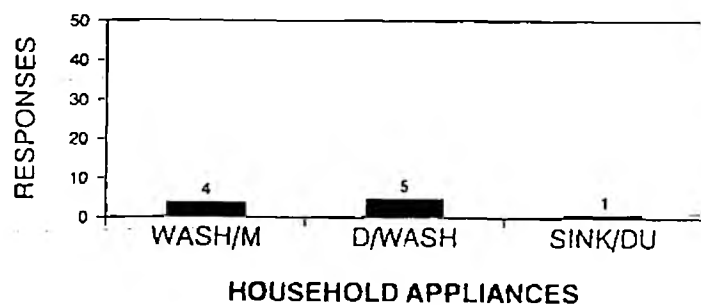
TOTAL OF 7 RESPONSES

*Qu.5: Work Location (if applicable)**Qu.6: Type of Sewerage Facility*WORK LOCATION
FOR BLACKDOWNHOUSEHOLD SEWAGE SYSTEMS
FOR BLACKDOWN

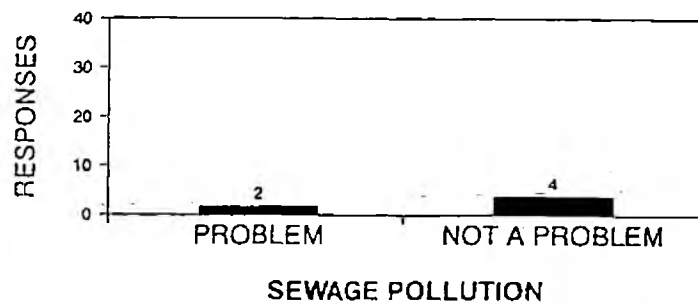
TOTAL OF 7 RESPONSES



TOTAL OF 7 RESPONSES

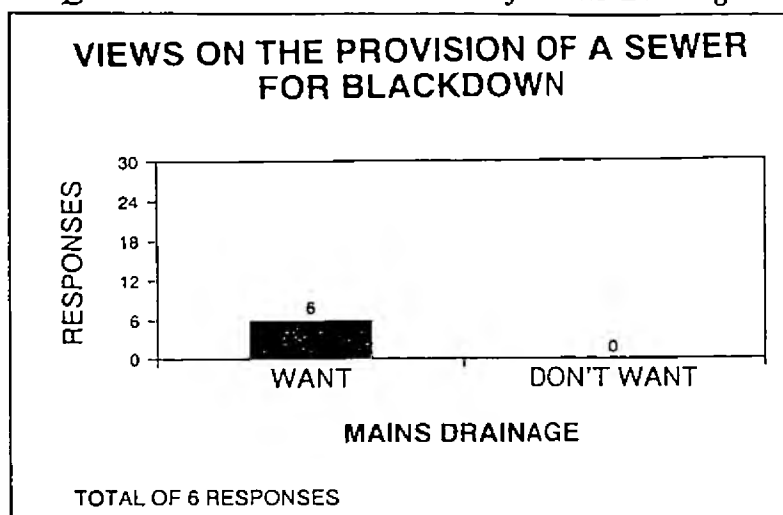
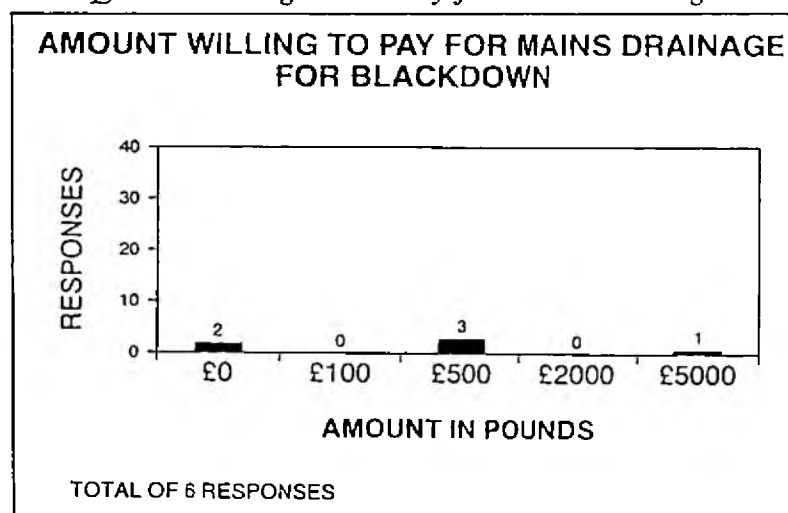
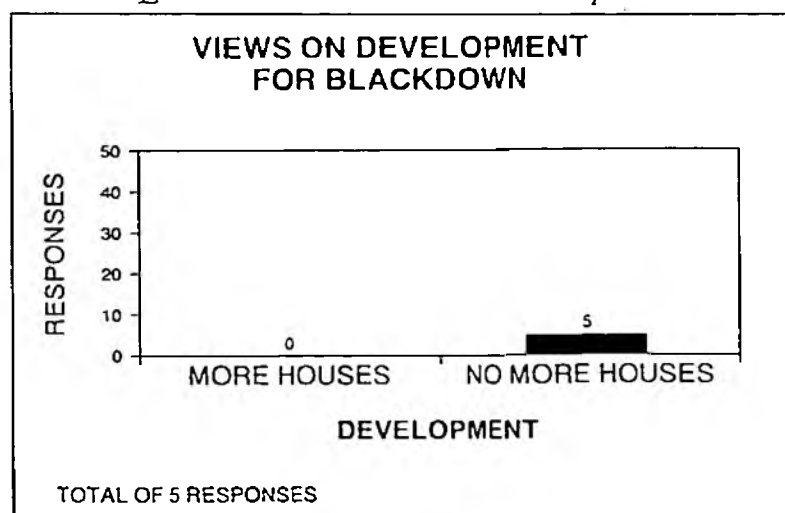
*Qu.7: Water Consuming Appliances Used**Qu.8: Attitude to Drainage Problems*HOUSEHOLD APPLIANCES
FOR BLACKDOWNVIEW OF LOCAL SEWAGE POLLUTION
FOR BLACKDOWN

TOTAL OF 10 RESPONSES



TOTAL OF 6 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

BLACKDOWN

KEY	
	Septic Tank Discharges to Watercourse
	STP Discharges to Watercourse
	STP Discharges to Soakaway
	Ditch or Watercourse
	Piped Discharge
	Sampling Point
	Total Score
Not to Scale	

9.10.3

Site 37: WASPERTON

IMPACT SCORE: 25

Description

Wasperton is situated four miles north east of Stratford on Avon on the east bank of the River Avon (NGR: SP 265 588).

Soil Drainage Characteristics

The village lies on sand and gravel, and drains to the River Avon. the soil type is a brown earth (5.41). Under the Groundwater Vulnerability Classification the area has been designated as a Non-Aquifer site.

Development

Wasperton is a 'restraint' area where development is limited. Over the past ten year period eight properties have been built.

Foul Drainage

The eight property farm conversion at the top end of the village are served by a package treatment plant that has a consented discharge to the River Avon. Properties at the lower end of the village have septic tank systems. Some of these properties discharge septic effluent to a surface water drain that discharges to a ditchcourse which runs parallel to the River Avon for about a quarter of a mile before it joins the river.

Pollution

Polluted conditions were detected at one point in the village with a contribution from 9 properties. At the scoring point water quality samples were indicative of a Class 4 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
36.7	26	36	32

Environmental Health Complaints

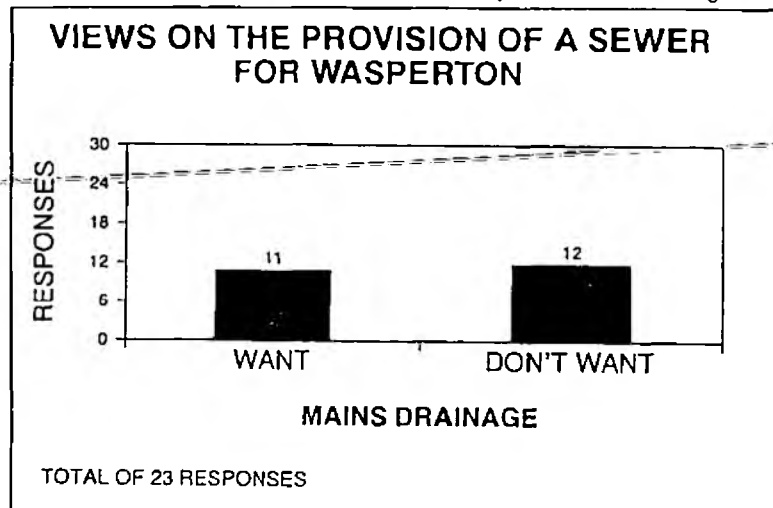
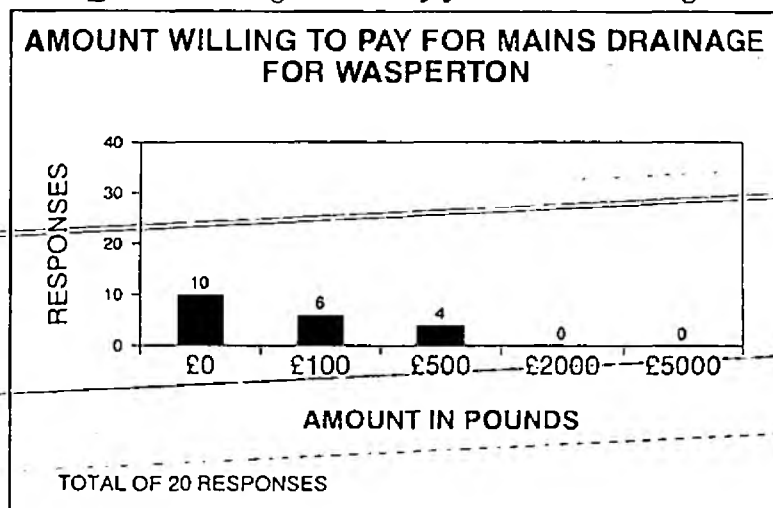
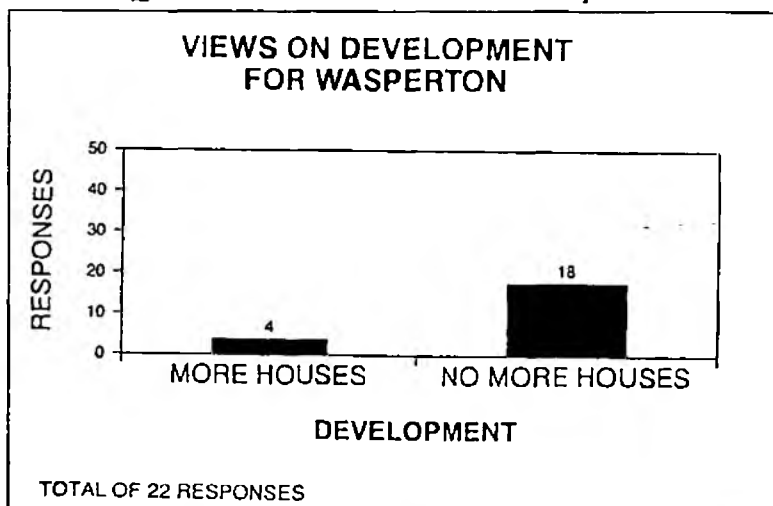
Warwick District Council receive occasional environmental health complaints from this village.

VILLAGE NAME: WASPERTON

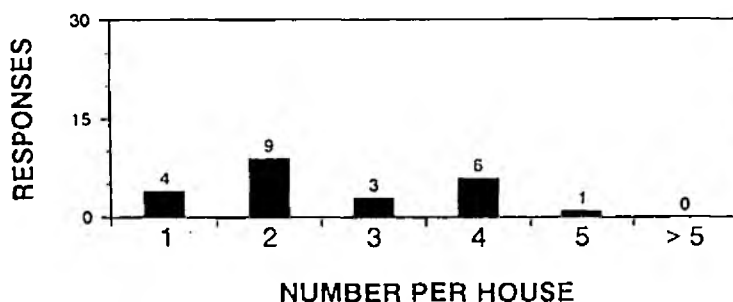
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	6-10	2
NO OF DISCHARGE POINTS	1-2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	5-8	3
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100-200M	5
B.O.D. 10M D/S OF SCORING POINT	18-40	4
AMMONIA 10M D/S OF SCORING POINT	>20	5
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	40-21	3
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		25

NUMBER OF QUESTIONNAIRES SENT OUT:	33
NUMBER OF QUESTIONNAIRES RETURNED:	23
PERCENTAGE OF QUESTIONNAIRES RETURNED:	69%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	47%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	47%

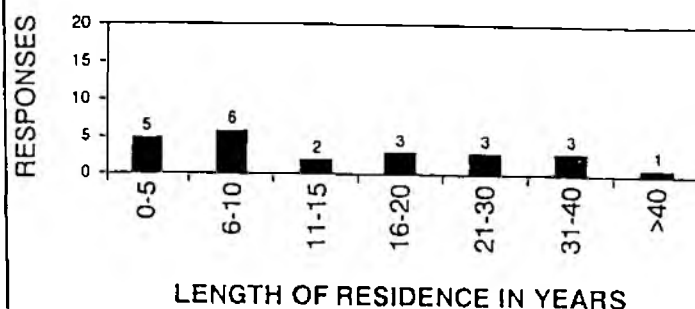
ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

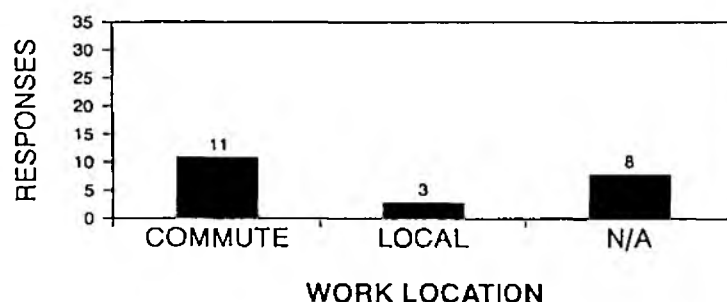
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property**Qu.4: Length of Residence in the Village***SIZE OF HOUSEHOLD
FOR WASPERTON**

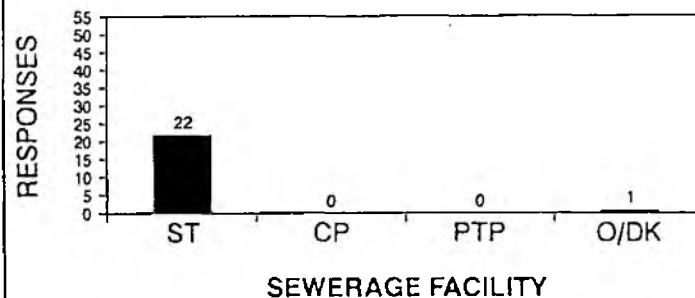
TOTAL OF 23 RESPONSES

**LENGTH OF RESIDENCE
FOR WASPERTON**

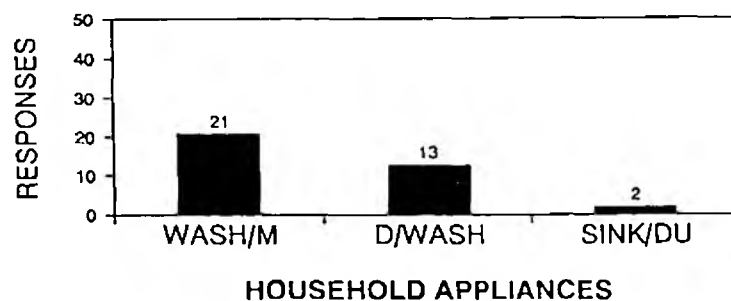
TOTAL OF 23 RESPONSES

*Qu.5: Work Location (if applicable)**Qu.6: Type of Sewerage Facility***WORK LOCATION
FOR WASPERTON**

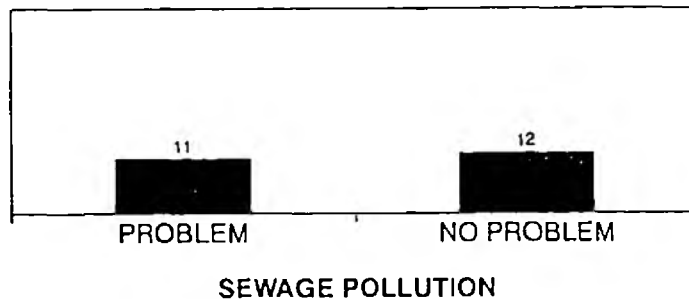
TOTAL OF 22 RESPONSES

**HOUSEHOLD SEWAGE SYSTEMS
FOR WASPERTON**

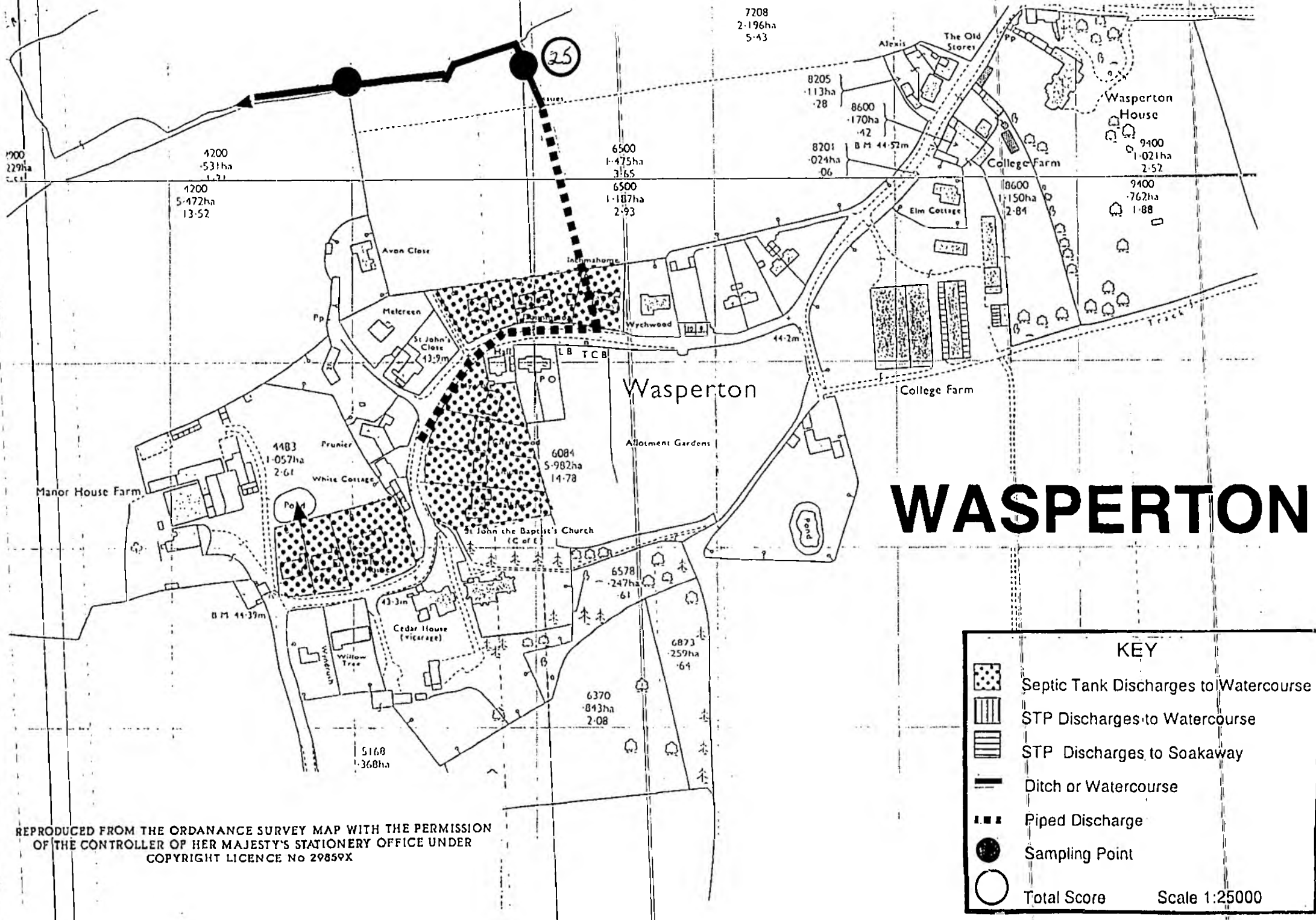
TOTAL OF 23 RESPONSES

*Qu.7: Water Consuming Appliances Used**Qu.8: Attitude to Drainage Problems***HOUSEHOLD APPLIANCES
FOR WASPERTON**

TOTAL OF 36 RESPONSES

**VIEW OF LOCAL SEWAGE POLLUTION
FOR WASPERTON**

TOTAL OF 23 RESPONSES



9.11 WYCHAVON DISTRICT COUNCIL*Response to Questionnaire*

- **Population of district:** 101,716
- **Population connected to the public sewerage system:**
No information available.
- **Policy towards provision of sewerage?**
The council's current policy is not to requisition any sewers.
- **Does the council have an on-going programme of first time sewerage schemes?**
No.
- **Total value of first time sewage schemes constructed in the last ten years.**
None.
- **Does the council own/maintain sewage plants/ sewerage systems in its own right?**
(Not as sewerage agents)
17 small plants not serving more than 10 houses each.

Impact Ranking Order of Villages Covered in the Survey (see over)

Impact Ranking Order of Villages Covered in the Survey		
Site 57	Whittington	42
Site 43.	Flyford Flavell	41
Site 52.	Peopleton	37
Site 38.	Abberton	36
Site 56.	White Ladies Aston	36
Site 44.	Grafton Flyford	33
Site 42.	Earls Common	32
Site 41.	Drakes Broughton	30
Site 54.	Stock Green	30
Site 45.	Hatfield	28
Site 53.	Sale Green	24
Site 46.	Hadzor	23
Site 39.	Birlingham	22
Site 51.	Naunton Beauchamp	18
Site 40.	Defford	16
Site 55.	Upton Snodsbury	15
Site 49.	Kington	14
Site 48.	Himbleton	13
Site 50.	Littleworth	-

9.11.1

Site 38: ABBERTON

IMPACT SCORE: 36

Description

Abberton is located to the East of Worcester, two and a half miles South of the A422, one mile south-east of Flyford Flavell (NGR: SO 995 535). The settlement of approximately 20 houses is centred around St. Eaburga's Church. It was once known as Eäbbä's settlement.

Soil Drainage Characteristics

The village lies on heavy clay, and drains to a tributary of the Piddle Brook. The soil type is a typical calcareous pelosol (4.11). The area has been given Non-Aquifer status.

Development

Development has been restricted in order to protect the village's unique character. The site has been declared a conservation area. Over the past ten years, planning permission has been granted for only one dwelling.

Foul Drainage

The properties in the North part of the village have septic tank systems with overflows piped to a open ditch at NGR: SO 993 537. The rest of the houses in the village are served by septic tank/soakaway systems.

Pollution

Polluted conditions were detected at one main location, with a contribution from 9 properties. At the scoring point water quality samples were indicative Class 4 watercourse (see table). It is likely that these results may have been exacerbated by an input of farm effluent.

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
40.3	56.0	169	32

Environmental Health Complaints

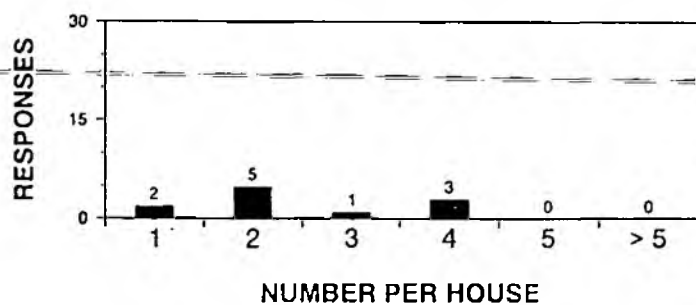
Wychavon District Council have received no environmental health complaints about this village.

VILLAGE NAME: ABBERTON

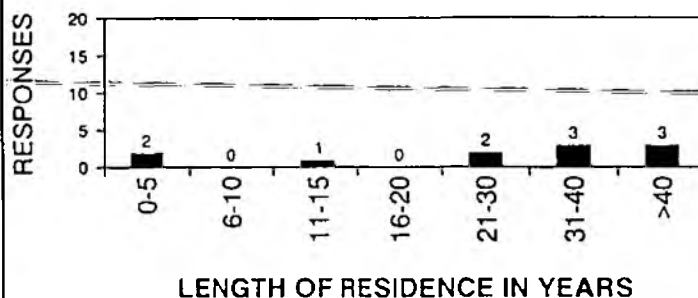
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	6-10	2
NO OF DISCHARGE POINTS	1-2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	9-16	4
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>400M	15
B.O.D. 10M D/S OF SCORING POINT	>40	5
AMMONIA 10M D/S OF SCORING POINT	>20	5
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	40-21	3
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	LOW	1
TOTAL SCORE		36

NUMBER OF QUESTIONNAIRES SENT OUT:	21
NUMBER OF QUESTIONNAIRES RETURNED:	11
PERCENTAGE OF QUESTIONNAIRES RETURNED:	52%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	10%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	36%

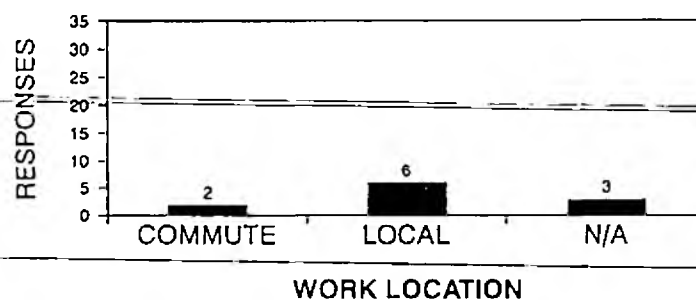
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property*SIZE OF HOUSEHOLD
FOR ABBERTON

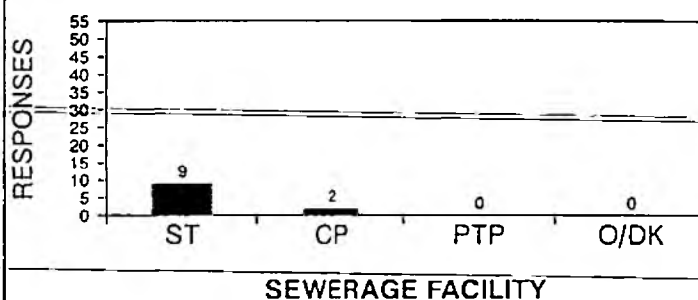
TOTAL OF 11 RESPONSES

*Qu.4: Length of Residence in the Village*LENGTH OF RESIDENCE
FOR ABBERTON.

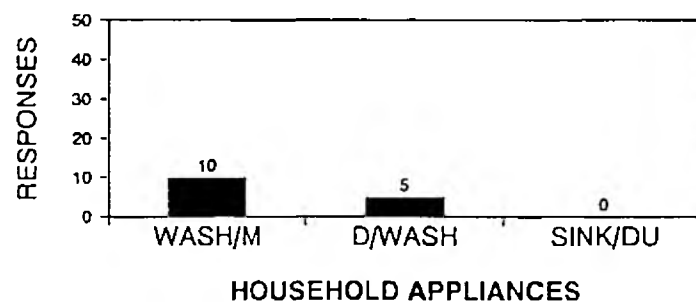
TOTAL OF 11 RESPONSES

*Qu.5: Work Location (if applicable)*WORK LOCATION
FOR ABBERTON

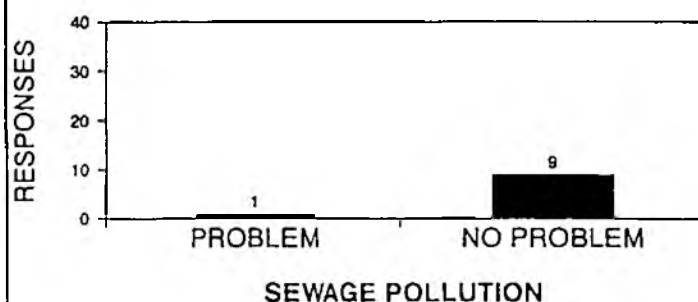
TOTAL OF 11 RESPONSES

*Qu.6: Type of Sewerage Facility*HOUSEHOLD SEWAGE SYSTEMS
FOR ABBERTON

TOTAL OF 11 RESPONSES

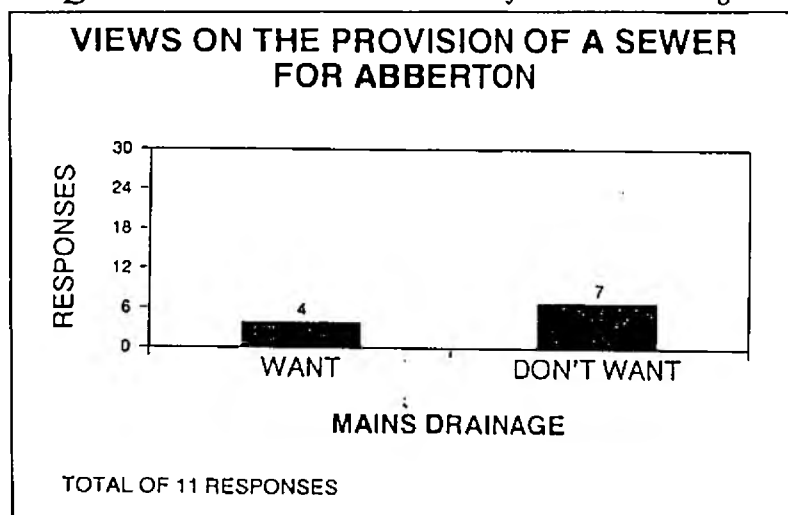
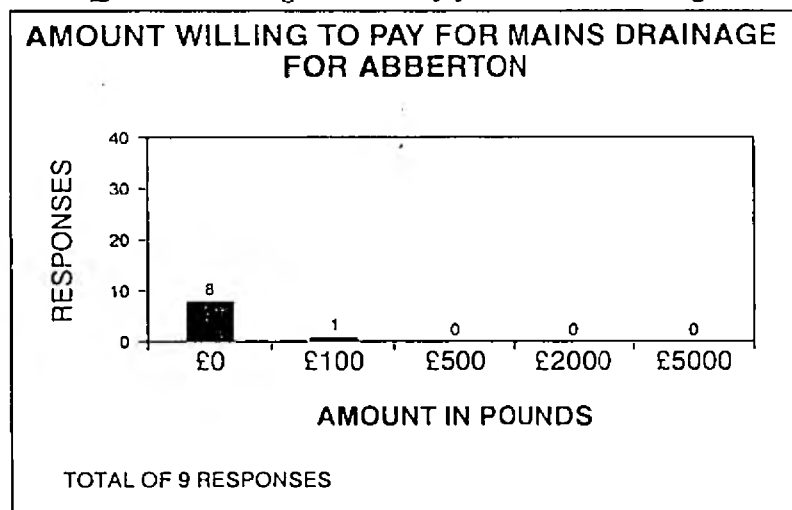
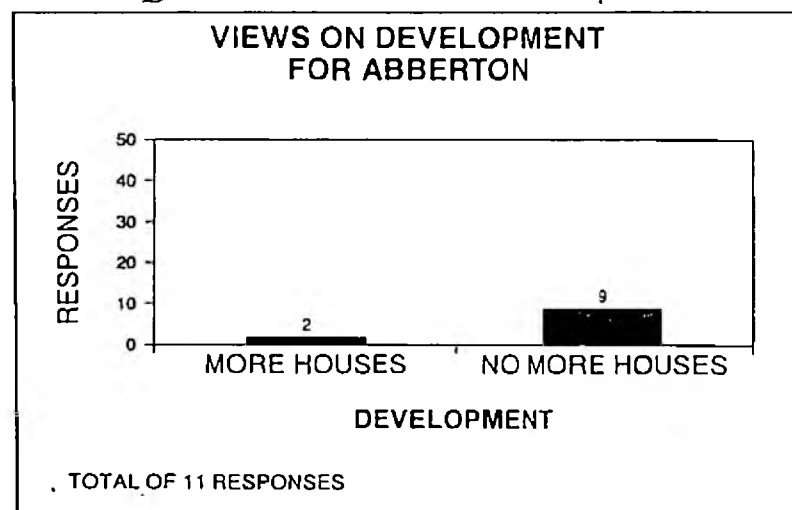
*Qu.7: Water Consuming Appliances Used*HOUSEHOLD APPLIANCES
FOR ABBERTON

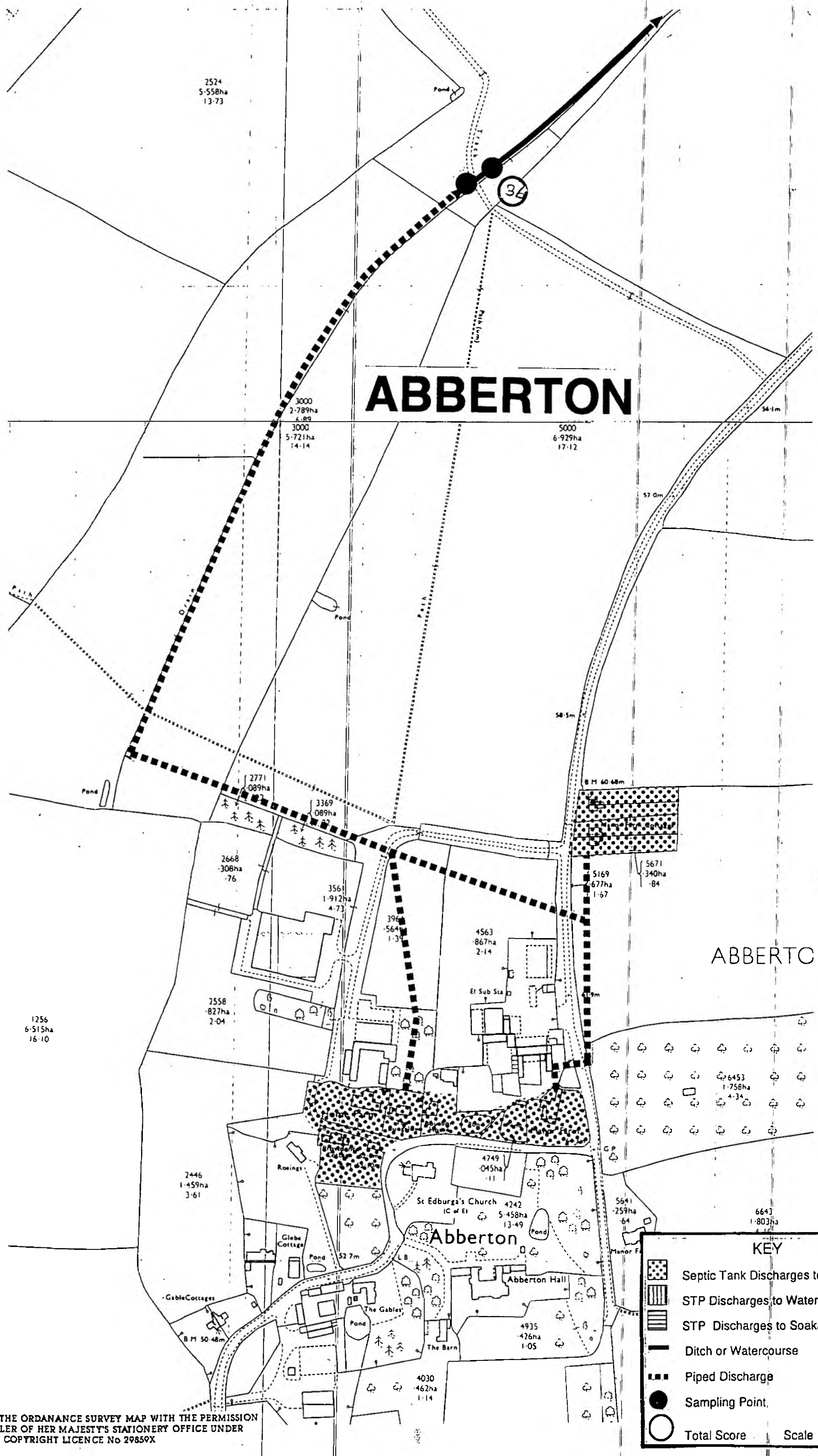
TOTAL OF 15 RESPONSES

*Qu.8: Attitude to Drainage Problems*VIEW OF LOCAL SEWAGE POLLUTION
FOR ABBERTON

TOTAL OF 10 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



ABBERTON

ABBERTO

KEY

- Septic Tank Discharges to Watercourse
 - STP Discharges to Watercourse
 - STP Discharges to Soakaway
 - Ditch or Watercourse
 - Piped Discharge
 - Sampling Point
 - Total Score
- Scale 1:25000

9.11.2

Site 39: BIRLINGHAM

IMPACT SCORE: 25

Description

Birlingham lies to the east of Defford, approximately two mile south of Pershore (NGR: SO 934 4320). The settlement falls into two parts, the majority of which is concentrated to the east of St. James' Church. The second part lies to the south of St. James' church-around four main farm-groups-and-a-number of farm cottages.

Soil Drainage Characteristics

The subsoil in the village is heavy clay, and the area drains to the River Avon. the soil type is a brown earth (5.41).

Development

There has been some consolidation of development through infilling, particularly on Church Street. The almshouses have been converted, as well as buildings at Manor Farm. Over the past ten years thirteen properties have been built. In order to restrict development the area has been designated a Conservation Area.

Foul Drainage

The sewerage system at Birlingham consists of two 'Village Drains'. These are subject to Royal Commission consent standards. The majority of properties in the village discharge effluent to one or other of these drains, which discharge to a small tributary of the River Avon. Some of the newer properties along Church Street have installed small package treatment plants. The farm conversion at Manor Farm has a package treatment plant that goes to soakaway.

Pollution

Polluted conditions were found at two main points in the village, with a contribution from more than 40 properties. Ten metres down stream of the worst site, the scoring point, water quality was indicative of a Class 3 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
10.3	9.0	187	56

Environmental Health Complaints

Wychavon District council receive regular environmental health complaints from this village.

VILLAGE NAME: BIRLINGHAM

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	>40	5
NO OF DISCHARGE POINTS	3-4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	>16	5
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100-200	5
B.O.D. 10M D/S OF SCORING POINT	5-9	2
AMMONIA 10M D/S OF SCORING POINT	5.1-20	4
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	>60	1
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	LOW	1
TOTAL SCORE		25

NUMBER OF QUESTIONNAIRES SENT OUT:

49

NUMBER OF QUESTIONNAIRES RETURNED:

34

PERCENTAGE OF QUESTIONNAIRES RETURNED:

69%

PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE
POLLUTION IS A PROBLEM:

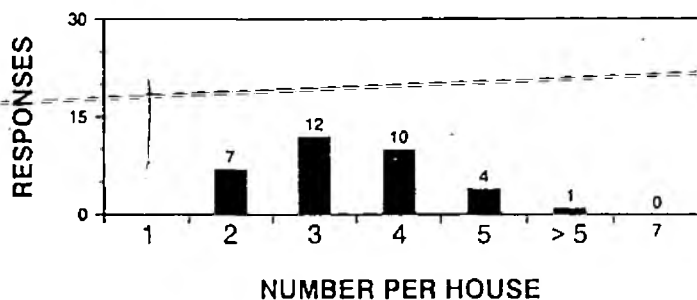
50%

PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:

56%

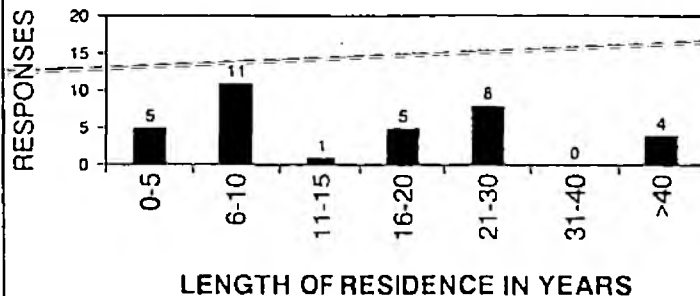
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

SIZE OF HOUSEHOLD
FOR BIRLINGHAM

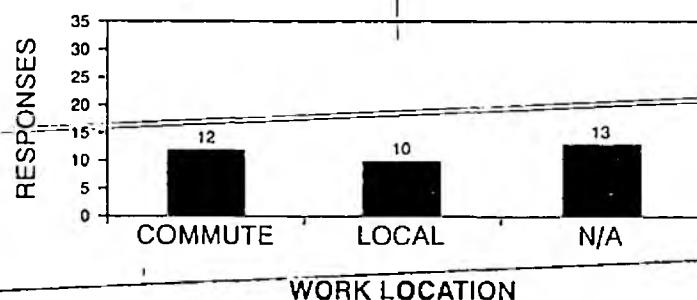
TOTAL OF 34 RESPONSES

Qu.4: Length of Residence in the Village

LENGTH OF RESIDENCE
FOR BIRLINGHAM

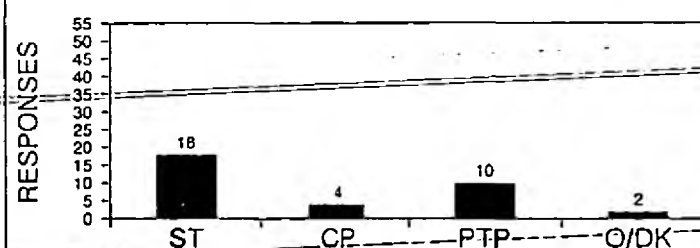
TOTAL OF 34 RESPONSES

Qu.5: Work Location (if applicable)

WORK LOCATION
FOR BIRLINGHAM

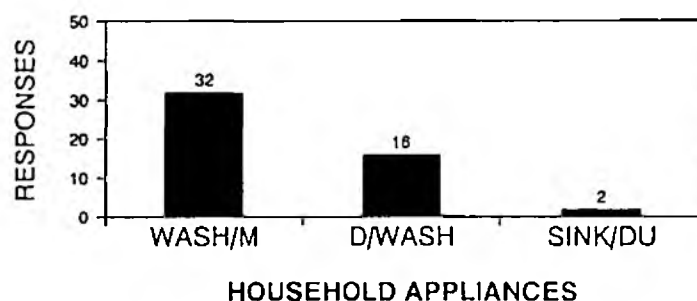
TOTAL OF 35 RESPONSES

Qu.6: Type of Sewerage Facility

HOUSEHOLD SEWAGE SYSTEMS
FOR BIRLINGHAM

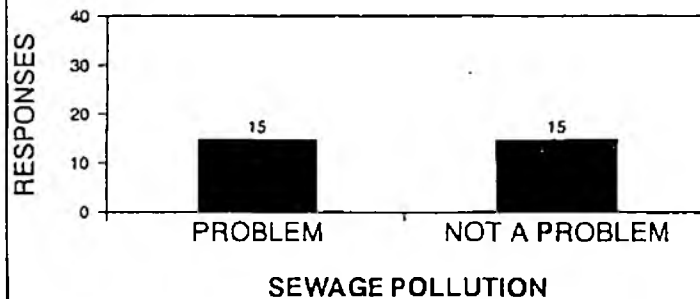
TOTAL OF 34 RESPONSES

Qu.7: Water Consuming Appliances Used

HOUSEHOLD APPLIANCES
FOR BIRLINGHAM

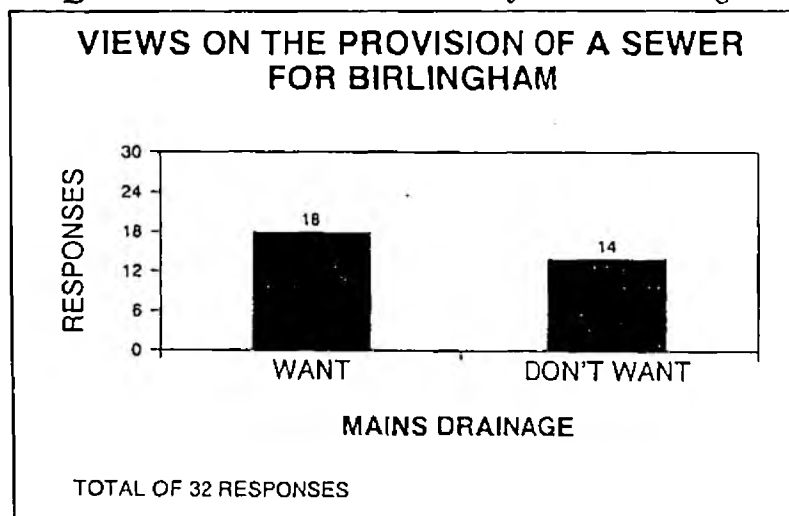
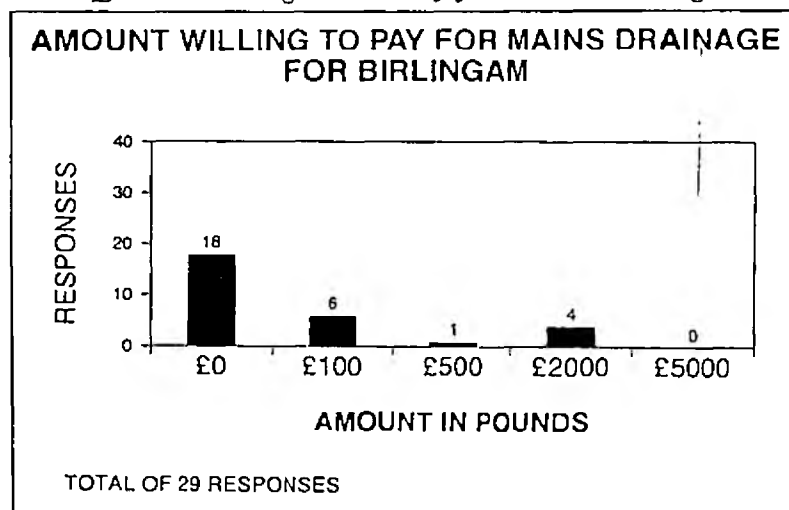
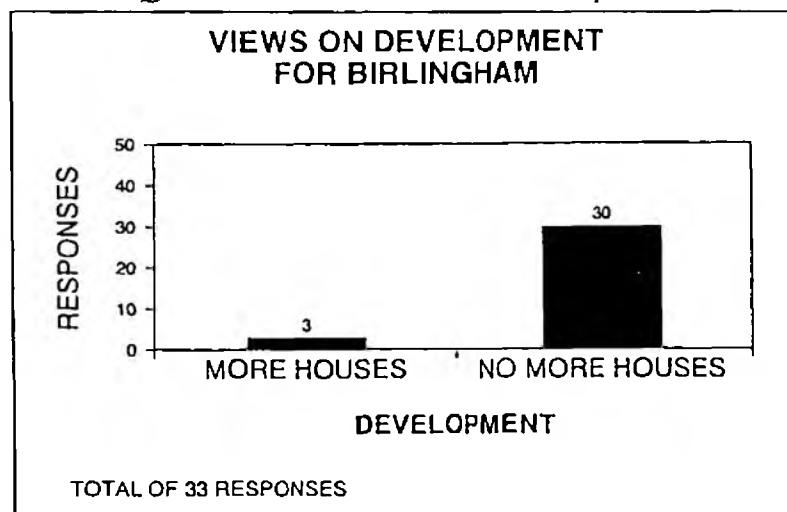
TOTAL OF 50 RESPONSES

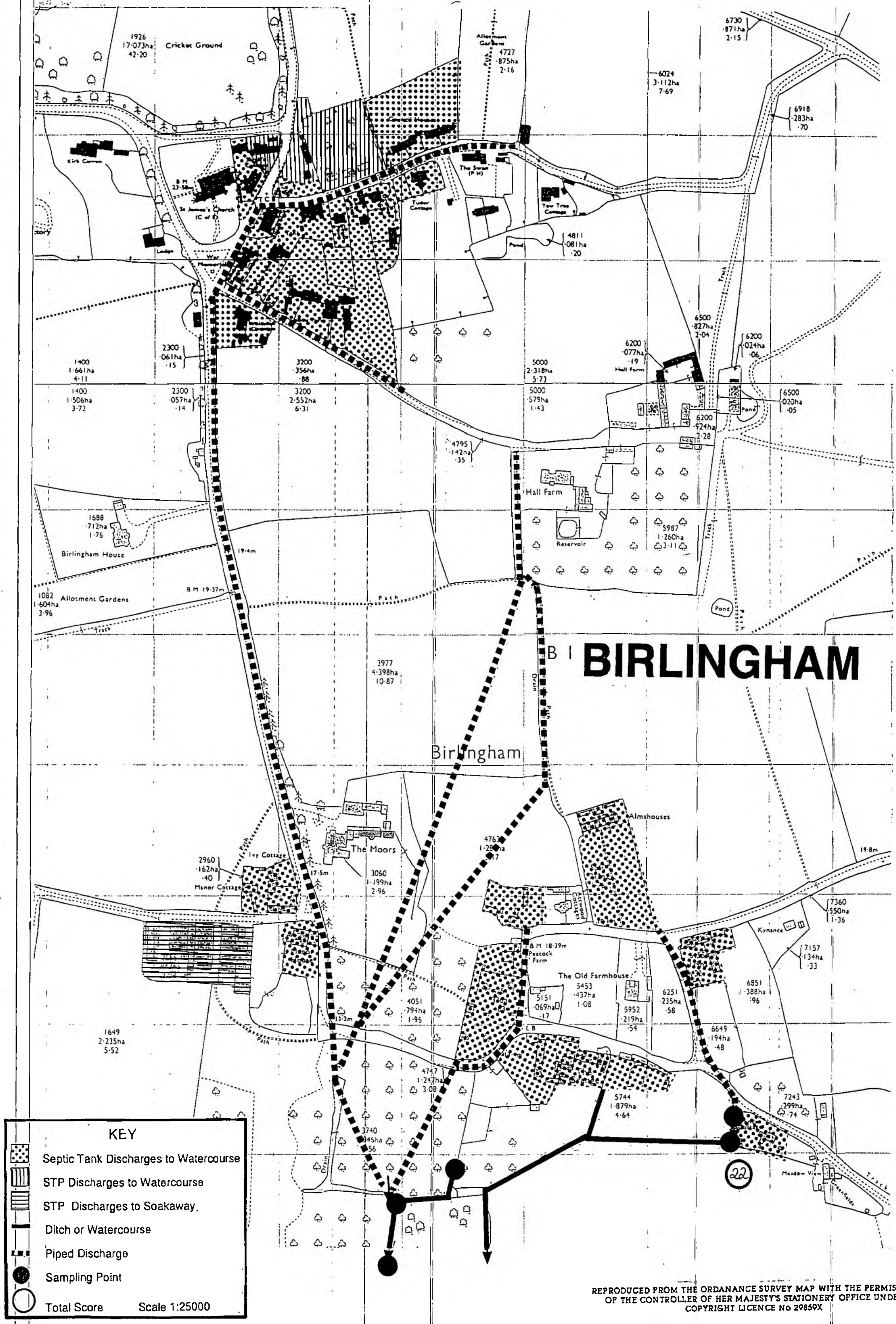
Qu.8: Attitude to Drainage Problems

VIEW OF LOCAL SEWAGE POLLUTION
FOR BIRLINGHAM

TOTAL OF 30 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



9.11.3

Site 40: DEFFORD

IMPACT SCORE: 16

Description

Defford is a compact settlement which has experienced a steady growth over recent years. It lies to the South-East of Pershore and North of the A4104 adjacent to the Birmingham - Bristol railway line.

Soil Drainage Characteristics

The subsoil in the village is heavy clay, and the area drains to the Bow Brook. The soil type is a typical calcareous pelosol (4.11). The area has been assigned Non-Aquifer status.

Development

The village has experienced a steady growth over recent years. The more loosely knit older houses have been interwoven with small estate type development. It has been estimated that over the last ten years 28 dwellings have been built.

Foul Drainage

The central part of the village is served by a mains sewerage system. A 'village drain' exists to the west of the village running parallel with Harpley Road, and discharges to the railway track drain. Although, this discharge has not been found in recent years, it is consented. The newer houses at the top end of Upper Street discharge to a culvert that discharges to the Bow Brook just upstream of Defford Bridge.

Pollution

Polluted conditions were found at one main point in the village, with a contribution from at least 12 properties. At the scoring point, water quality was indicative of a Class 3 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
3.0	2.8	19	69

Environmental Health Complaints

Wychavon District Council have received no environmental health complaints from this village.

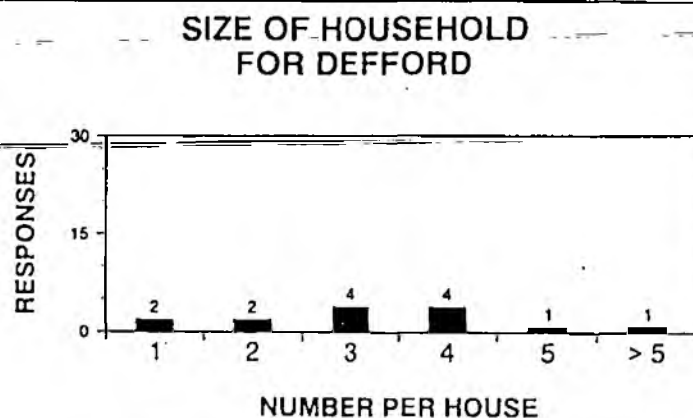
VILLAGE NAME: DEFFORD

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	11-20	3
NO OF DISCHARGE POINTS	1-2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	9-16	4
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100M	1
B.O.D. 10M D/S OF SCORING POINT	<5	1
AMMONIA 10M D/S OF SCORING POINT	2.6-5.0	3
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	>60	1
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		16

NUMBER OF QUESTIONNAIRES SENT OUT:	37
NUMBER OF QUESTIONNAIRES RETURNED:	14
PERCENTAGE OF QUESTIONNAIRES RETURNED:	37%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	57%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	79%

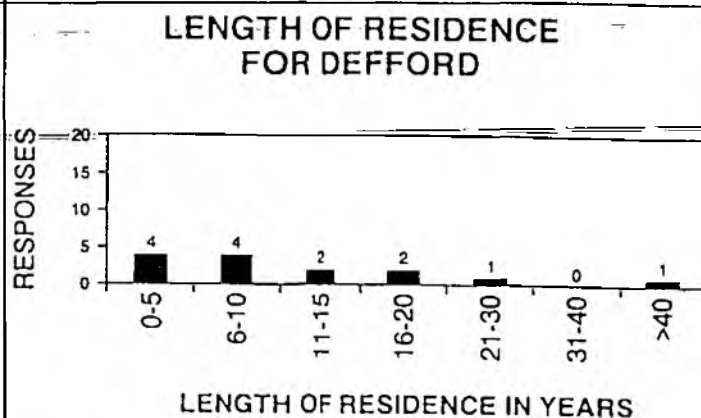
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property



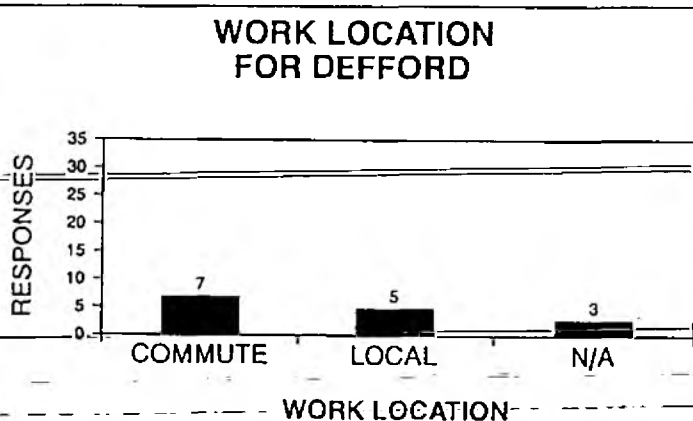
TOTAL OF 14 RESPONSES

Qu.4: Length of Residence in the Village



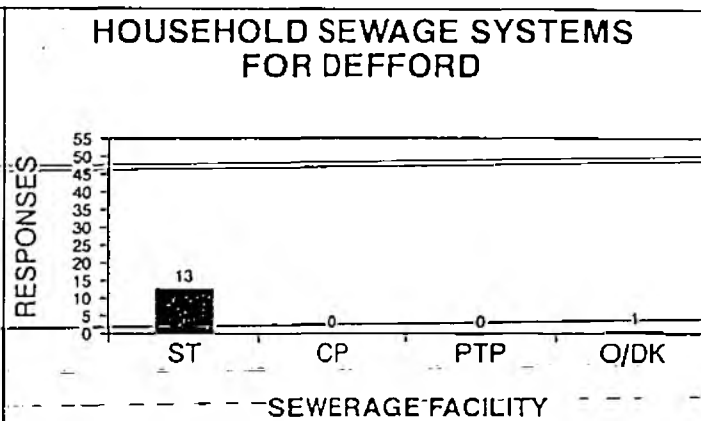
TOTAL OF 14 RESPONSES

Qu.5: Work Location (if applicable)



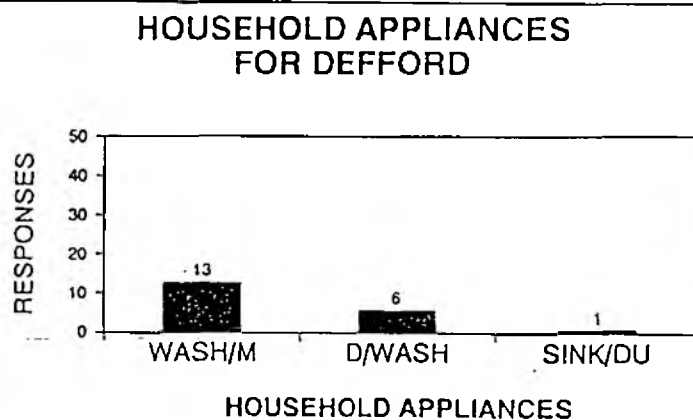
TOTAL OF 15 RESPONSES

Qu.6: Type of Sewerage Facility



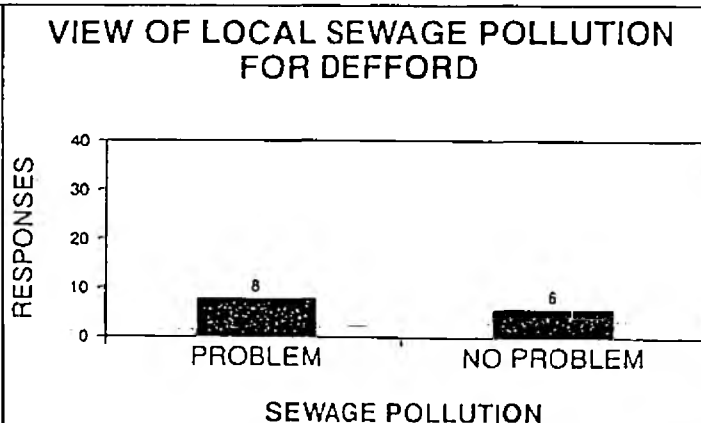
TOTAL OF 14 RESPONSES

Qu.7: Water Consuming Appliances Used



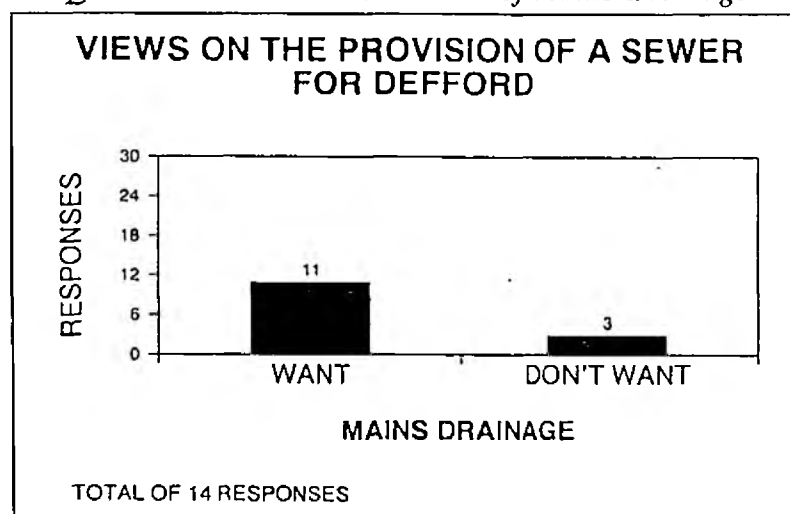
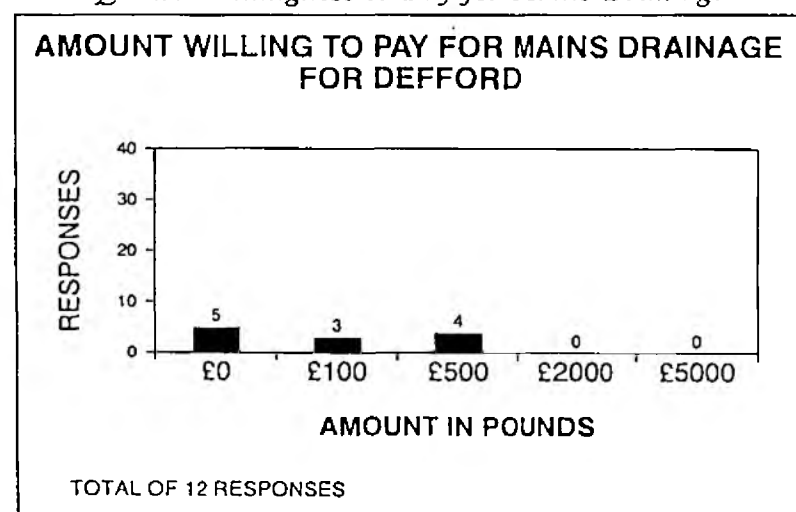
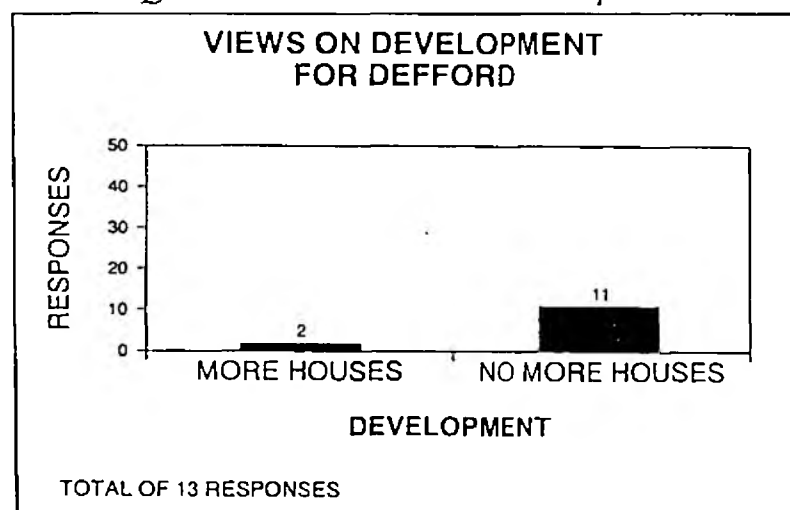
TOTAL OF 20 RESPONSES

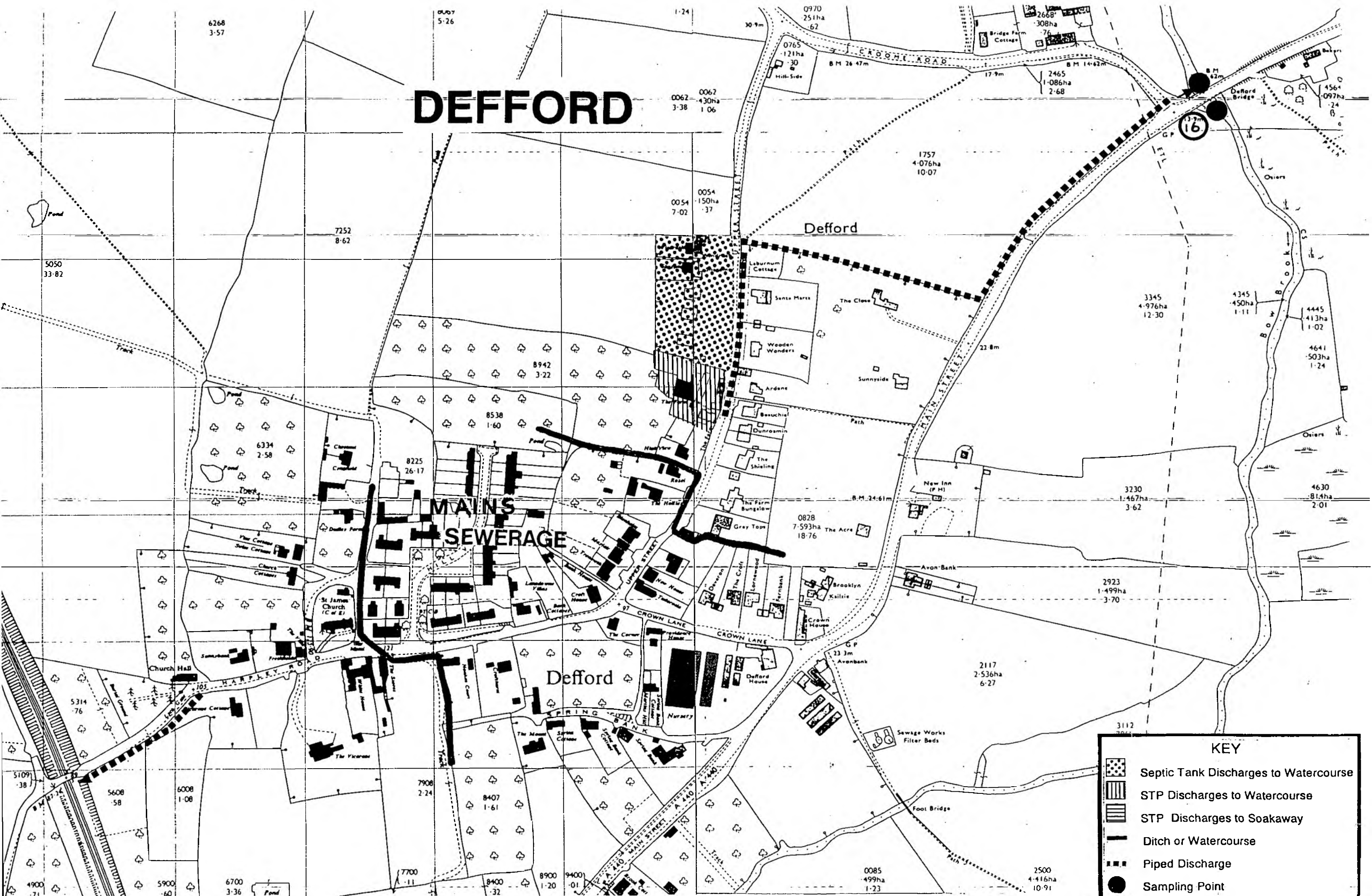
Qu.8: Attitude to Drainage Problems



TOTAL OF 14 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



DEFFORD

MAINS SEWERAGE

KEY

- Septic Tank Discharges to Watercourse
- STP Discharges to Watercourse
- STP Discharges to Soakaway
- Ditch or Watercourse
- Piped Discharge
- Sampling Point
- Total Score

9.11.4

Site 41: DRAKES BROUGHTON

IMPACT SCORE: 30

Description

Drakes Broughton lies to the North West of Pershore, adjacent to the Birmingham-Bristol railway line (NGR: SO 927 487).

Soil Drainage Characteristics

The subsoil in the village is heavy clay, and the area drains to the Bow Brook. The soil type is a stagnogleyic argillic brown earth (5.71). Under the Groundwater Vulnerability Classification this area has been given Non-Aquifer status.

Development

Drakes Broughton is a substantial village. It consists largely of modern development which has consolidated the older groups of dwellings along Stonebow Road. To the north-east of the village lies a suburban estate. Over the past ten years 115 dwellings have been built. This development has now been restricted to a settlement boundary drawn to follow existing curtilages and the highway.

Foul Drainage

The majority of the village is served by mains drainage. Several houses to the south of the village, adjacent to A44, discharge foul effluent to a 'village drain' that discharges to a tributary of the Bow Brook in Lodge Wood. This discharge is consented to a Royal Commission Standard.

Pollution

Polluted conditions were found at two main points in the village, with contributions made from approximately 10 properties. At the scoring-point water quality samples were indicative of a Class 4 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
8.9	18	74	58

Environmental Health Complaints

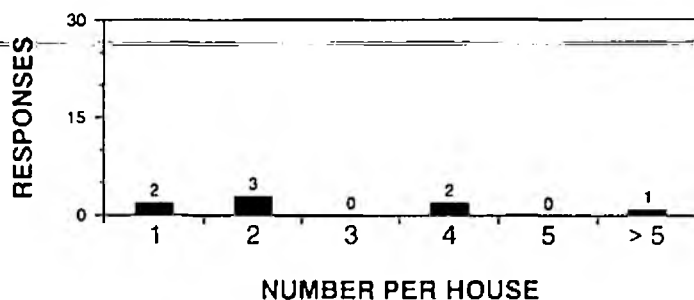
Wychavon District Council receive occasional environmental health complaints from this village.

VILLAGE NAME: DRAKES BROUGHTON

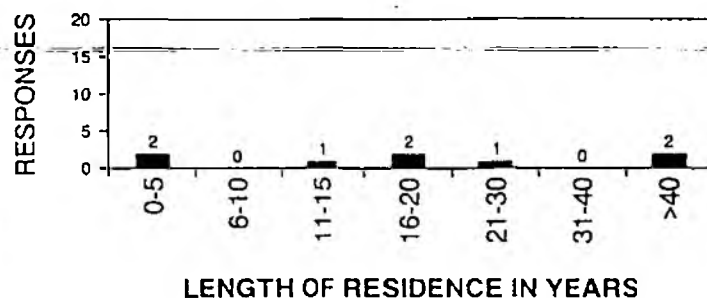
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	6-10	2
NO OF DISCHARGE POINTS	1-2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	9-16	4
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>200M	10
B.O.D. 10M D/S OF SCORING POINT	18-40	4
AMMONIA 10M D/S OF SCORING POINT	5.1-20	4
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	60-41	2
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	10M	2
PUBLIC ACCESSIBILITY	LOW	1
TOTAL SCORE		30

NUMBER OF QUESTIONNAIRES SENT OUT:	12
NUMBER OF QUESTIONNAIRES RETURNED:	8
PERCENTAGE OF QUESTIONNAIRES RETURNED:	66%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	66%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	50%

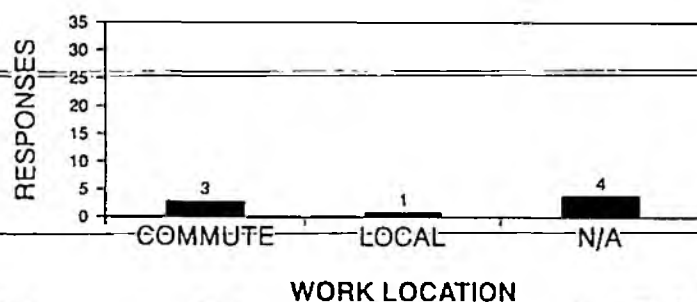
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property***SIZE OF HOUSEHOLD
FOR DRAKES BROUGHTON**

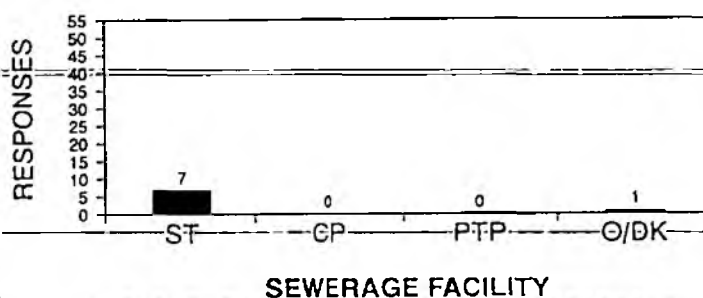
TOTAL OF 8 RESPONSES

*Qu.4: Length of Residence in the Village***LENGTH OF RESIDENCE
FOR DRAKES BROUGHTON**

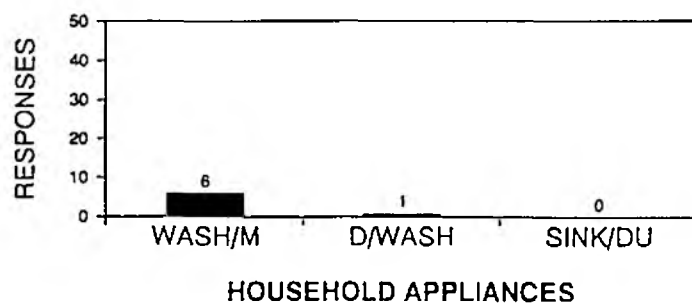
TOTAL OF 8 RESPONSES

*Qu.5: Work Location (if applicable)***WORK LOCATION
FOR DRAKES BROUGHTON**

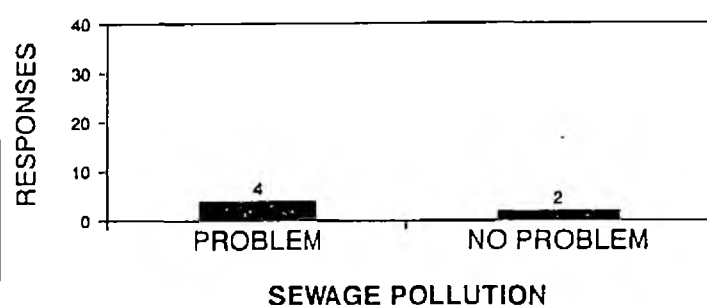
TOTAL OF 8 RESPONSES

*Qu.6: Type of Sewerage Facility***HOUSEHOLD SEWAGE SYSTEMS
FOR DRAKES BROUGHTON**

TOTAL OF 8 RESPONSES

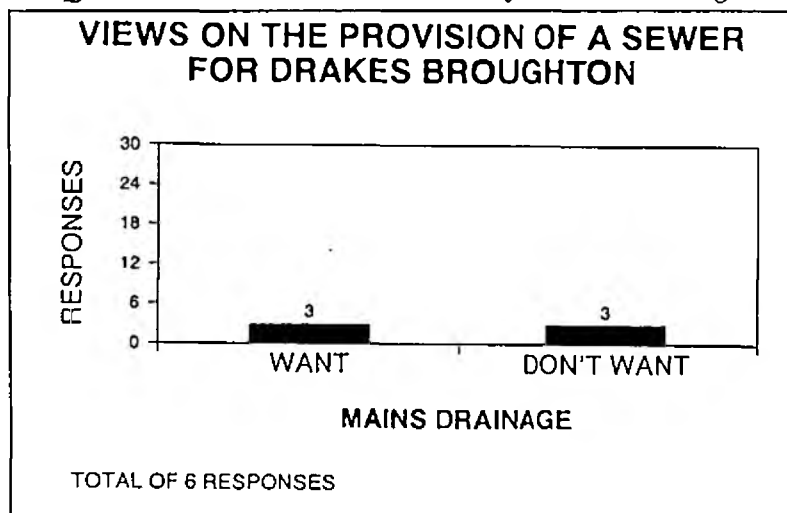
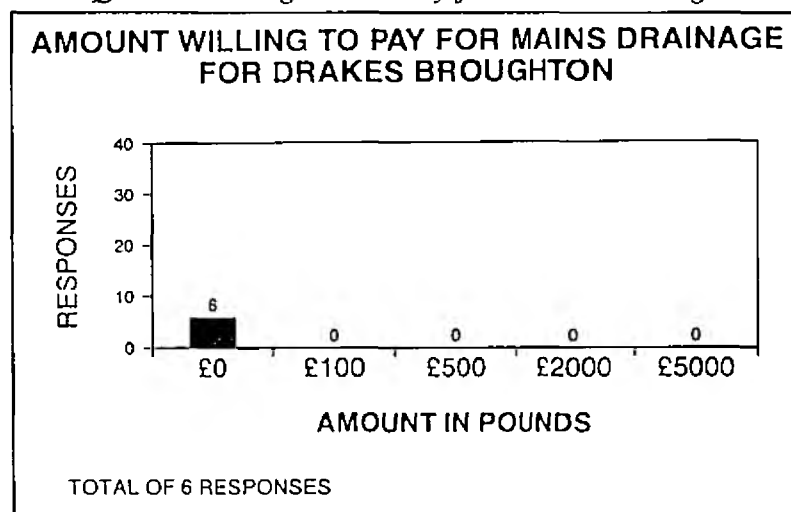
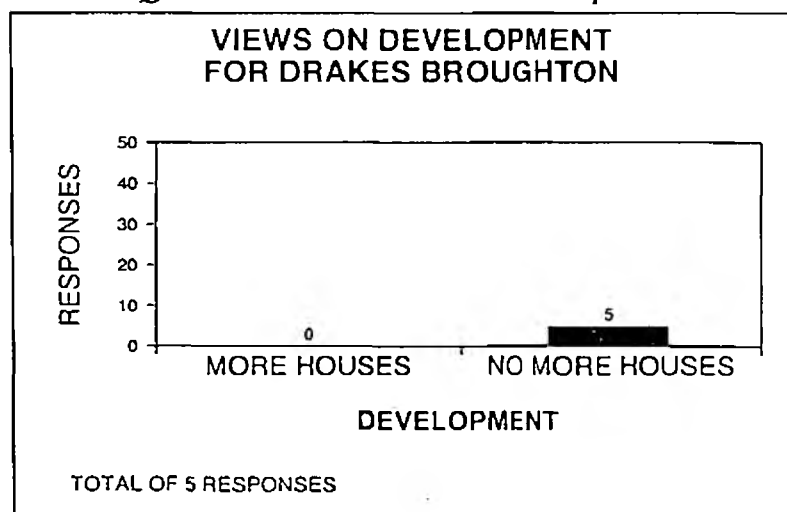
*Qu.7: Water Consuming Appliances Used***HOUSEHOLD APPLIANCES
FOR DRAKES BROUGHTON**

TOTAL OF 7 RESPONSES

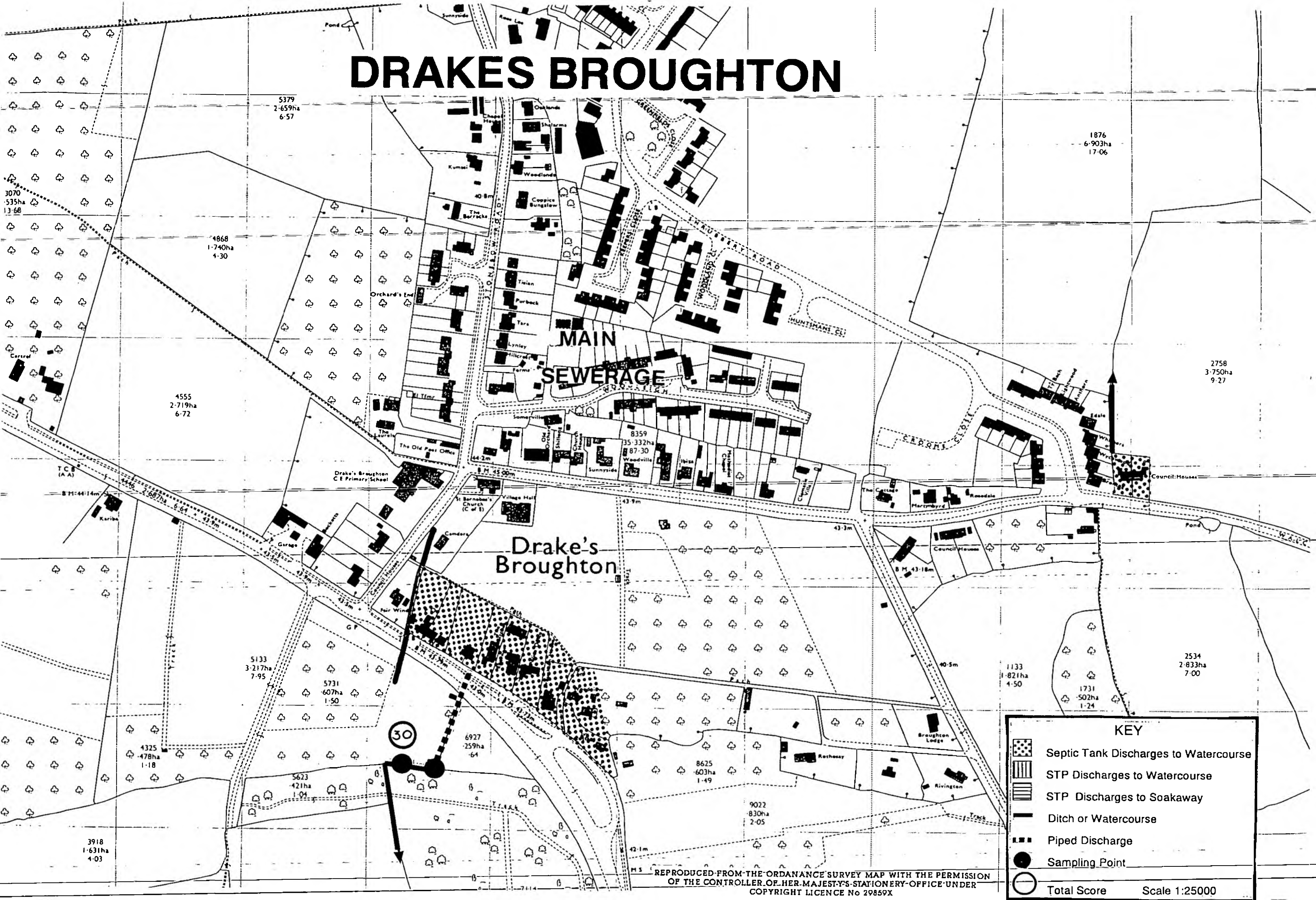
*Qu.8: Attitude to Drainage Problems***VIEW OF LOCAL SEWAGE POLLUTION
FOR DRAKES BROUGHTON**

TOTAL OF 6 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

DRAKES BROUGHTON



9.11.5

Site 42: EARL'S COMMON

IMPACT SCORE: 32

Description

Earl's Common lies to the south east of Droitwich between Himbleton and Stock Green (NRG:SO 958 591). It is a reasonable compact village of approximately 30 properties.

Drainage Characteristics

The subsoil in the village is a heavy lias clay with poor absorption characteristics. The soil type is a pelo-stagnogley soil (7.12). The village drains to a small stream, the Earl's Common Brook, a tributary of the Bow Brook.

Development

There is a high level of development pressure for the village in the form of infilling and minor consolidation. However, post 1974 the majority of development has been opposed on drainage grounds.

Foul Drainage

All of the properties in the village, bar three, are served by septic tanks/soakaway systems. Due to the impervious nature of the clay subsoil the majority of these malfunction, and discharge to ditches and road drains. These combine at NRG:SO 9600 5915 to the north east of the village. Of the three exceptions to septic tank drainage, one property has installed a 'bio-disc' plant discharging to a road drain and the other two have sealed cess-pits (conditions of Planning Consent in each case).

Pollution

Polluted conditions were detected at four points in the village, with a contribution from approximately 24 properties. At the scoring point water quality samples were indicative of a Class 3 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
11	12.5	32	68

Environmental Health Complaints

Wychavon District Council receive occasional environmental health complaints from this village.

VILLAGE NAME: EARLS COMMON

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	21-40	4
NO OF DISCHARGE POINTS	3-4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	9-16	4
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>200m	10
B.O.D. 10M D/S OF SCORING POINT	10-17	3
AMMONIA 10M D/S OF SCORING POINT	5.1-20	4
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	>60	1
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	10M	2
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		32

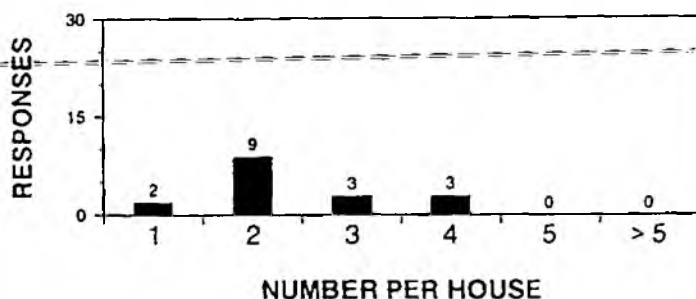
NUMBER OF QUESTIONNAIRES SENT OUT:	17
NUMBER OF QUESTIONNAIRES RETURNED:	25
PERCENTAGE OF QUESTIONNAIRES RETURNED:	68%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	25%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	43%

ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

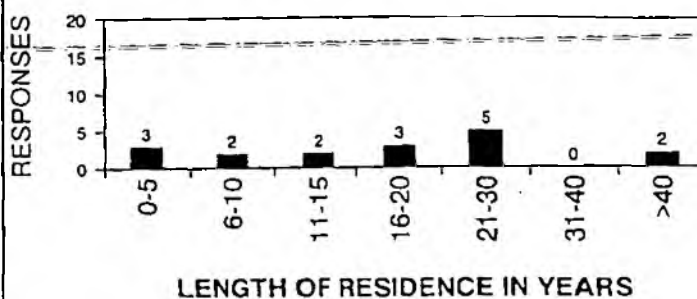
Qu.4: Length of Residence in the Village

SIZE OF HOUSEHOLD FOR EARLS COMMON



TOTAL OF 17 RESPONSES

LENGTH OF RESIDENCE FOR EARLS COMMON

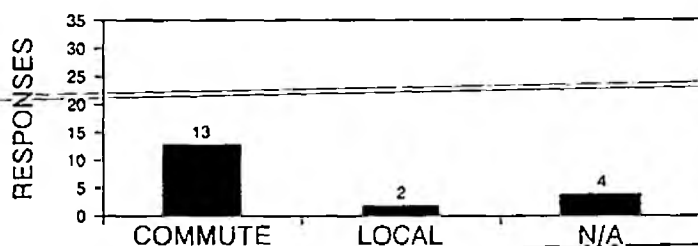


TOTAL OF 17 RESPONSES

Qu.5: Work Location (if applicable)

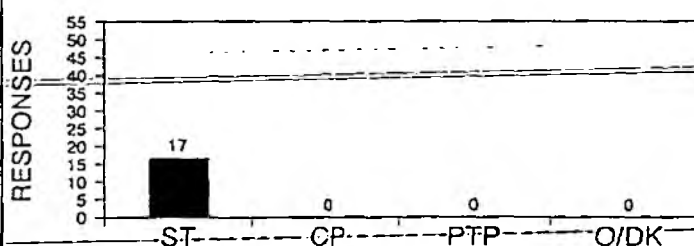
Qu.6: Type of Sewerage Facility

WORK LOCATION FOR EARLS COMMON



TOTAL OF 19 RESPONSES

HOUSEHOLD SEWAGE SYSTEMS FOR EARLS COMMON

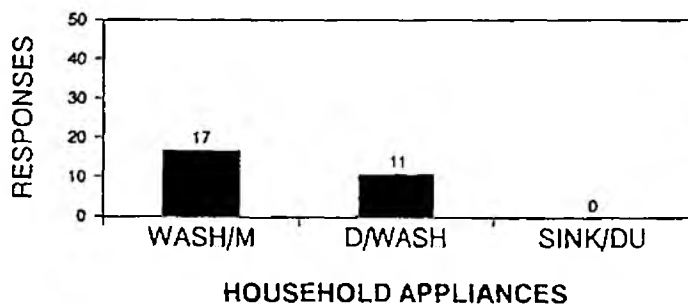


TOTAL OF 17 RESPONSES

Qu.7: Water Consuming Appliances Used

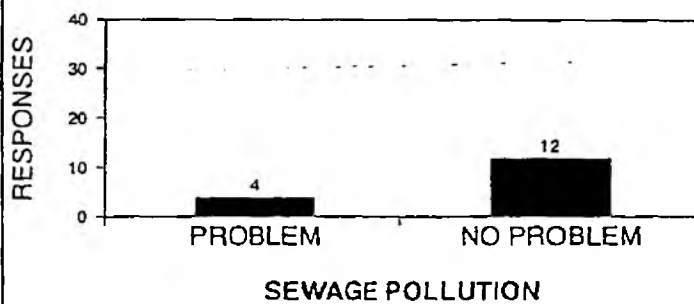
Qu.8: Attitude to Drainage Problems

HOUSEHOLD APPLIANCES FOR EARLS COMMON



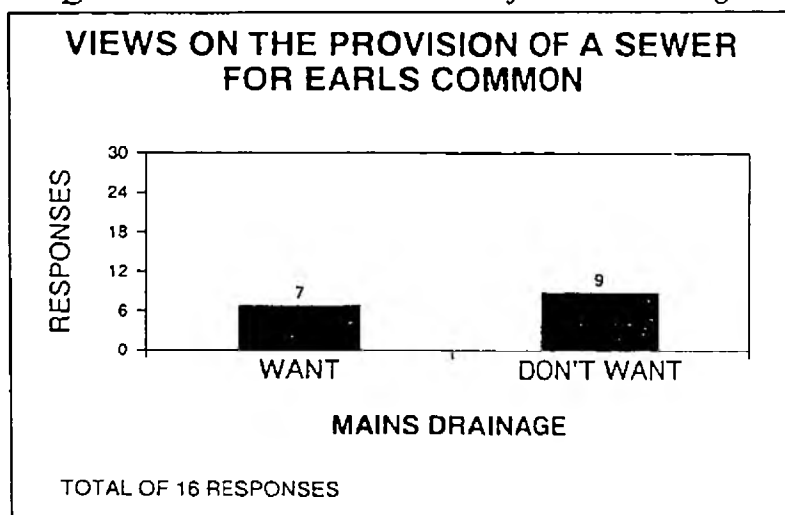
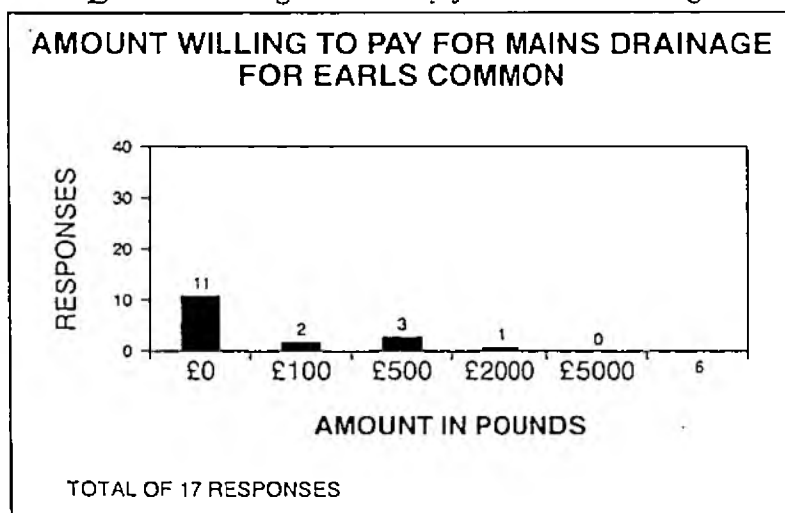
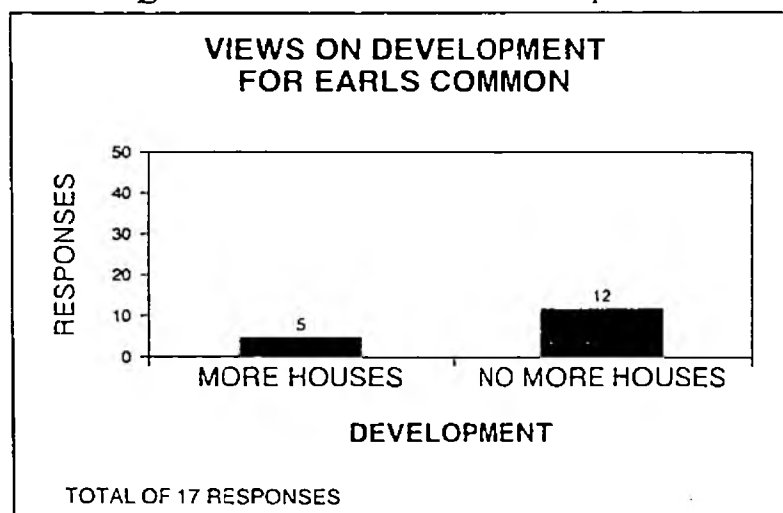
TOTAL OF 28 RESPONSES

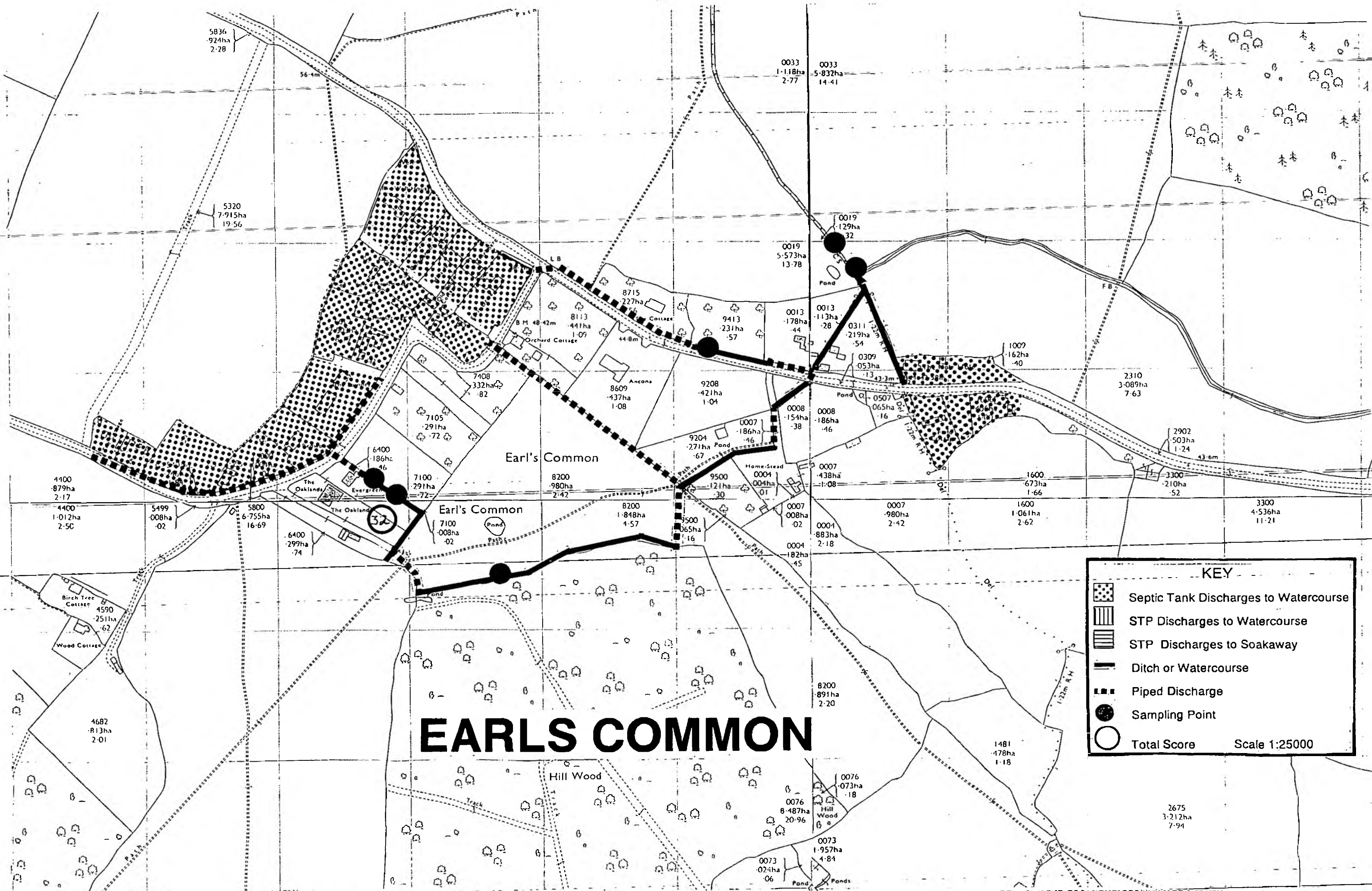
VIEW OF LOCAL SEWAGE POLLUTION FOR EARLS COMMON



TOTAL OF 16 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



EARLS COMMON

KEY

Septic Tank Discharges to Watercourse

STP Discharges to Watercourse

STP Discharges to Soakaway

Ditch or Watercourse

Piped Discharge

Sampling Point

Total Score

Scale 1:25000

9.11.6

Site 43: FLYFORD FLAVELL

IMPACT SCORE: 41

Description

Flyford Flavell is located south of the A 422, approximately seven miles east of Worcester NGR: SO 980 550). The oldest part of the village lies at the core, with two arms of more recent development stretching north and south.

Soil Drainage Characteristics

The village lies on heavy lias clay, and drains to the Piddle Brook. The soil type is a typical calcareous pelosol (4.11). Under the Groundwater Vulnerability Classification the area has been defined as a Non-Aquifer site.

Development

Over the past ten years there have been fourteen properties built in this village. Further development will be in the form of infilling and minor consolidation.

Foul Drainage

There are four 'village drains' in this settlement: Oldhill Village Drain, North Village Drain, South Minor Village Drain and South Major Village Drain. Overflows from septic tanks, as well as direct foul sewage connections, discharged, until recently, to one of these 'village drains.' Seven Trent Water completed a sewerage scheme for Flyford Flavell in 1993, in which all village drains were supposed to be picked up and incorporated into the scheme. The North Village Drain, that runs between St. Peter's Church and the Boot Inn, has not been picked up. Severn Trent claim that this discharge is not their responsibility. (See Chapter 5.6)

Pollution

The North Village Drain is polluted. There are approximately six properties discharging to this point. At the scoring point water quality samples were indicative of Class 4 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
22.4	109	69	48

Environmental Health Complaints

Wychavon District Council receive regular environmental health complaints from this village.

VILLAGE NAME: FLYFORD FLAVELL

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	6-10	2
NO OF DISCHARGE POINTS	1-2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	5-8	3
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>400M	15
B.O.D. 10M D/S OF SCORING POINT	>40	5
AMMONIA 10M D/S OF SCORING POINT	>20	5
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	60-41	2
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	>50	5
PUBLIC ACCESSIBILITY	HIGH	3
TOTAL SCORE		41

NUMBER OF QUESTIONNAIRES SENT OUT:	60
NUMBER OF QUESTIONNAIRES RETURNED:	31
PERCENTAGE OF QUESTIONNAIRES RETURNED:	51%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	57%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	59%

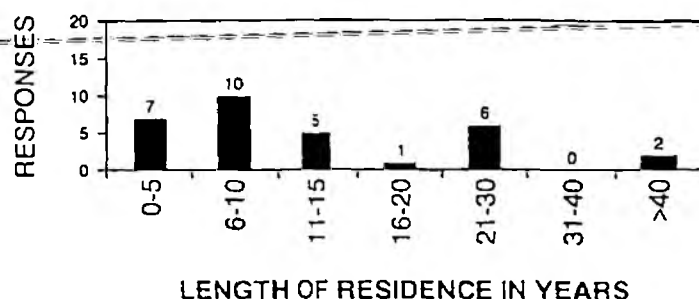
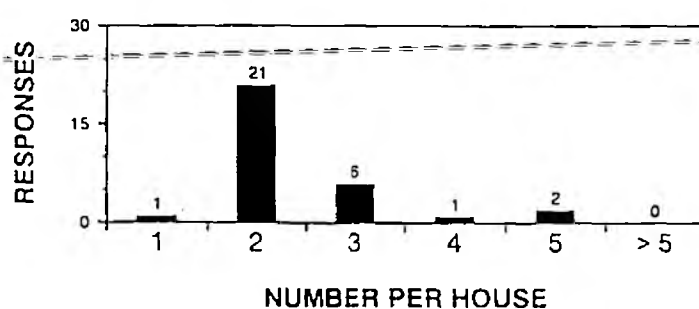
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

Qu.4: Length of Residence in the Village

SIZE OF HOUSEHOLD FOR FLYFORD FLAVELL

LENGTH OF RESIDENCE FOR FLYFORD FLAVELL



TOTAL OF 31 RESPONSES

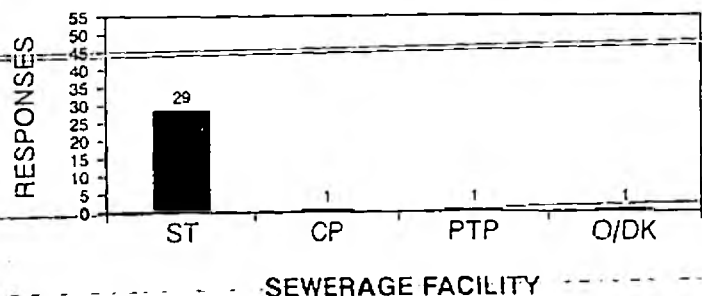
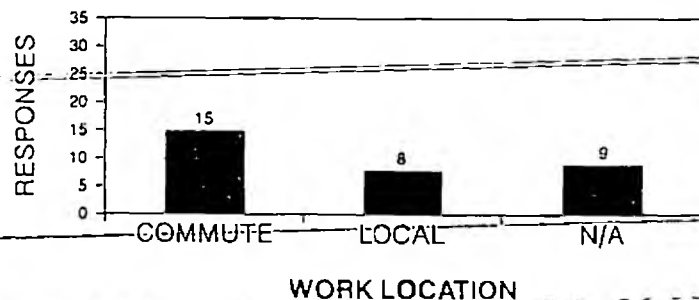
TOTAL OF 31 RESPONSES

Qu.5: Work Location (if applicable)

Qu.6: Type of Sewerage Facility

WORK LOCATION FOR FLYFORD FLAVELL

HOUSEHOLD SEWAGE SYSTEMS FOR FLYFORD FLAVELL



TOTAL OF 32 RESPONSES

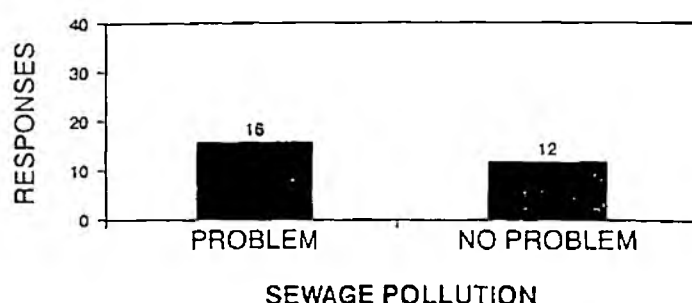
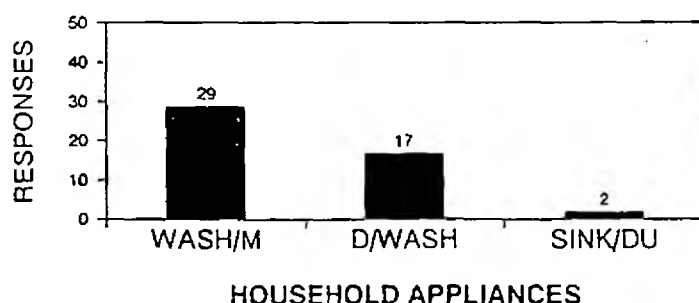
TOTAL OF 32 RESPONSES

Qu.7: Water Consuming Appliances Used

Qu.8: Attitude to Drainage Problems

HOUSEHOLD APPLIANCES FOR FLYFORD FLAVELL

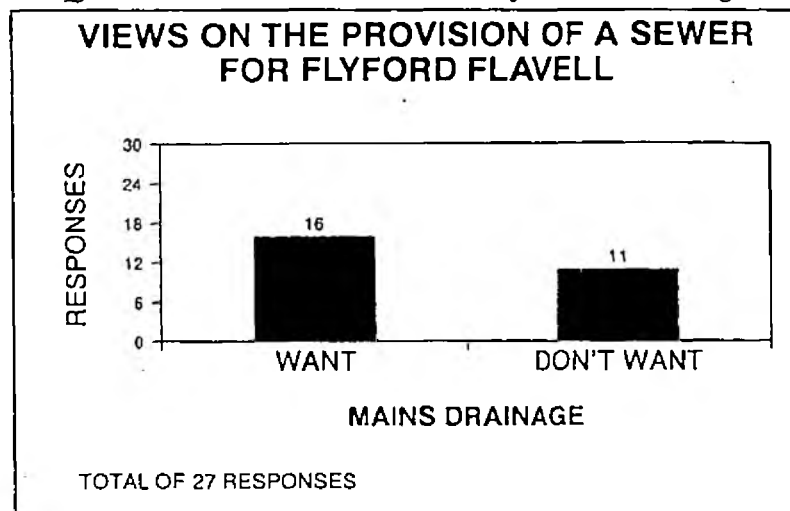
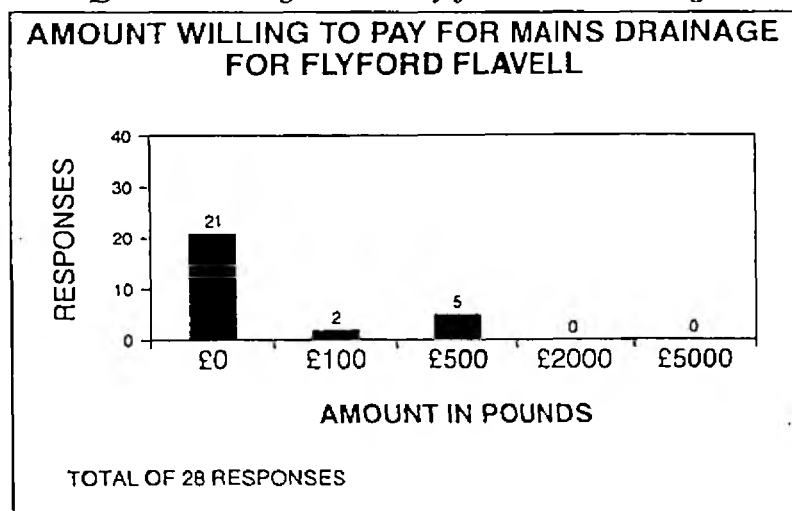
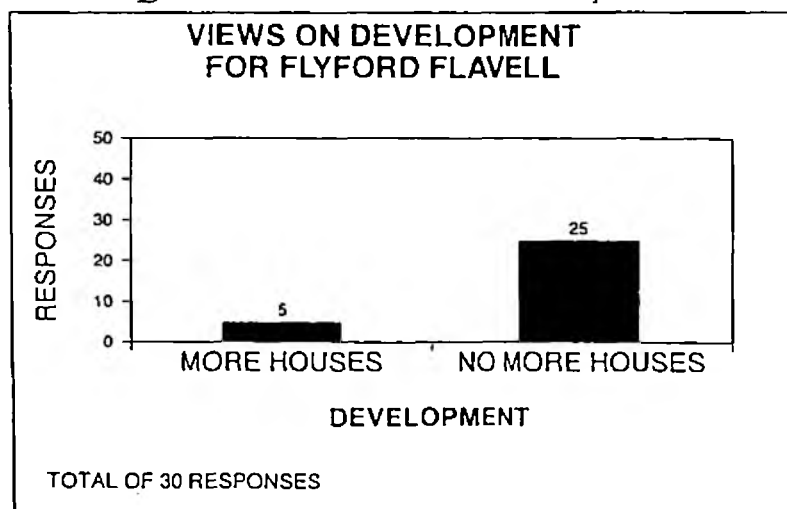
VIEW OF LOCAL SEWAGE POLLUTION FOR FLYFORD FLAVELL

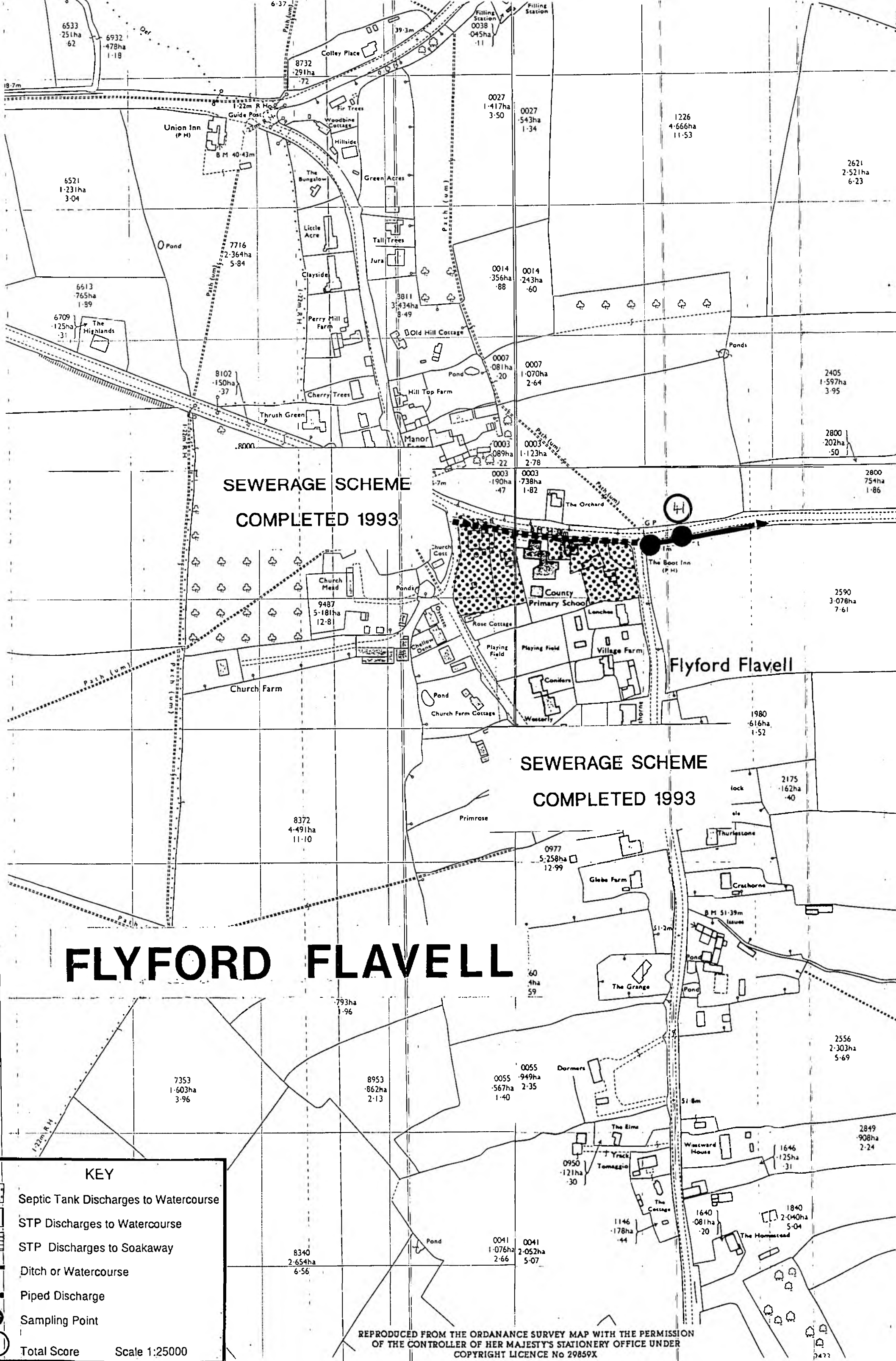


TOTAL OF 48 RESPONSES

TOTAL OF 28 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



SEWERAGE SCHEME
COMPLETED 1993

SEWERAGE SCHEME
COMPLETED 1993

FLYFORD FLAVELL

KEY

Septic Tank Discharges to Watercourse

STP Discharges to Watercourse

STP Discharges to Soakaway

Ditch or Watercourse

Piped Discharge

Sampling Point

Total Score

Scale 1:25000

9.11.7

Site 44: GRAFTON FLYFORD

IMPACT SCORE: 33

Description

Grafton Flyford is a small linear settlement situated one and a half miles north of the A422, between Worcester and Alcester (NGR: SO 966 571).

Soil Drainage Characteristics

The subsoil in the village is heavy lias clay with poor absorption characteristics. The soil type is a typical calcareous pelosol (4.11). Under the Groundwater Vulnerability classification this area has been given Non-Aquifer status. The village drains to a tributary of the Piddle Brook.

Development

Development has been in the form of infilling and minor consolidation. Two properties have been built in the last ten years.

Foul Drainage

There is a proliferation of small package treatment plants in this village, with five consented discharges to the road side ditch. All the other properties in the village are served by septic tank / soakaway systems. Some of this effluent seeps into the ditch running adjacent to the road.

Pollution

Polluted conditions were detected in the road side ditch, with a contribution from 5 properties. At the scoring point water quality samples were indicative of a Class 3 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
13.6	16.0	13.6	34.5

Environmental Health Complaints

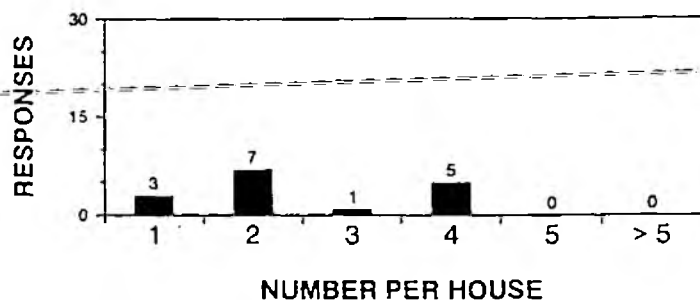
Prior to enforcement action, Wychavon District Council received regular environmental health complaints from this village.

VILLAGE NAME: GRAFTON FLYFORD

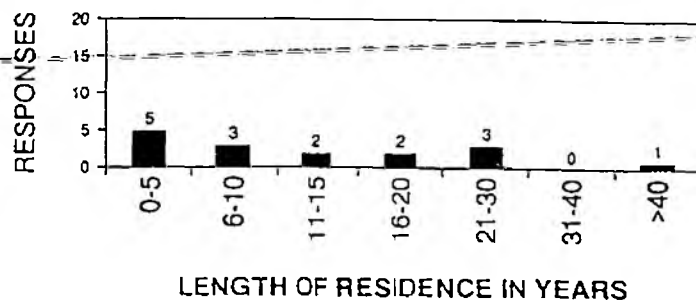
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	1-5	1
NO OF DISCHARGE POINTS	3-4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	3-4	2
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>400m	15
B.O.D. 10M D/S OF SCORING POINT	10-17	3
AMMONIA 10M D/S OF SCORING POINT	5.1-20	4
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	40-21	3
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	HIGH	3
TOTAL SCORE		33

NUMBER OF QUESTIONNAIRES SENT OUT:	18
NUMBER OF QUESTIONNAIRES RETURNED:	16
PERCENTAGE OF QUESTIONNAIRES RETURNED:	88%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	62%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	62%

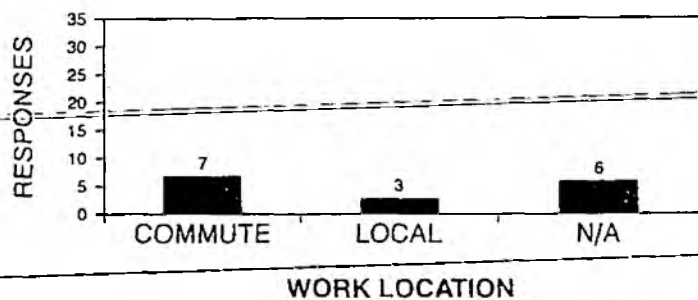
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property**Qu.4: Length of Residence in the Village*SIZE OF HOUSEHOLD
FOR GRAFTON FLYFORD

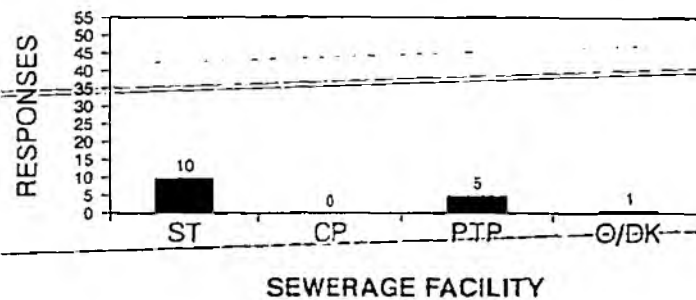
TOTAL OF 16 RESPONSES

LENGTH OF RESIDENCE
FOR GRAFTON FLYFORD

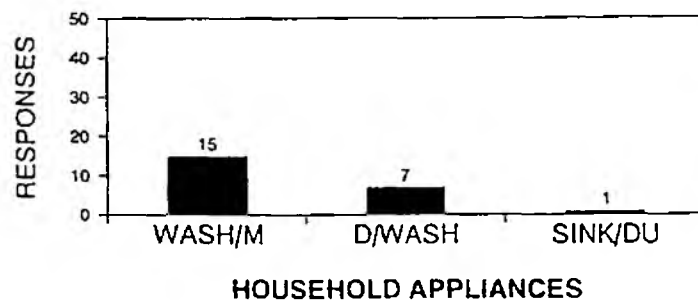
TOTAL OF 16 RESPONSES

*Qu.5: Work Location (if applicable)**Qu.6: Type of Sewerage Facility*WORK LOCATION
FOR GRAFTON FLYFORD

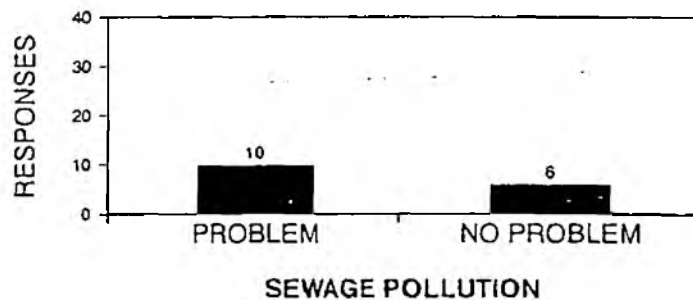
TOTAL OF 16 RESPONSES

HOUSEHOLD SEWAGE SYSTEMS
FOR GRAFTON FLYFORD

TOTAL OF 16 RESPONSES

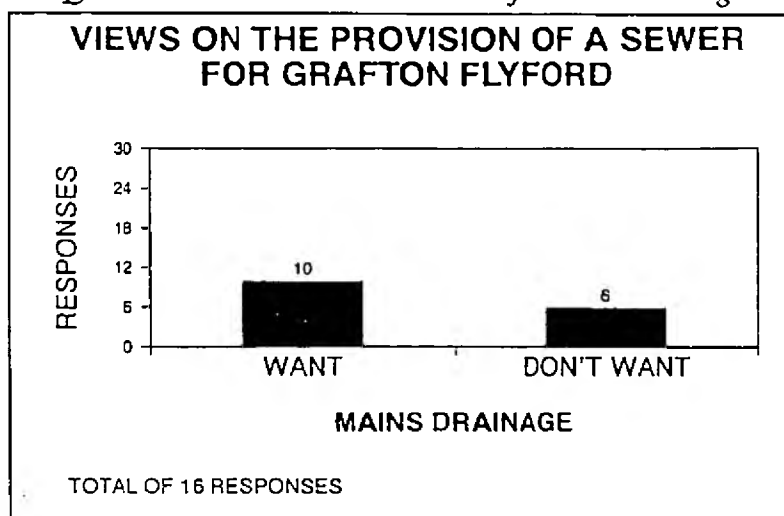
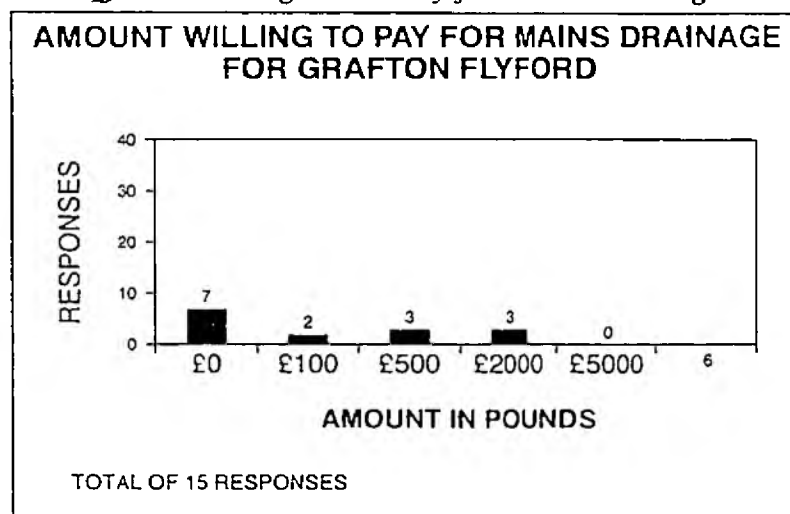
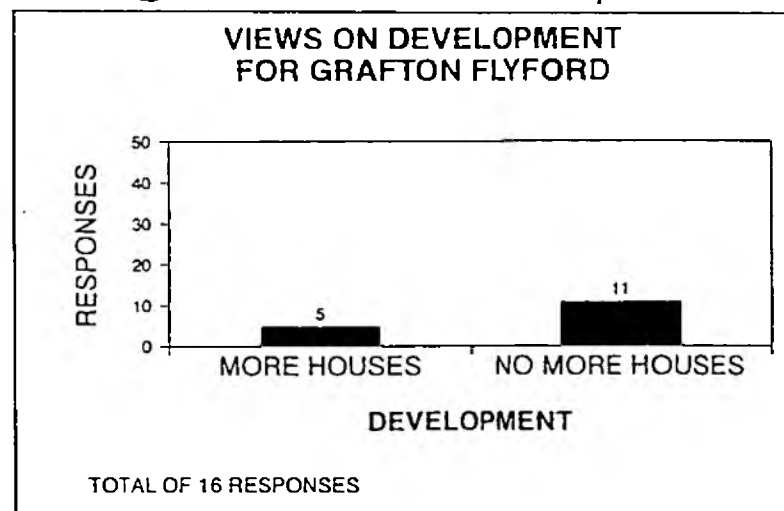
*Qu.7: Water Consuming Appliances Used**Qu.8: Attitude to Drainage Problems*HOUSEHOLD APPLIANCES
FOR GRAFTON FLYFORD

TOTAL OF 23 RESPONSES

VIEW OF LOCAL SEWAGE POLLUTION
FOR GRAFTON FLYFORD








TOTAL OF 16 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

GRAFTON FLYFORD

KEY

-  Septic Tank Discharges to Watercourse
-  STP Discharges to Watercourse
-  STP Discharges to Soakaway
-  Ditch or Watercourse
-  Piped Discharge
-  Sampling Point
-  Total Score

Scale 1:25000

9.11.8

Site 45: HATFIELD

IMPACT SCORE: 28

Description

Hatfield is located one mile to the south east of Worcester, to the east of the M5 (NGR: SO 875 505).

Soil Drainage Characteristics

The village lies on heavy clay, and drains partly to the Hatfield Brook, and partly to the Stoulton Brook. The soil type is a stanogleyic argillic brown earth (5.72). Under the Groundwater Vulnerability Classification this area has been given Non-Aquifer status.

Development

There has been considerable pressure for development in the settlement through infilling.

Foul Drainage

All properties in the village are served by septic tank/soakaway systems. Some of this septic effluent is discharged to a 'village drain' that discharges to a ditchcourse.

Pollution

Polluted conditions were detected at two points in the village, with a contribution from at least 10 properties. At the scoring point water quality samples were indicative of a Class 3 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
0.16	10.5	38	87

Environmental Health Complaints

Wychavon District Council receive occasional environmental health complaints from this village.

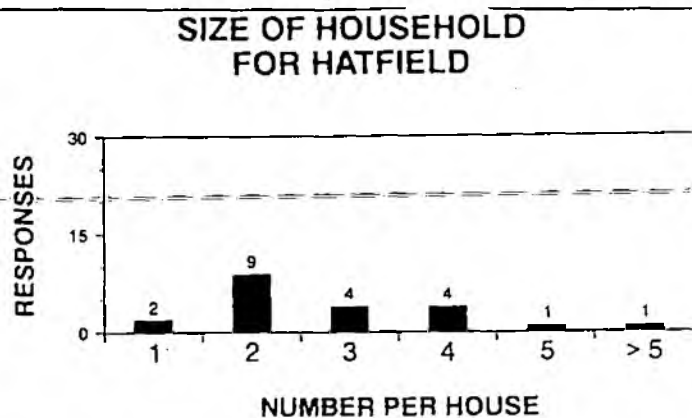
VILLAGE NAME: HATFIELD

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	11-20	3
NO OF DISCHARGE POINTS	3-4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	9-16	4
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>200m	10
B.O.D. 10M D/S OF SCORING POINT	10-17	3
AMMONIA 10M D/S OF SCORING POINT	<0.7	1
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	>60	1
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	11-25	3
PUBLIC ACCESSIBILITY	LOW	1
TOTAL SCORE		28

NUMBER OF QUESTIONNAIRES SENT OUT:	33
NUMBER OF QUESTIONNAIRES RETURNED:	21
PERCENTAGE OF QUESTIONNAIRES RETURNED:	63%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	45%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	66%

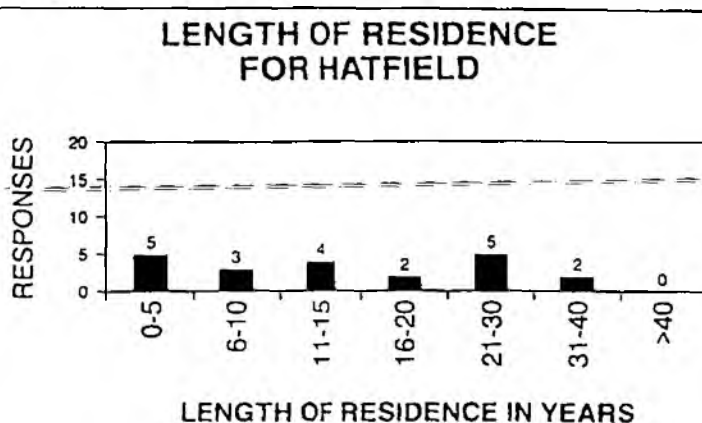
ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property



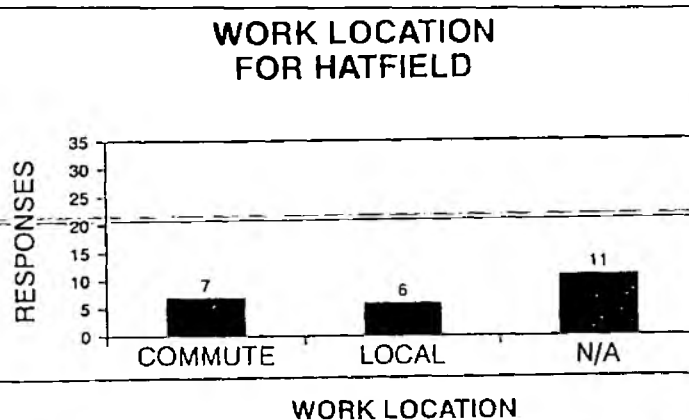
TOTAL OF 21 RESPONSES

Qu.4: Length of Residence in the Village



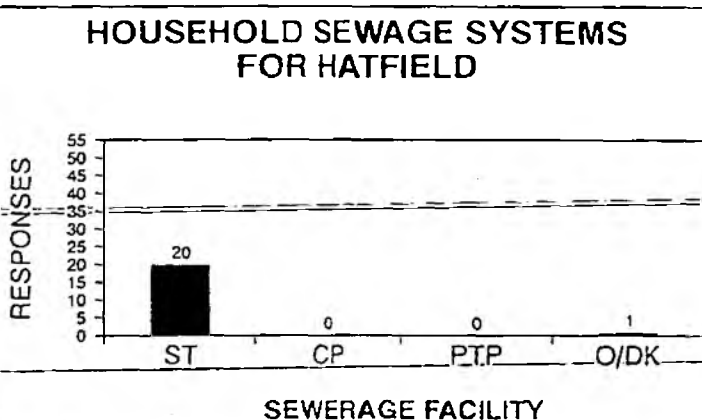
TOTAL OF 21 RESPONSES

Qu.5: Work Location (if applicable)



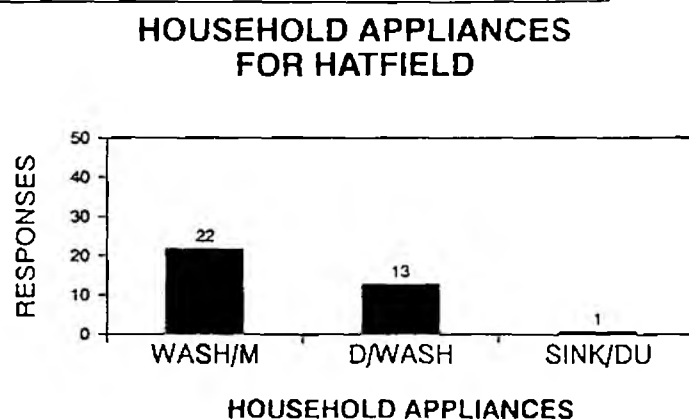
TOTAL OF 24 RESPONSES

Qu.6: Type of Sewerage Facility



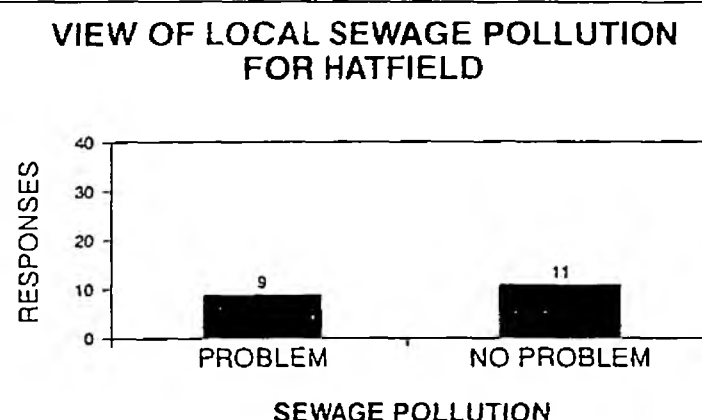
TOTAL OF 21 RESPONSES

Qu.7: Water Consuming Appliances Used



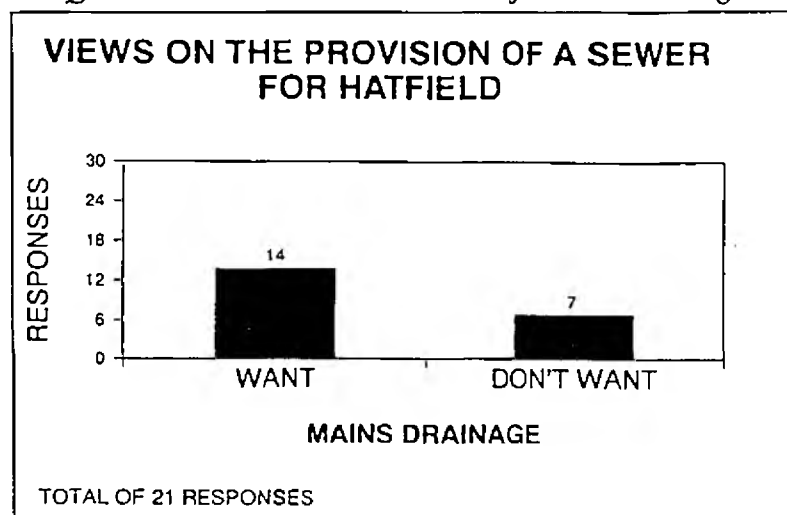
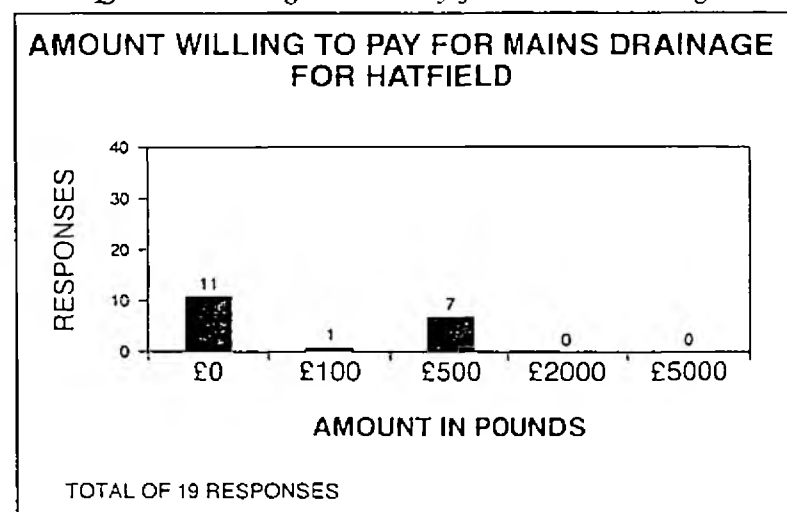
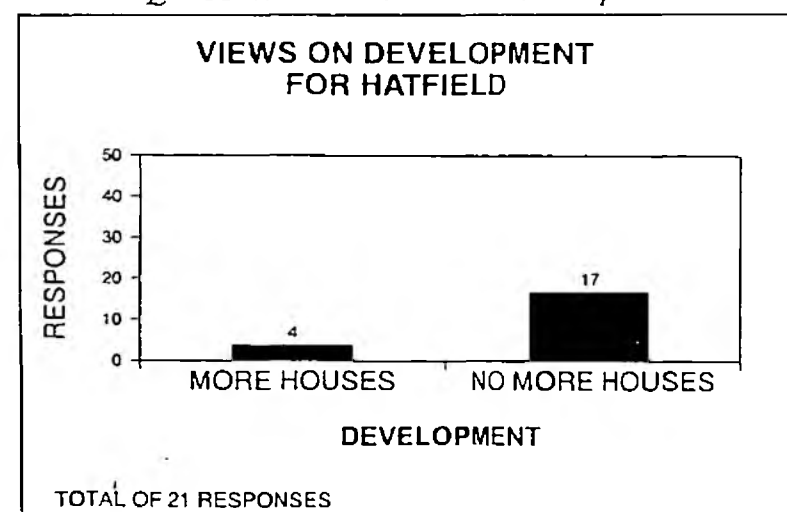
TOTAL OF 37 RESPONSES

Qu.8: Attitude to Drainage Problems

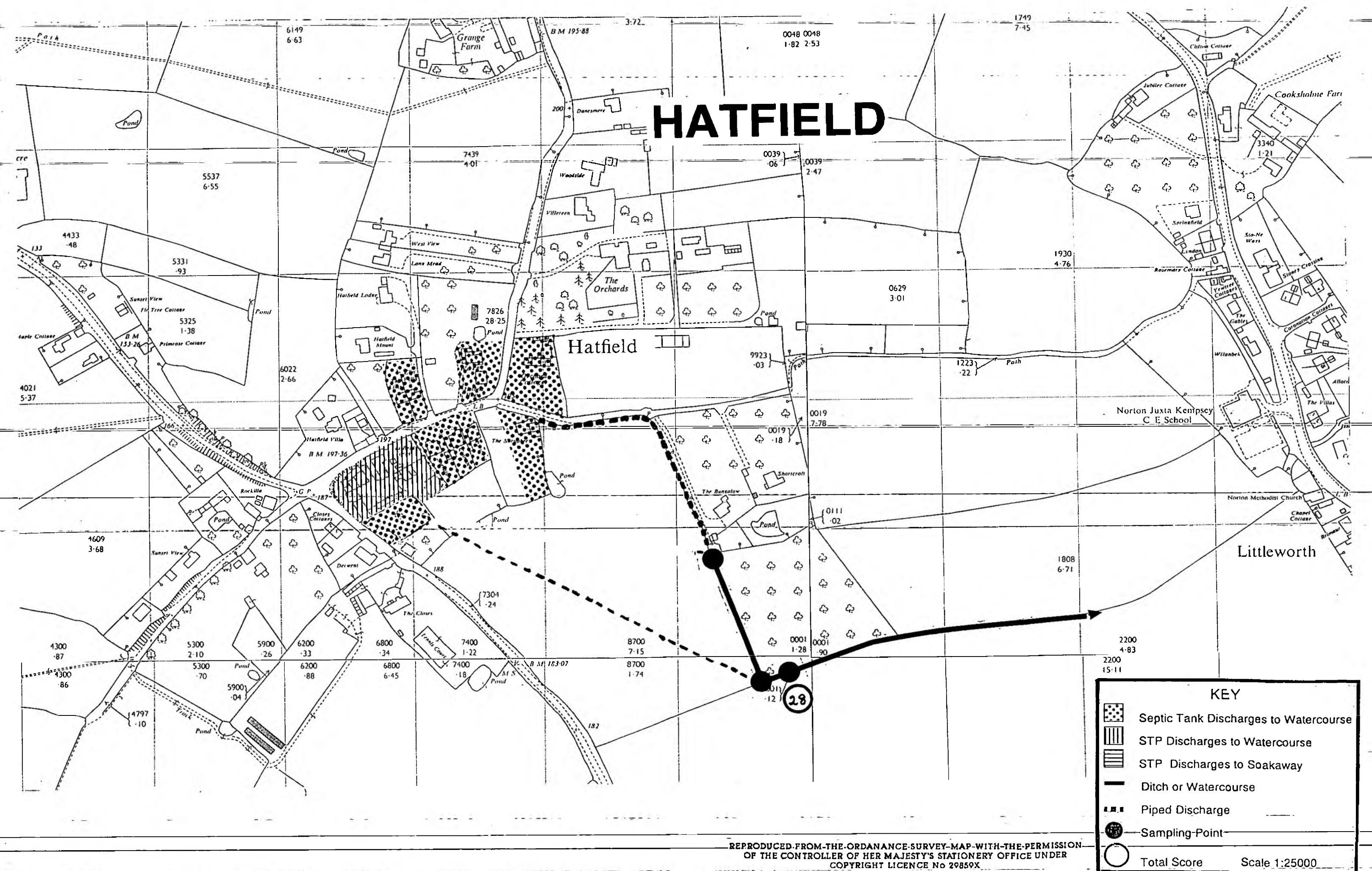


TOTAL OF 20 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

HATFIELD



—REPRODUCED FROM THE ORDANANCE SURVEY MAP WITH THE PERMISSION
OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER
COPYRIGHT LICENCE No 29859X

9.11.9

Site 46: HADZOR

IMPACT SCORE: 23

Description

Hadzor is situated to the East of Droitwich, lying between the M5 and the Worcester Birmingham Canal (NGR SO:915 622).

Soil Drainage Characteristics

The village lies on marl, and drains to the Dean Brook. The soil type is a typical stagnogley soil (7.11). Under the Groundwater Vulnerability Classification the area has been defined as a Minor Aquifer area.

Development

The village has been defined as a Conservation Site and development has been restricted. Over the last ten years two houses have been built.

Foul Drainage

All the properties in the village are served by septic tank/soakaway systems. Some of this septic effluent is discharged to a 'village drain' that discharges via a pond to the Dean Brook.

Pollution

Polluted conditions were detected at three points in the village, with a contribution from 10 properties. At the scoring point water quality samples were indicative of a class 4 watercourse.

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
9.0	28	73	44%

Environmental Health Complaints

Wychavon District Council have not received any environmental health complaints from this village.

Questionnaire Responses

The questionnaire responses from Hadzor were received too late to be included in the main analysis.

VILLAGE NAME: HADZOR

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	6-10	2
NO OF DISCHARGE POINTS	1-2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	5-8	3
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100-200m	5
B.O.D. 10M D/S OF SCORING POINT	18-40	4
AMMONIA 10M D/S OF SCORING POINT	5.1-20	4
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	60-41	2
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		23

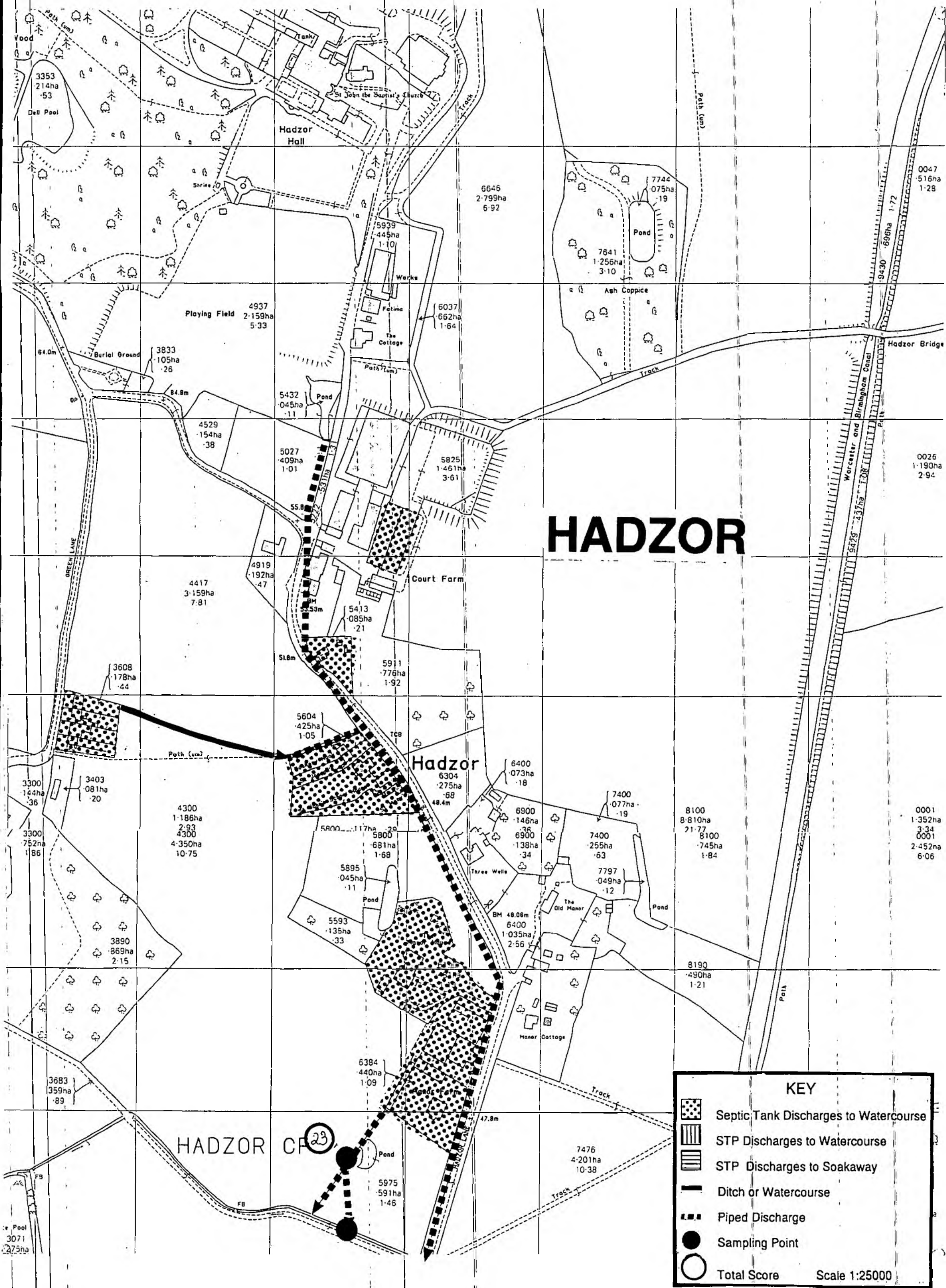
NUMBER OF QUESTIONNAIRES SENT OUT: 17

NUMBER OF QUESTIONNAIRES RETURNED: 12

PERCENTAGE OF QUESTIONNAIRES RETURNED: 70%

PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE
POLLUTION IS A PROBLEM:

PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:



HADZOR

KEY

- Septic Tank Discharges to Watercourse
- STP Discharges to Watercourse
- STP Discharges to Soakaway
- Ditch or Watercourse
- Piped Discharge
- Sampling Point
- Total Score

Scale 1:25000

9.11.10

Site 48: HIMBLETON

IMPACT SCORE: 13

Description

Himbleton is situated approximately five miles to the south east of Droitwich. The village originates from between 1135-1154, when development began on a small clearing in the Forest of Feckenham.

Soil Drainage Characteristics

The village lies on heavy clay, and drains to the Bow Brook. The soil type is a stanogleyic argillic brown earth. Under the Groundwater Vulnerability Classification the area has Non-Aquifer status.

Development Pressure

The village has been designated as a Conservation Area, and development has been in the form of infilling and minor consolidation. Over the past ten years thirteen properties have been built.

Foul Drainage

The majority of properties are served by septic tank/soakaway systems. Some of these connect to a 'village drain' that discharges to the Bow Brook downstream of the road bridge. The discharge is unconsented. The farm conversion at Church Farm is served by a package treatment plant.

Pollution

Polluted conditions were detected at one main point in the village, with contributions from approximately 12 properties. At the scoring point water quality samples were indicative of a Class 1A watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
0.1	1	25	98

Environmental Health Complaints

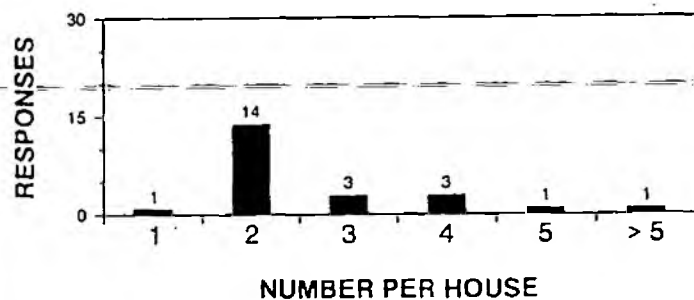
Wychavon District Council do not receive any environmental health complaints from this village.

VILLAGE NAME: HIMBLETON

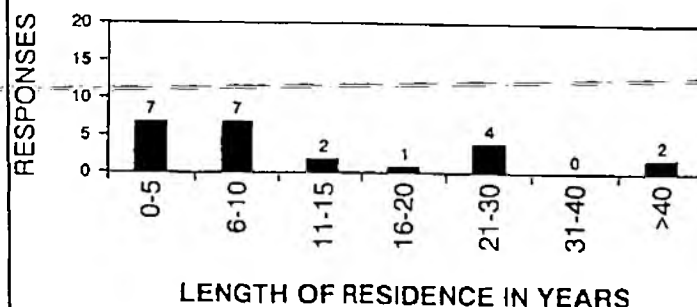
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	11-20	3
NO OF DISCHARGE POINTS	1-2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	9-16	4
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100m	1
B.O.D. 10M D/S OF SCORING POINT	<5	1
AMMONIA 10M D/S OF SCORING POINT	<0.7	1
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	>60	1
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ASESIBILITY	LOW	1
TOTAL SCORE		13

NUMBER OF QUESTIONNAIRES SENT OUT:	29
NUMBER OF QUESTIONNAIRES RETURNED:	23
PERCENTAGE OF QUESTIONNAIRES RETURNED:	79%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	50%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	60%

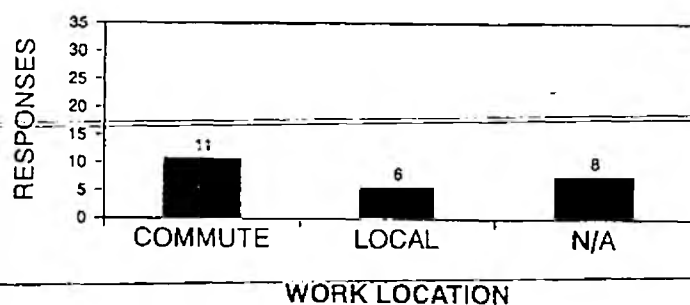
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property*SIZE OF HOUSEHOLD
FOR HIMBLETON

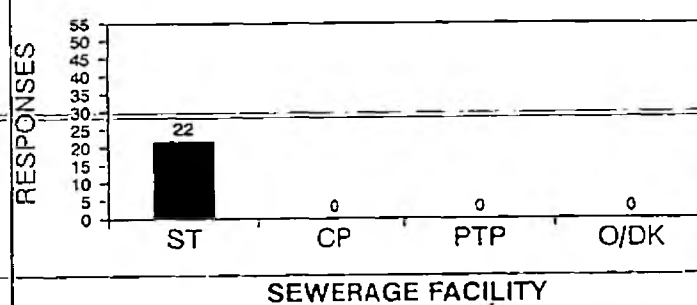
TOTAL OF 23 RESPONSES

*Qu.4: Length of Residence in the Village*LENGTH OF RESIDENCE
FOR HIMBLETON

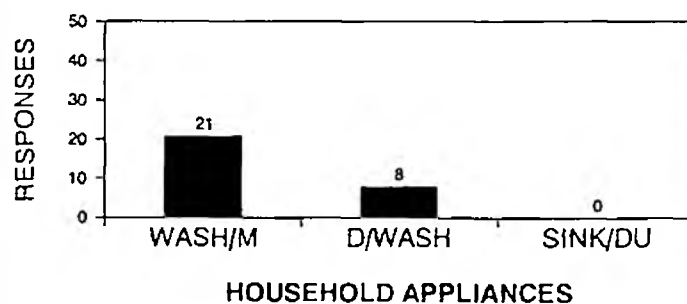
TOTAL OF 23 RESPONSES

*Qu.5: Work Location (if applicable)*WORK LOCATION
FOR HIMBLETON

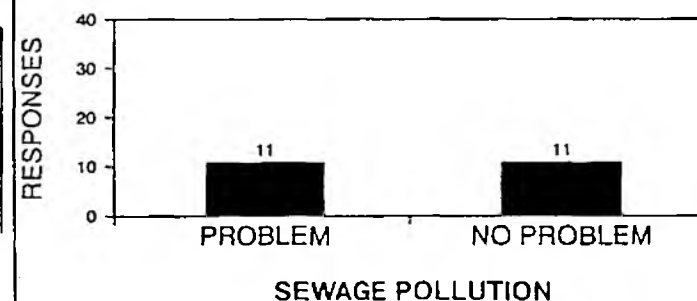
TOTAL OF 25 RESPONSES

*Qu.6: Type of Sewerage Facility*HOUSEHOLD SEWAGE SYSTEMS
FOR HIMBLETON

TOTAL OF 22 RESPONSES

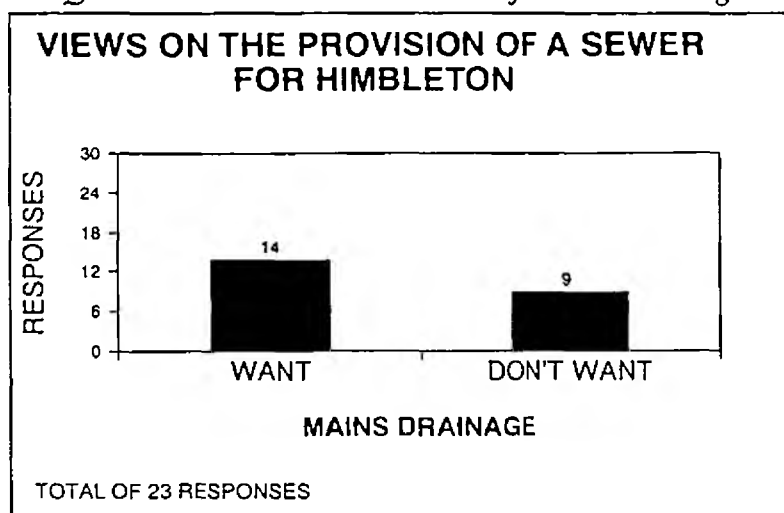
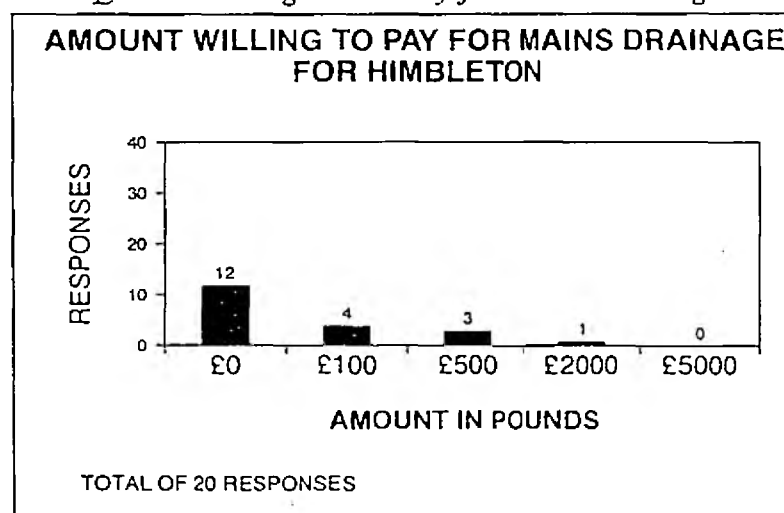
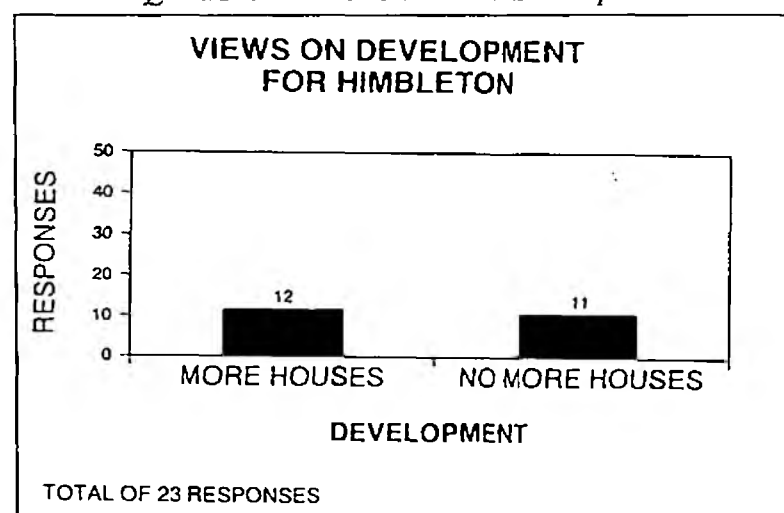
*Qu.7: Water Consuming Appliances Used*HOUSEHOLD APPLIANCES
FOR HIMBLETON

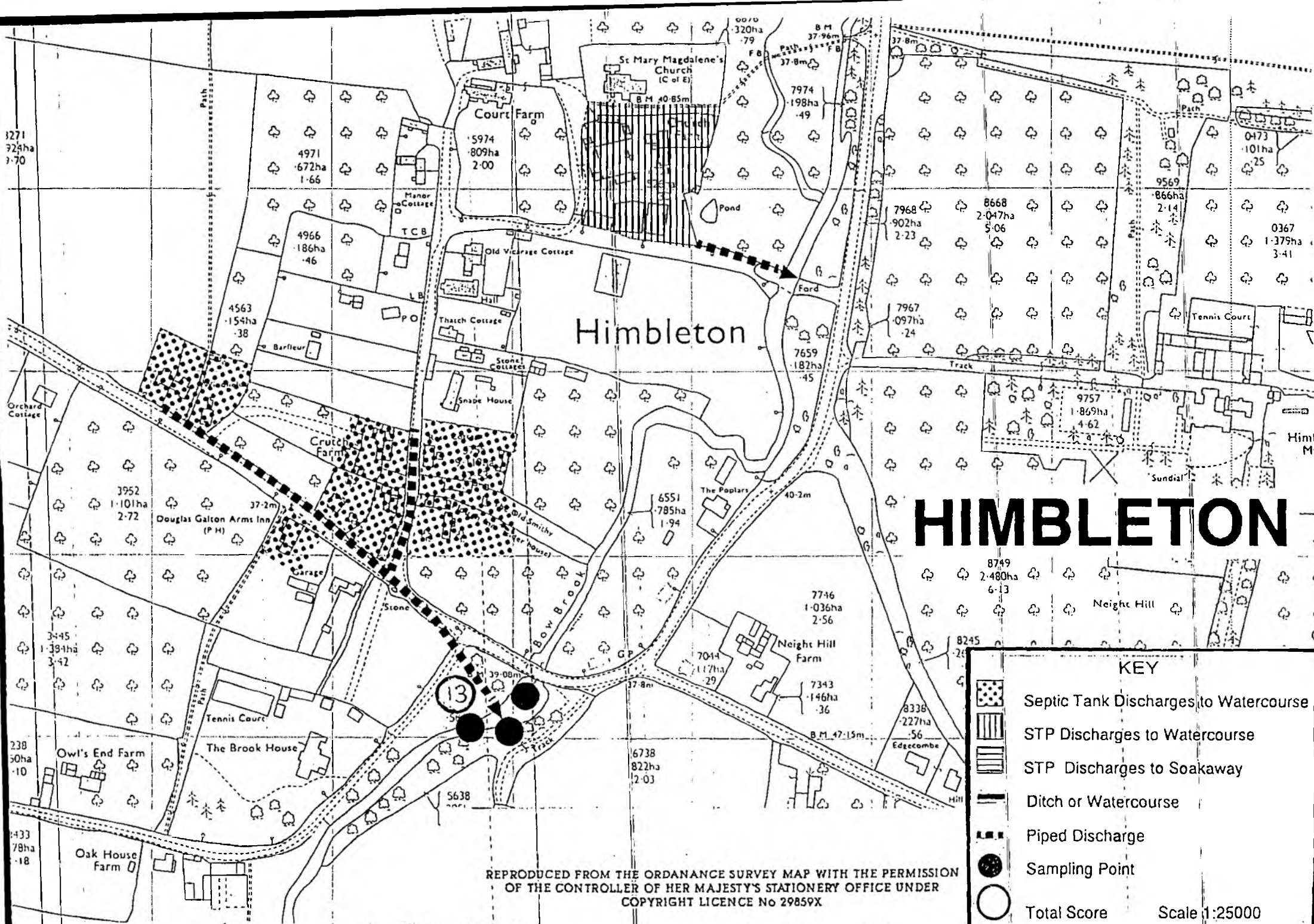
TOTAL OF 29 RESPONSES

*Qu.8: Attitude to Drainage Problems*VIEW OF LOCAL SEWAGE POLLUTION
FOR HIMBLETON

TOTAL OF 22 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



HIMBLETON

KEY

- Septic Tank Discharges to Watercourse
- STP Discharges to Watercourse
- STP Discharges to Soakaway
- Ditch or Watercourse
- Piped Discharge
- Sampling Point
- Total Score

Scale 1:25000

REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION
OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER
COPYRIGHT LICENCE No 29859X

9.11.11

Site 49: KINGTON

IMPACT SCORE: 14

Description

Kington is situated between Upton Snodsbury and Inkberrow to the South of the A422 Worcester to Stratford road (NGR: SO 990 557). Linear in nature, the settlement of about 30 houses, is reasonably compact with modern development interspersed between larger, more traditional buildings. At the northern end of the settlement there is a site of archaeological interest with earthworks abutting the Grange and Court Farm.

Soil Drainage Characteristics

The village lies on heavy lias clay, and drains to the Piddle Brook. The soil type is a stagnogleyic argillic brown earth (5.72). The area has been assigned Non-Aquifer status.

Development

Development Pressure has been in the form of infilling and minor consolidation. Eight properties have been built in the last ten years.

Foul Drainage

With the exception of the Court Farm development (which has a package treatment plant), all properties in the village are served by septic tank /soakaway systems. A village drain picks up some of this septic tank effluent. The village drain discharges to the Piddle Brook, and has a deemed consent.

Pollution

Polluted conditions were detected at one point in the village, with a contribution from approximately 10 properties. At the scoring point water quality samples were indicative of a Class 1A watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
0.04	0.90	6	90

Environmental Health Complaints

Wychavon District Council have received no environmental health complaints from this village.

VILLAGE NAME: KINGTON

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	21-40	4
NO OF DISCHARGE POINTS	1-2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	9-16	4
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100M	1
B.O.D. 10M D/S OF SCORING POINT	<5	1
AMMONIA 10M D/S OF SCORING POINT	<0.7	1
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	>60	1
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	LOW	1
TOTAL SCORE		14

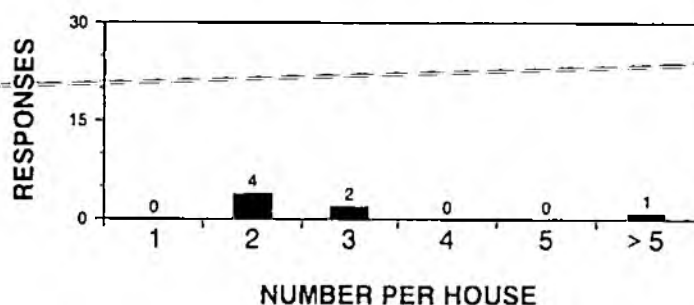
NUMBER OF QUESTIONNAIRES SENT OUT:	23
NUMBER OF QUESTIONNAIRES RETURNED:	14
PERCENTAGE OF QUESTIONNAIRES RETURNED:	60
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	57%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	66%

ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

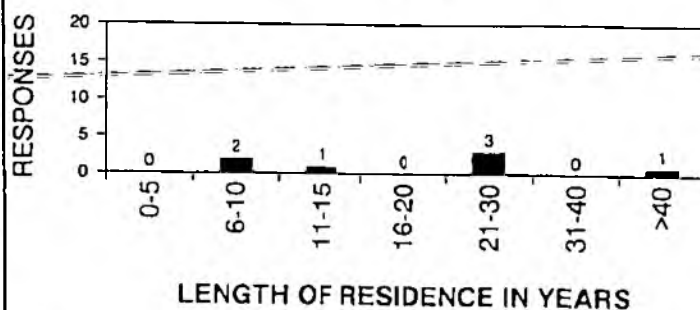
Qu.4: Length of Residence in the Village

SIZE OF HOUSEHOLD FOR KINGTON



TOTAL OF 7 RESPONSES

LENGTH OF RESIDENCE FOR KINGTON

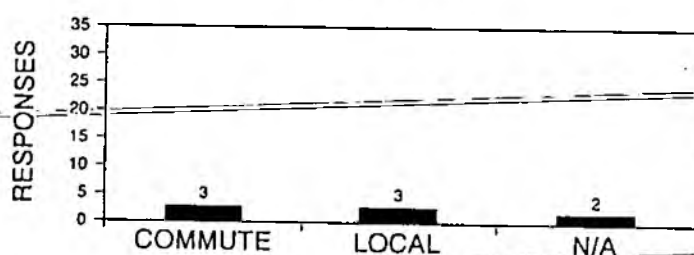


TOTAL OF 7 RESPONSES

Qu.5: Work Location (if applicable)

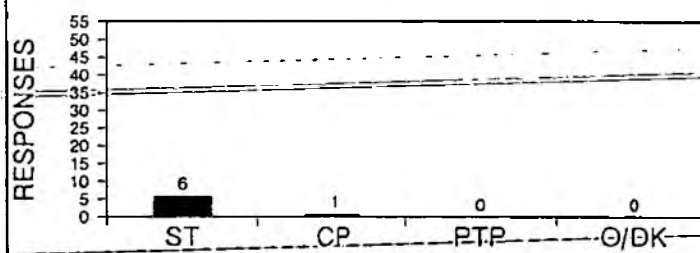
Qu.6: Type of Sewerage Facility

WORK LOCATION FOR KINGTON



TOTAL OF 8 RESPONSES

HOUSEHOLD SEWAGE SYSTEMS FOR KINGTON

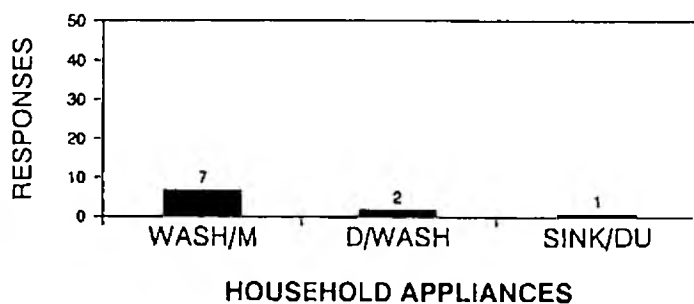


TOTAL OF 7 RESPONSES

Qu.7: Water Consuming Appliances Used

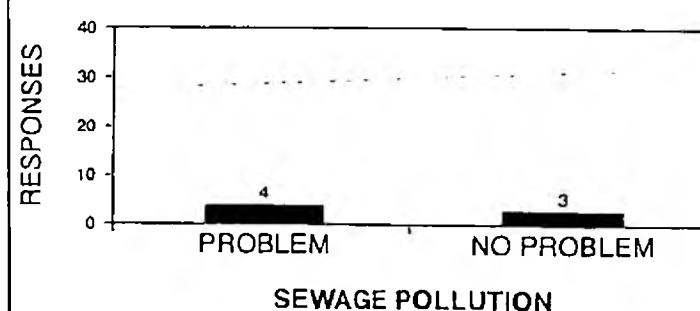
Qu.8: Attitude to Drainage Problems

HOUSEHOLD APPLIANCES FOR KINGTON



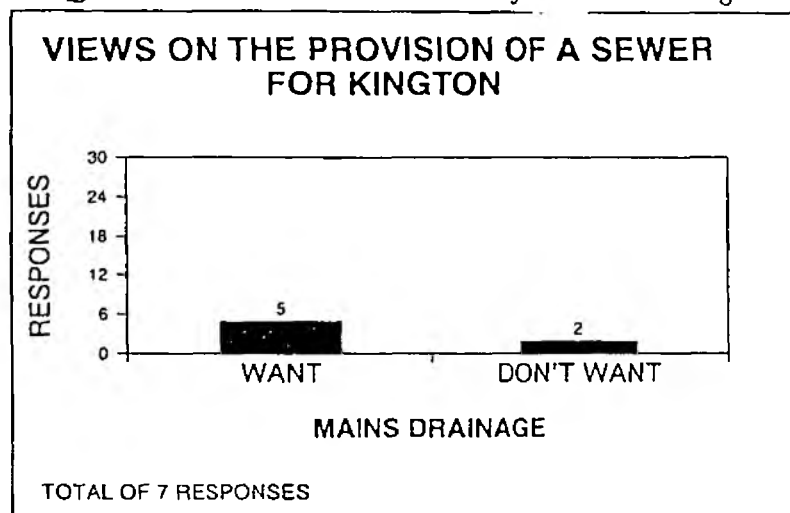
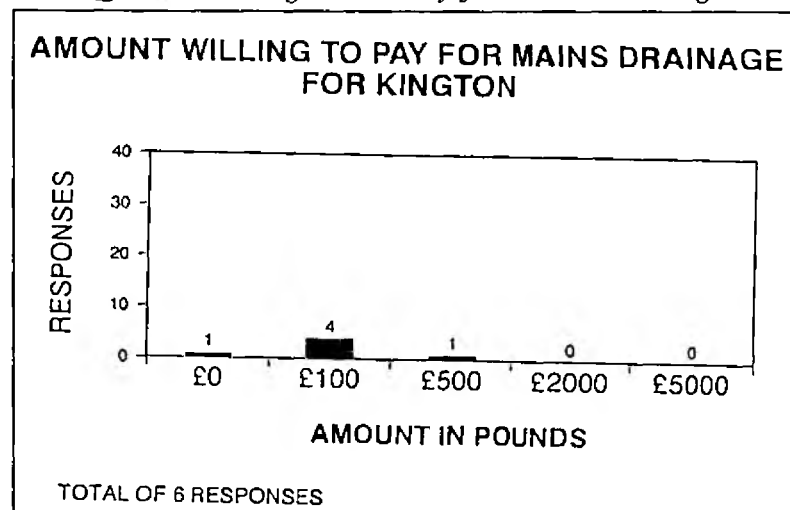
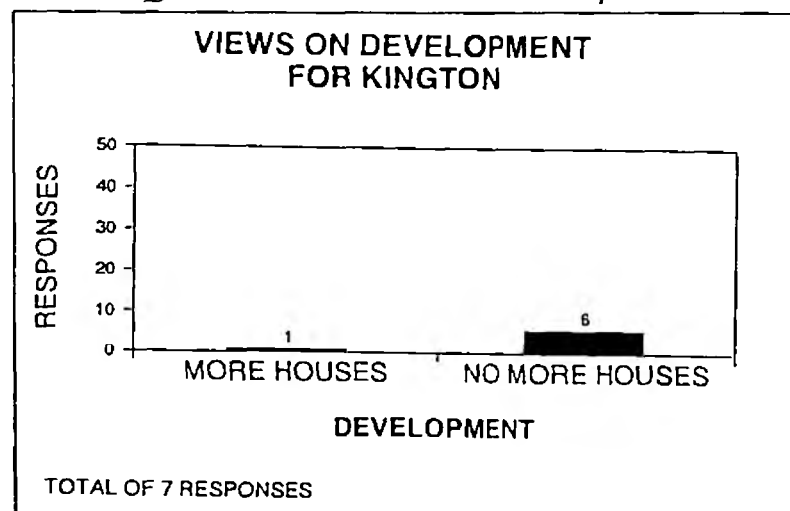
TOTAL OF 10 RESPONSES

VIEW OF LOCAL SEWAGE POLLUTION FOR KINGTON



TOTAL OF 7 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

9.11.12

Site 50: LITTLEWORTH

IMPACT SCORE: -

Description

Littleworth is located South-East of Worcester (NGR SO 885 502). The village is linear in nature, and has an estimated population of 343.

Soil Drainage Characteristics

The village lies on heavy clay, and drains to a tributary of the Stoulton Brook. The soil type is a stagnogleyic argillic brown earth (5.72). Under the Groundwater Vulnerability Classification the area has been designated as a Non-Aquifer site.

Development

There is pressure for development in the form of infilling and minor consolidation.

Foul Drainage

The majority of properties in the village are connected to the main sewer. Properties at the lower end of Wadborough Road are not served by a public sewerage system. Several of the properties have installed package treatment plants with consented discharges.

Pollution

It was not possible to obtain water quality samples due to low flow conditions.

Environmental Health Complaints

Wychavon District Council receive occasional environmental health complaints from this village.

VILLAGE NAME: LITTLEWORTH

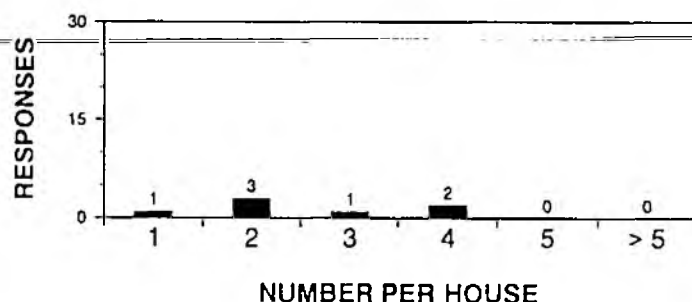
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING		
NO OF DISCHARGE POINTS		
NO OF HOUSES DISCHARGING AT SCORING POINT		
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT		
B.O.D. 10M D/S OF SCORING POINT		
AMMONIA 10M D/S OF SCORING POINT		
DISSOLVED OXYGEN 10M D/S OF SCORING POINT		
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT		
PUBLIC ACCESSIBILITY		
TOTAL SCORE		--

NUMBER OF QUESTIONNAIRES SENT OUT:	16
NUMBER OF QUESTIONNAIRES RETURNED:	7
PERCENTAGE OF QUESTIONNAIRES RETURNED:	43%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	83%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	71%

ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

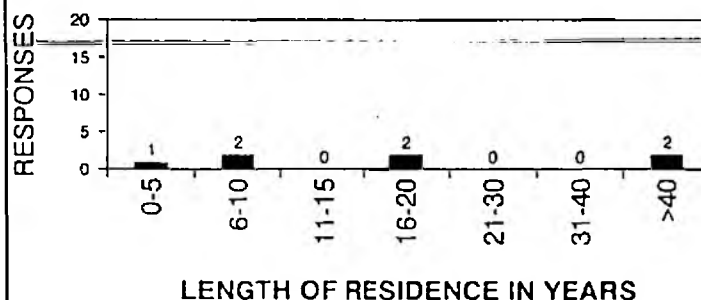
SIZE OF HOUSEHOLD FOR LITTLEWORTH



TOTAL OF 7 RESPONSES

Qu.4: Length of Residence in the Village

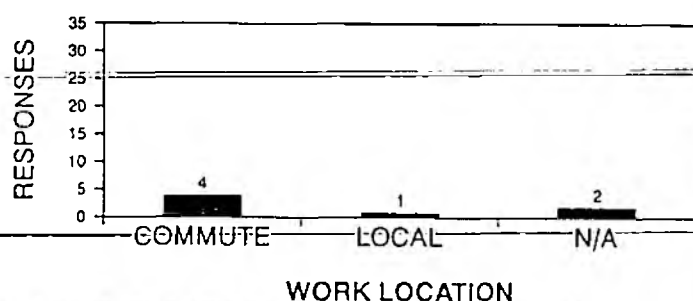
LENGTH OF RESIDENCE FOR LITTLEWORTH



TOTAL OF 7 RESPONSES

Qu.5: Work Location (if applicable)

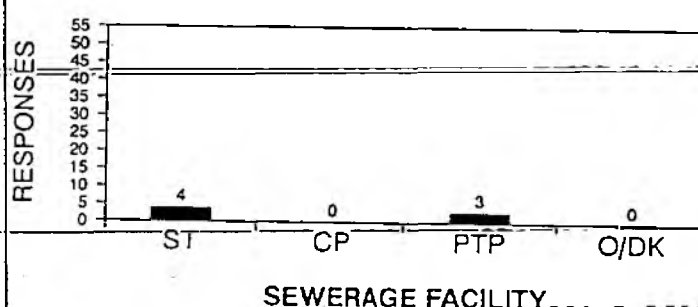
WORK LOCATION FOR LITTLEWORTH



TOTAL OF 7 RESPONSES

Qu.6: Type of Sewerage Facility

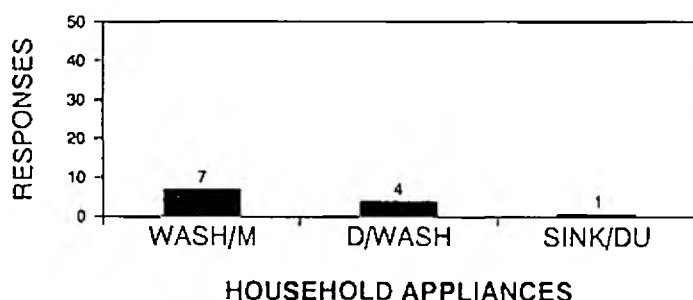
HOUSEHOLD SEWAGE SYSTEMS FOR LITTLEWORTH



TOTAL OF 7 RESPONSES

Qu.7: Water Consuming Appliances Used

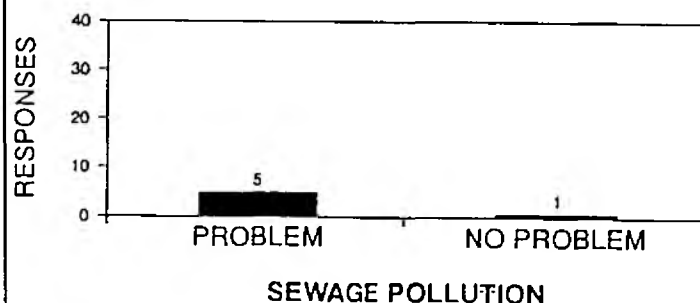
HOUSEHOLD APPLIANCES FOR LITTLEWORTH



TOTAL OF 12 RESPONSES

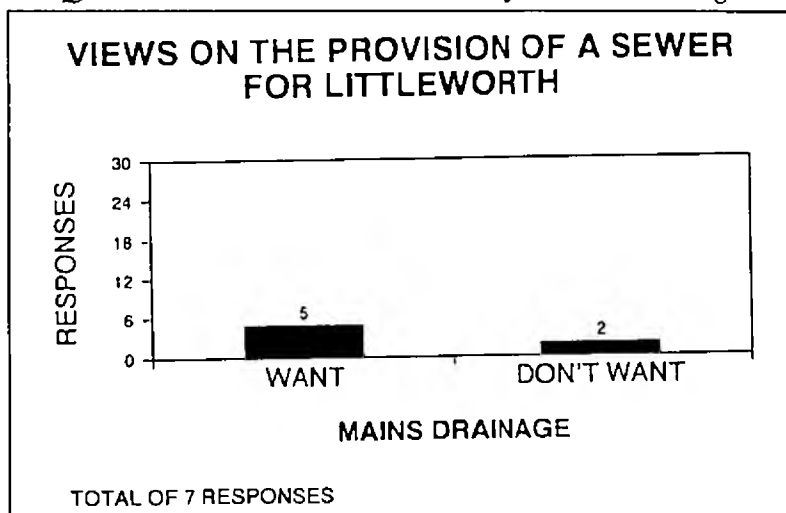
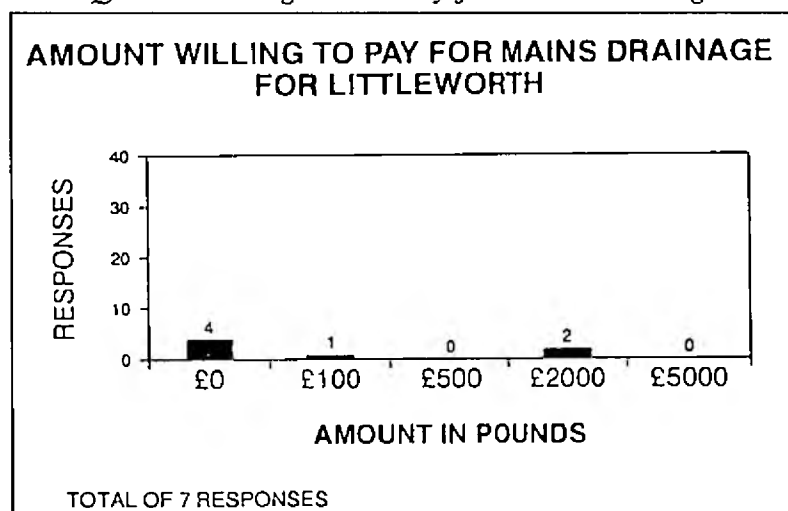
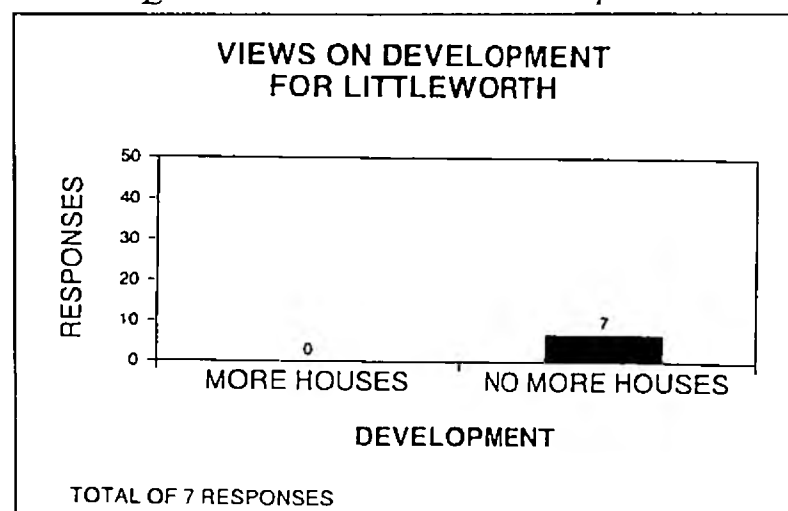
Qu.8: Attitude to Drainage Problems

VIEW OF LOCAL SEWAGE POLLUTION FOR LITTLEWORTH



TOTAL OF 6 RESPONSES








ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

LITTLEWORTH

REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION
OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER
COPYRIGHT LICENCE No 29859X

KEY

-  Septic Tank Discharges to Watercourse
-  STP Discharges to Watercourse
-  STP Discharges to Soakaway
-  Ditch or Watercourse
-  Piped Discharge
-  Sampling Point
-  Total Score

Scale 1:25000

9.11.13

Site 51: NAUNTON BEAUCHAMP

IMPACT SCORE: 18

Description

Naunton Beauchamp lies approximately four miles north of Pershore on the B4082 (NGR: SO 964 524). The village origins have been traced to before Domesday and was called 'Newentune' in the survey of 1086. There are approximately 50 properties in the settlement.

Soil Drainage Characteristics

The settlement lies on heavy lias clay, and drains to the Piddle Brook. The soil type is a stagnogleyic argillic brown earth (5.72). The area has been given Non-Aquifer status.

Development Pressure

Naunton Beauchamp was designated a conservation area in 1975 in the Wychavon District Council Local Plan. As a consequence development has been restricted. Since 1983, four properties have been built.

Foul Drainage

A village drain exists at NGR: SO 9608 5240. This discharges to the West of the village, to the North of the road bridge. The discharge point is consented to a Royal Commission Standard of 30/20. All properties to the north of the road, bar two, have septic tanks which overflow to this drain. The two exceptions have installed a package treatment plant which is consented to a highways drain. Effluent from some of the properties to the south of the road overflow to this drain. A small sewage treatment works serves the estate at Orchardlea. This has a consented discharge to the Piddle Brook.

Pollution

Polluted conditons were detected at two points in the village, and it has been estimated that 16 properties contribute to the problem. At the scoring point samples of water quality were indicative of a Class 1 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
0.06	2	48	86

Environmental Health Complaints

Wychavon District Council have received no environmental health complaints from this village.

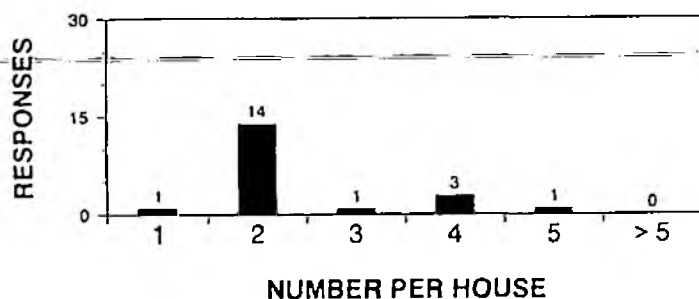
RURAL SEWAGE POLLUTION IN THE '90S CHAPTER 9

VILLAGE NAME: NAUNTON BEAUCHAMP

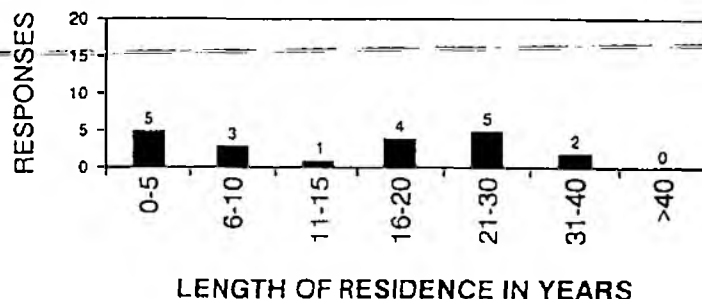
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	21-40	4
NO OF DISCHARGE POINTS	5-8	3
NO OF HOUSES DISCHARGING AT SCORING POINT	9-16	4
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100M	1
B.O.D. 10M D/S OF SCORING POINT	<5	1
AMMONIA 10M D/S OF SCORING POINT	<0.7	1
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	>60	1
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	OUTLET	1
PUBLIC ACESSIBILITY	MEDIUM	2
TOTAL SCORE		18

NUMBER OF QUESTIONNAIRES SENT OUT:	25
NUMBER OF QUESTIONNAIRES RETURNED:	21
PERCENTAGE OF QUESTIONNAIRES RETURNED:	84%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	52%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	65%

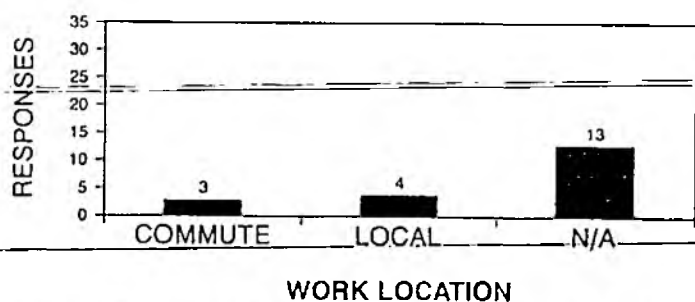
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property***SIZE OF HOUSEHOLD
FOR NAUNTON BEAUCHAMP**

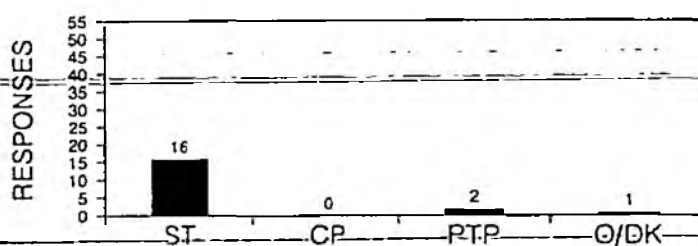
TOTAL OF 20 RESPONSES

*Qu.4: Length of Residence in the Village***LENGTH OF RESIDENCE
FOR NAUNTON BEAUCHAMP**

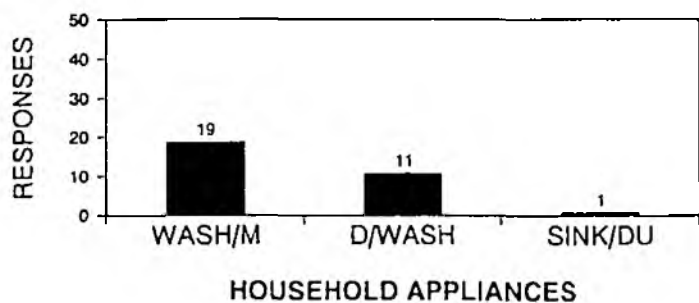
TOTAL OF 20 RESPONSES

*Qu.5: Work Location (if applicable)***WORK LOCATION
FOR NAUNTON BEAUCHAMP**

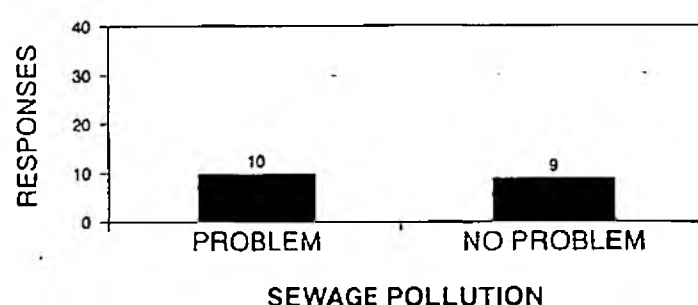
TOTAL OF 20 RESPONSES

*Qu.6: Type of Sewerage Facility***HOUSEHOLD SEWAGE SYSTEMS
FOR NAUNTON BEAUCHAMP**

TOTAL OF 19 RESPONSES

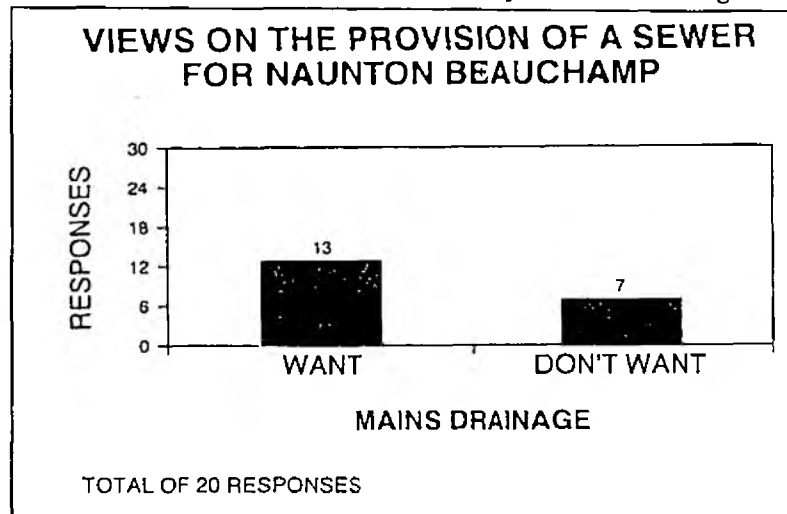
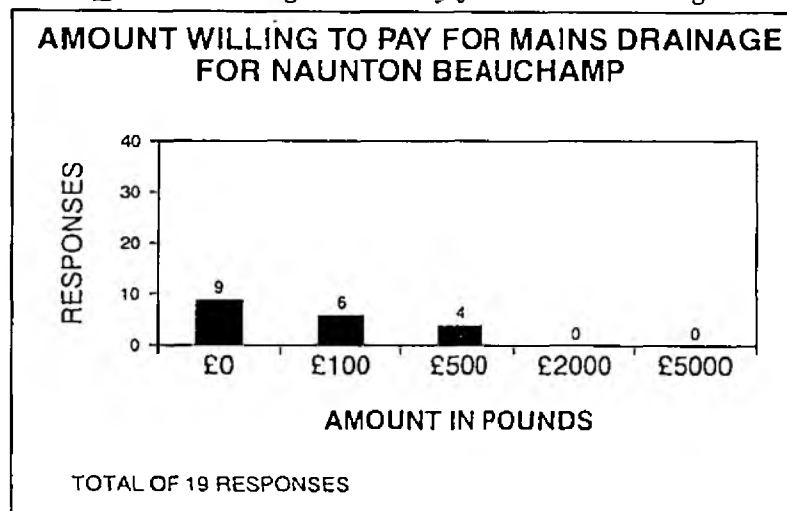
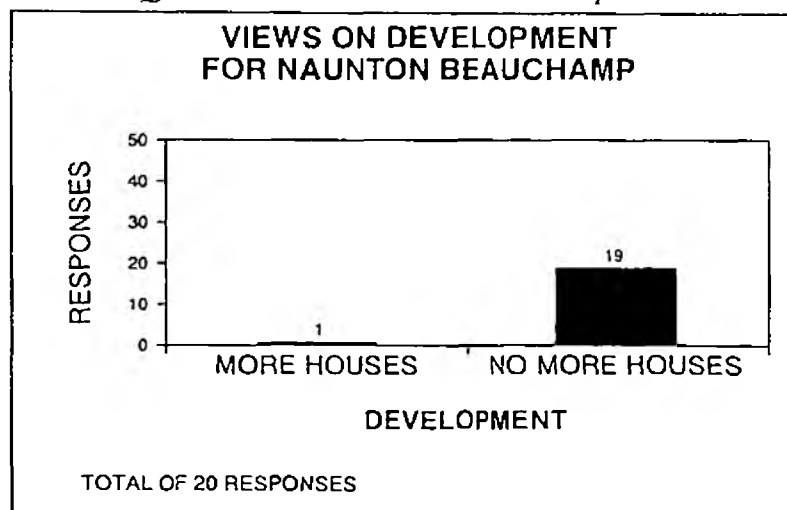
*Qu.7: Water Consuming Appliances Used***HOUSEHOLD APPLIANCES
FOR NAUNTON BEAUCHAMP**

TOTAL OF 31 RESPONSES

*Qu.8: Attitude to Drainage Problems***VIEW OF LOCAL SEWAGE POLLUTION
FOR NAUNTON BEAUCHAMP**

TOTAL OF 19 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

9.11.14

Site 52: PEOPLETON

IMPACT SCORE: 37

Description

Peopleton lies adjacent to the Bow Brook approximately three miles north of Pershore (NGR: SO 940 505). It is a fairly compact village consisting of a number of black and white listed buildings, several farms and an estate of modern houses.

Soil Drainage Characteristics

The village lies on heavy lias clay, and drains to the Bow Brook. The soil type is a typical calcareous pelosol (4.11). Under the Groundwater Vulnerability Classification the area has been designated as a Non-Aquifer site.

Development

The centre of Peopleton was designated as a Conservation Area in 1969. Further development along Norchard Lane will also be restricted. Fourteen properties have been built over the last ten years.

Foul Drainage

The modern part of Peopleton is served by a public sewerage system. Properties on the main street are served by septic tanks which discharge via one of two 'village drains' to a tributary of the Bow Brook. Likewise, properties to the east of the village discharge to a ditch running through the village.

Pollution

Pollution was detected at three points in the village, with a contribution from approximately forty properties. At the scoring point, water quality samples were indicative of a Class 3 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
2.87	5.5	7	58

Environmental Health Complaints

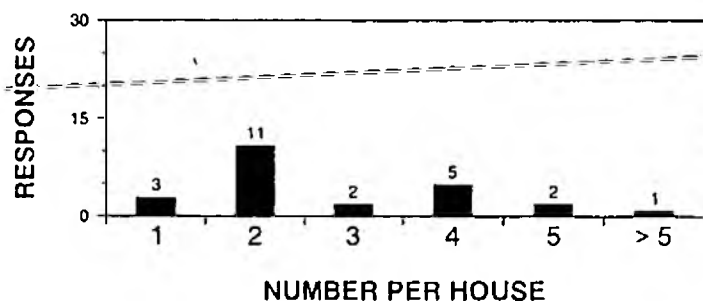
Wychavon District Council receive occasional environmental health complaints from this village.

VILLAGE NAME: PEOPLETON

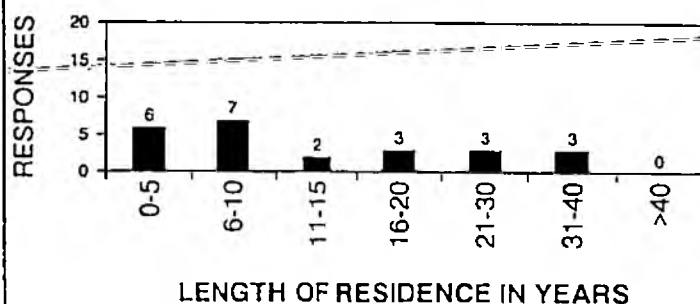
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	21-40	4
NO OF DISCHARGE POINTS	3-4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	>16	5
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>400	15
B.O.D. 10M D/S OF SCORING POINT	5-9	2
AMMONIA 10M D/S OF SCORING POINT	2.6-5.0	3
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	60-41	2
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	11-25M	3
PUBLIC ACCESSIBILITY	LOW	1
TOTAL SCORE		37

NUMBER OF QUESTIONNAIRES SENT OUT:	33
NUMBER OF QUESTIONNAIRES RETURNED:	24
PERCENTAGE OF QUESTIONNAIRES RETURNED:	72%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	52%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	76%

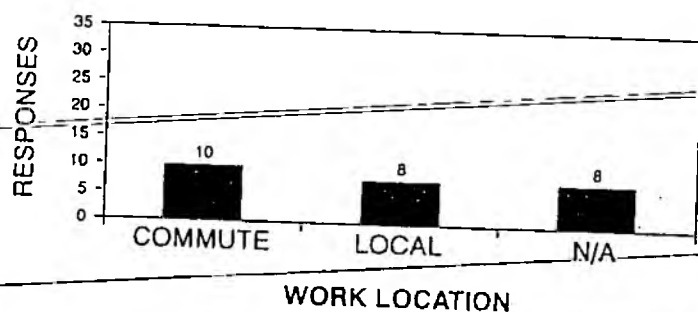
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property*SIZE OF HOUSEHOLD
FOR PEOPLETON

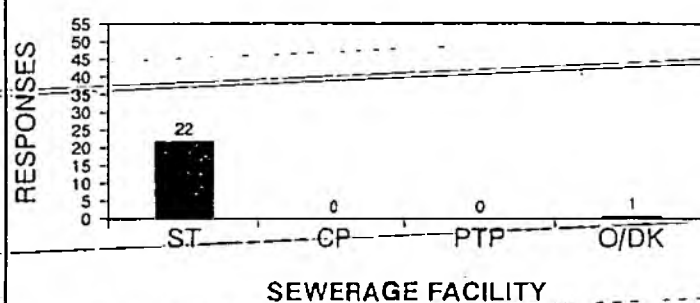
TOTAL OF 24 RESPONSES

*Qu.4: Length-of-Residence in the Village*LENGTH OF RESIDENCE
FOR PEOPLETON

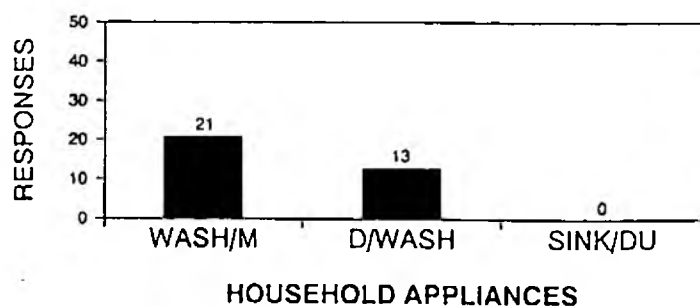
TOTAL OF 24 RESPONSES

*Qu.5: Work Location (if applicable)*WORK LOCATION
FOR PEOPLETON

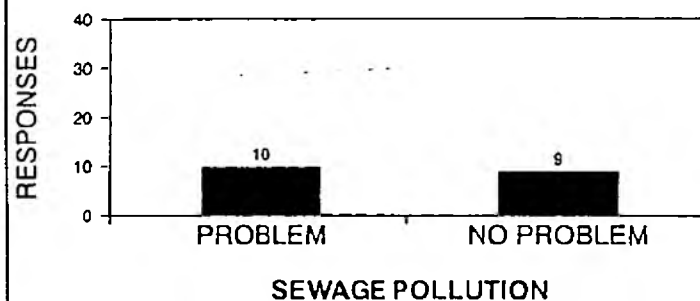
TOTAL OF 26 RESPONSES

*Qu.6: Type of Sewerage Facility*HOUSEHOLD SEWAGE SYSTEMS
FOR PEOPLETON

TOTAL OF 23 RESPONSES

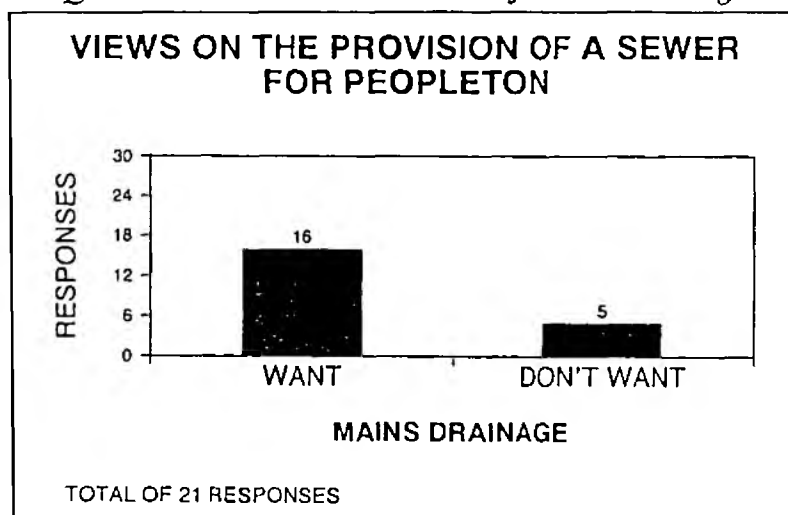
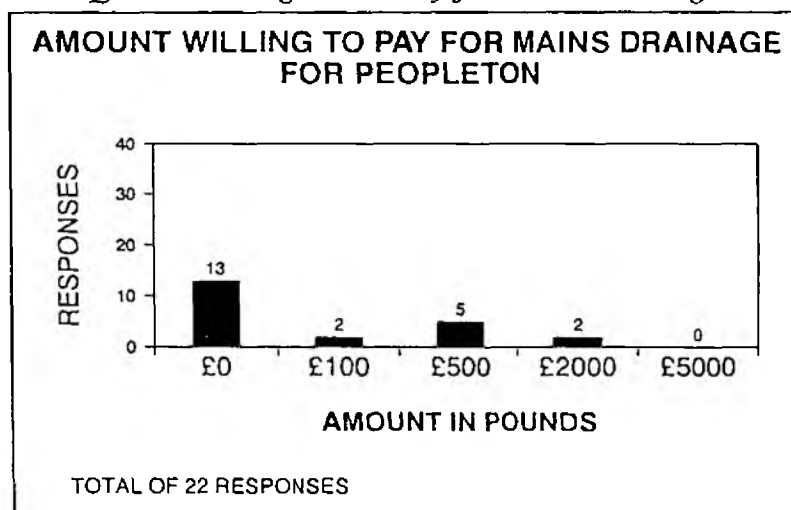
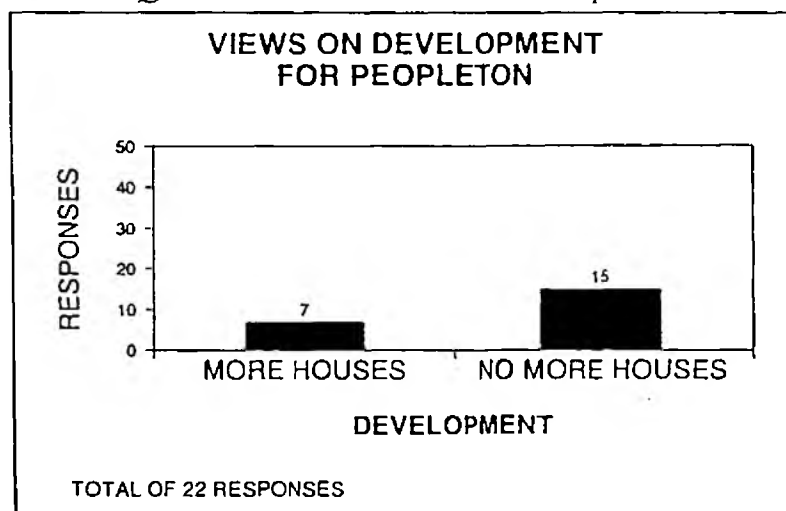
*Qu.7: Water Consuming Appliances Used*HOUSEHOLD APPLIANCES
FOR PEOPLETON

TOTAL OF 34 RESPONSES

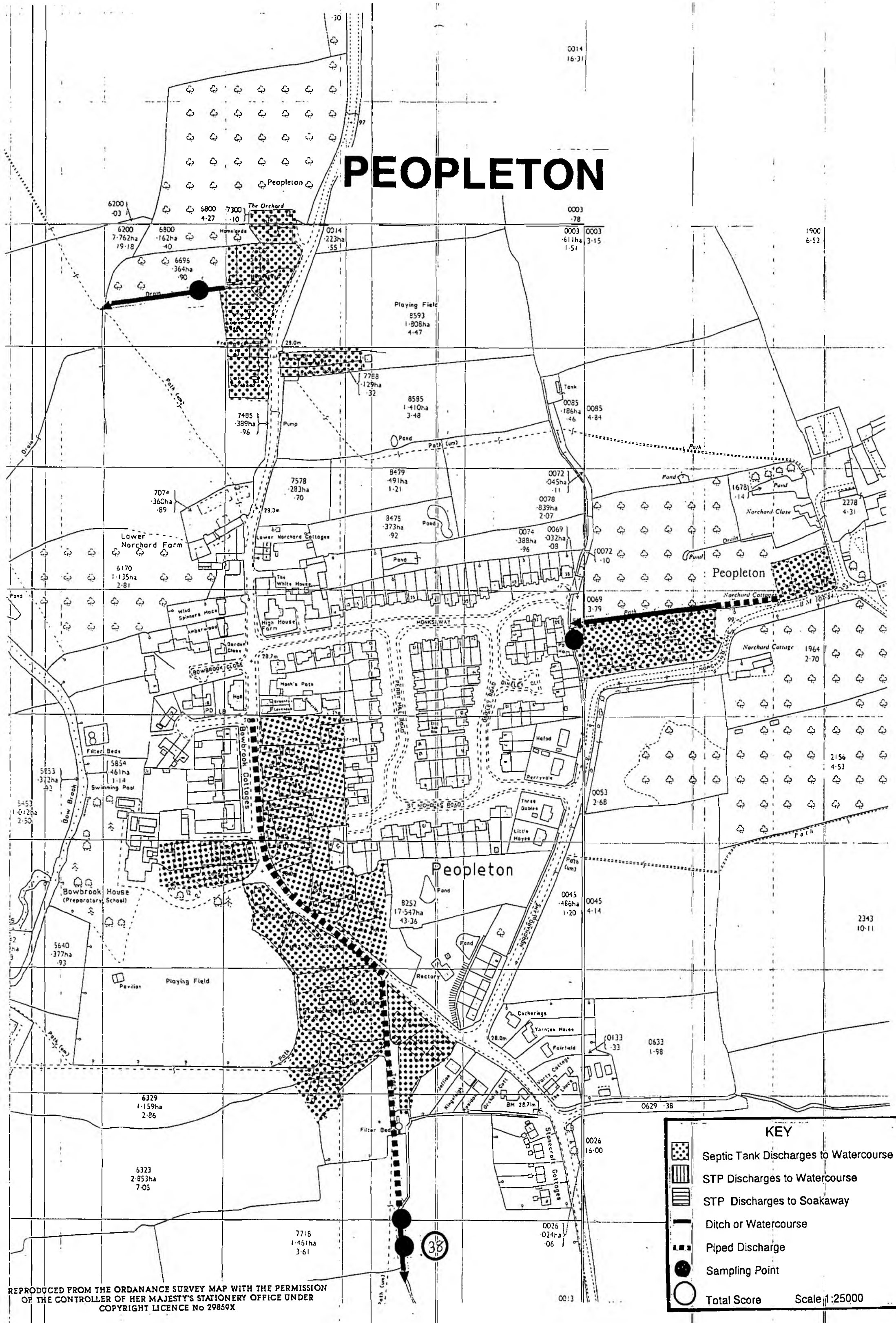
*Qu.8: Attitude to Drainage Problems*VIEW OF LOCAL SEWAGE POLLUTION
FOR PEOPLETON

TOTAL OF 19 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

PEOPLETON



REPRODUCED FROM THE ORDANANCE SURVEY MAP WITH THE PERMISSION
OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER
COPYRIGHT LICENCE No 29859X

9.11.15

Site 53: SALE GREEN

IMPACT SCORE: 24

Description

Sale Green lies to the south east of Droitwich between Himbleton and Crowle, and adjoins Trench Wood which is an important nature reserve (NGR: SO 931 580). It is a fairly compact village whose original loose scatter of Victorian cottages has been consolidated by more recent development. There are approximately 40 properties in the village.

Drainage Characteristics

The village lies on heavy lias clay, and drains to the an un-named tributary of the Bow brook. The soil type is a typical stagnogley soil (7.11) The area has been given Non-Aquifer status.

Development

There is pressure for development in the form of infilling and minor consolidation.

Foul Drainage

Four council houses in the village are served by a small sewage treatment plant, with has a consented discharge point at NGR: SO 9315 5830. The rest of the houses in the village have septic tank/soakaway systems. A proportion of the effluent from these systems makes its way to an open ditch at N.G.R: SO 9295 5820 through a culvert running behind 'Foxwood House', and a road drain along Marlbrook road.

Pollution

Polluted conditions were detected at 5 points in the village, with a contribution from 11 properties. At the scoring point samples of water quality were indicative of a Class 4 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
50.9	139	289	52

Environmental Health Complaints

Wychavon District Council receive occasional environmental health complaints from this village.

VILLAGE NAME: SALE GREEN

IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	11-20	3
NO OF DISCHARGE POINTS	3-4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	5-8	3
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100M	1
B.O.D. 10M D/S OF SCORING POINT	>40	5
AMMONIA 10M D/S OF SCORING POINT	>20	5
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	60-41	2
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	OUTLET	1
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		24

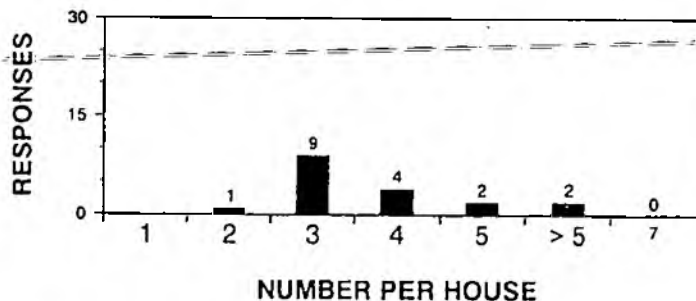
NUMBER OF QUESTIONNAIRES SENT OUT:	11
NUMBER OF QUESTIONNAIRES RETURNED:	5
PERCENTAGE OF QUESTIONNAIRES RETURNED:	45%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	100%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	83%

ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

Qu.4: Length of Residence in the Village

SIZE OF HOUSEHOLD FOR SALE GREEN



TOTAL OF 18 RESPONSES

LENGTH OF RESIDENCE FOR SALE GREEN

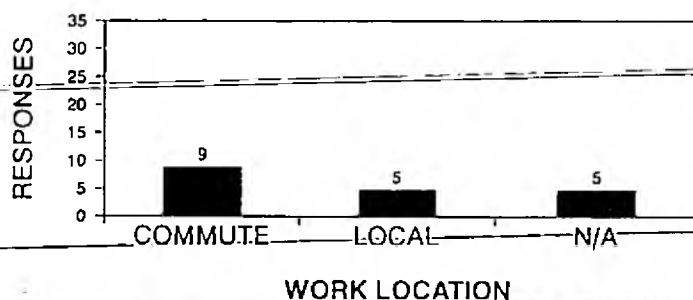


TOTAL OF 18 RESPONSES

Qu.5: Work Location (if applicable)

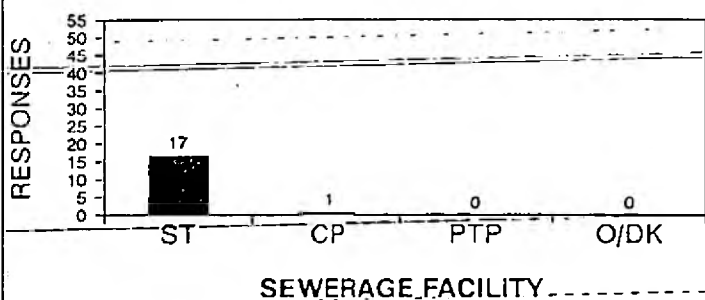
Qu.6: Type of Sewerage Facility

WORK LOCATION FOR SALE GREEN



TOTAL OF 19 RESPONSES

HOUSEHOLD SEWAGE SYSTEMS FOR SALE GREEN

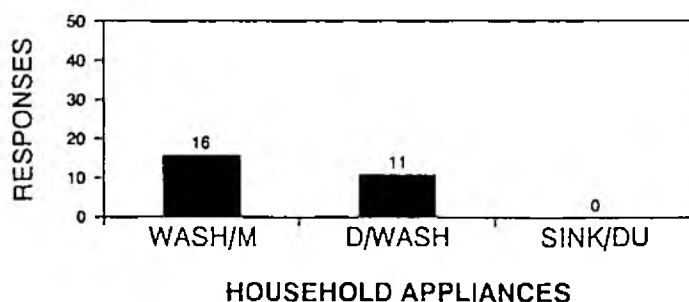


TOTAL OF 18 RESPONSES

Qu.7: Water Consuming Appliances Used

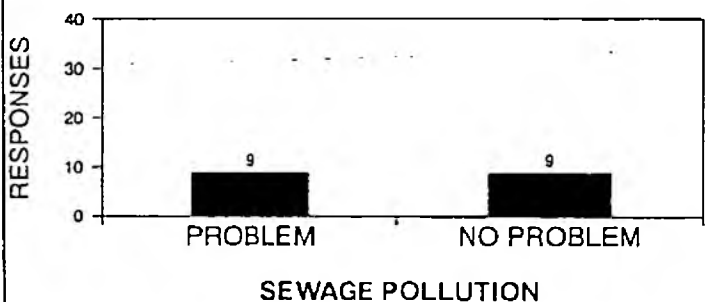
Qu.8: Attitude to Drainage Problems

HOUSEHOLD APPLIANCES FOR SALE GREEN



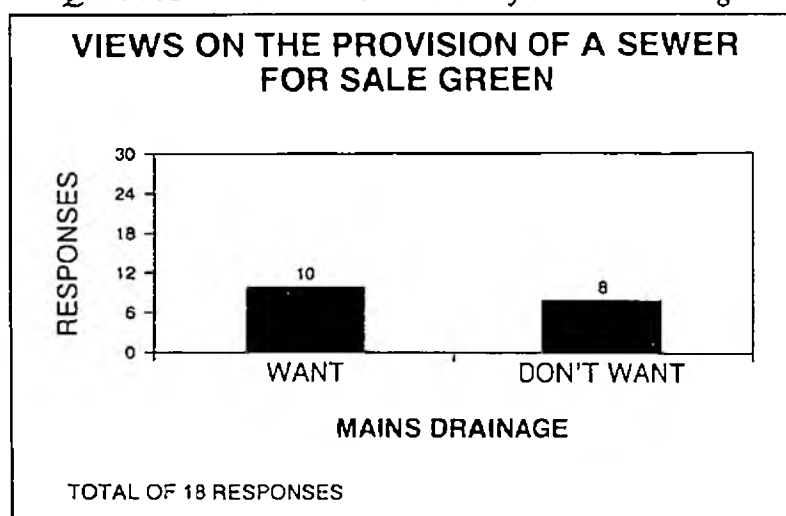
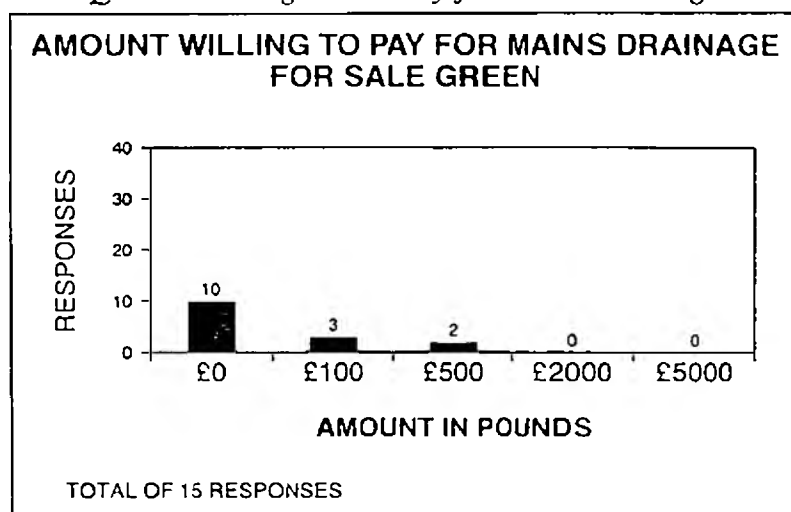
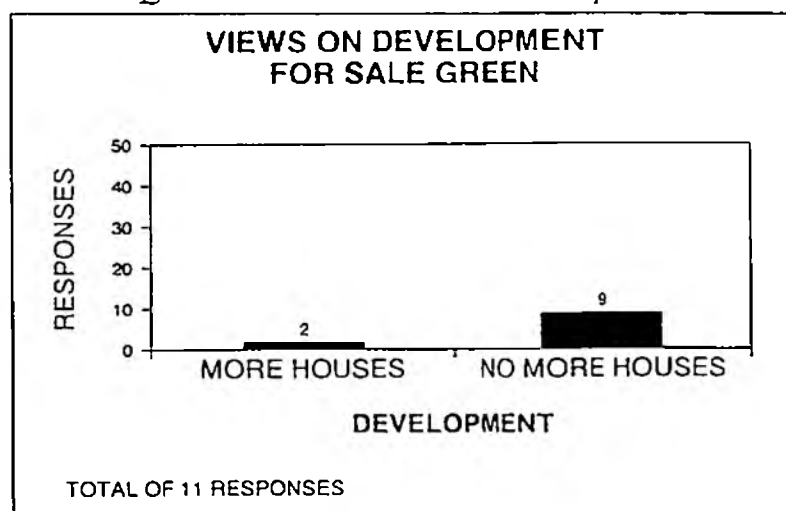
TOTAL OF 27 RESPONSES

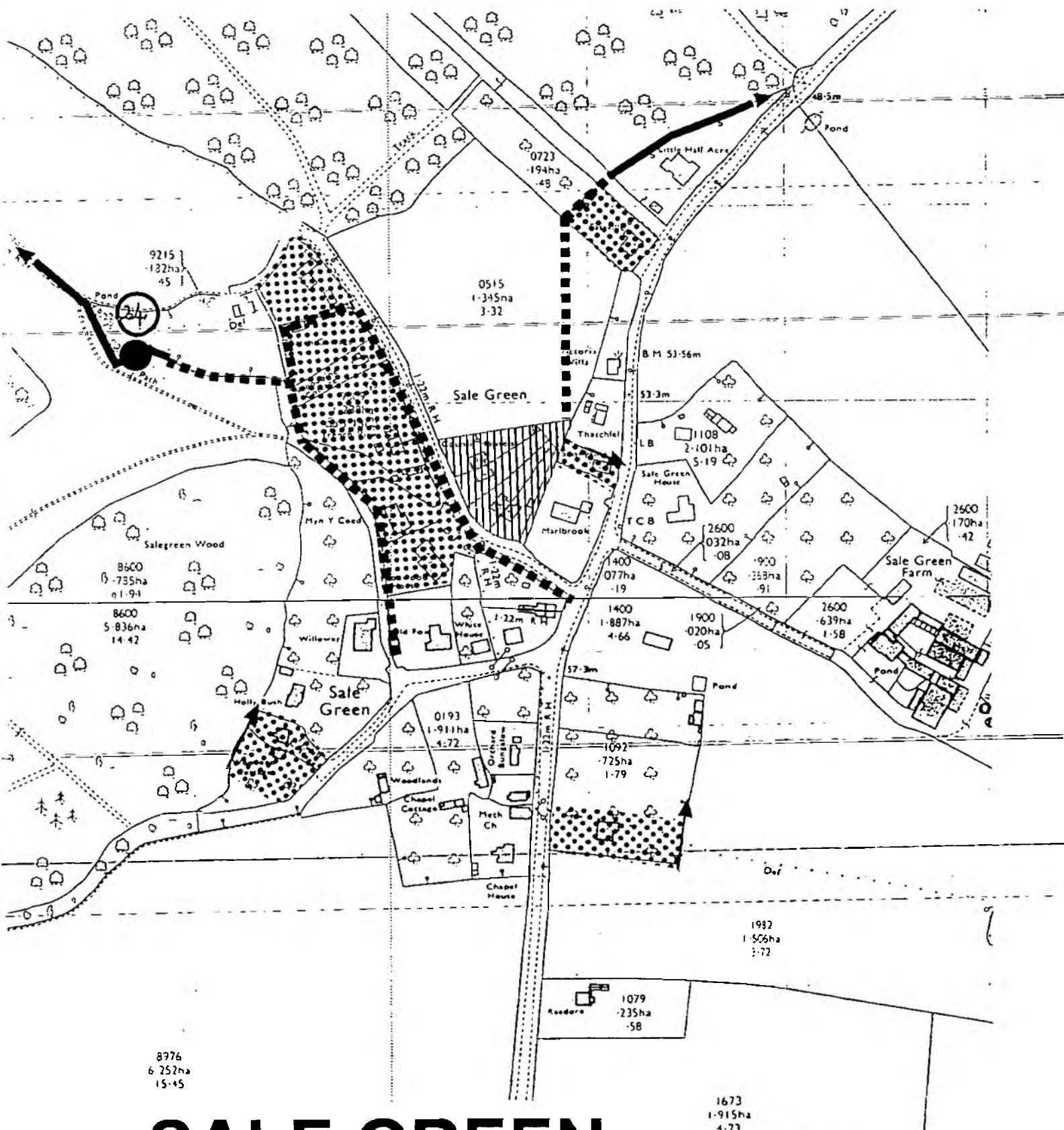
VIEW OF LOCAL SEWAGE POLLUTION FOR SALE GREEN



TOTAL OF 18 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



SALE GREEN

KEY	
	Septic Tank Discharges to Watercourse
	STP Discharges to Watercourse
	STP Discharges to Soakaway
	Ditch or Watercourse
	Piped Discharge
	Sampling Point
	Total Score
Scale 1:25000	

9.11.16

Site 54: STOCK GREEN

IMPACT SCORE: 30

Description

Stock Green is a linear settlement, situated South of Bradley Green and the B409 (NGR: SO 990 591).

Soil Drainage Characteristics

The village lies on heavy lias clay, and drains to the Bow Brook. The soil type is a pelo-stagnogley soil (7.12). Under the Groundwater Vulnerability Classification the area has been given Non-Aquifer status.

Development

The village has grown in recent years by the addition of new housing development in the form of infilling along the main road between the older houses.

Foul Drainage

The majority of the properties in the village are served by septic tank/soakaway systems. Due to the impervious nature of the clay subsoil many of these malfunction and discharge to the road side ditches. This problem is exacerbated by poor drainage in the village, with stagnant water in the road side ditches. Some houses have installed package treatment plants, which have consented discharges.

Pollution

Polluted conditions were detected at several places along the road side ditch, with contributions from approximately 17 properties. At the scoring point water quality samples were indicative of a Class 3 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
4.67	4.0	49	66

Environmental Health Complaints

Wychavon District Council receive occasional environmental health complaints from this village.

VILLAGE NAME: STOCK GREEN

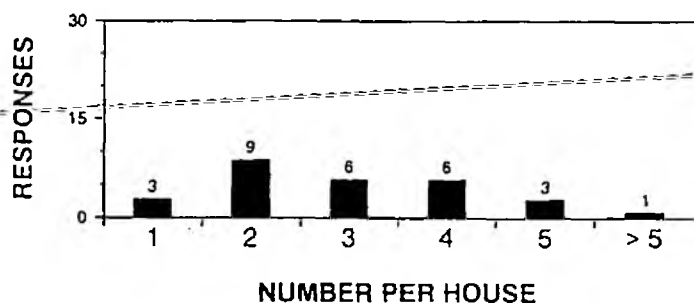
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	11-20	3
NO OF DISCHARGE POINTS	9-16	4
NO OF HOUSES DISCHARGING AT SCORING POINT	5-8	3
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>200M	10
B.O.D. 10M D/S OF SCORING POINT	<5	1
AMMONIA 10M D/S OF SCORING POINT	2.6-5.0	3
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	>60	1
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	10M	2
PUBLIC ACESSIBILITY	HIGH	3
TOTAL SCORE		30

NUMBER OF QUESTIONNAIRES SENT OUT:	42
NUMBER OF QUESTIONNAIRES RETURNED:	28
PERCENTAGE OF QUESTIONNAIRES RETURNED:	66%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	84%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	84%

ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

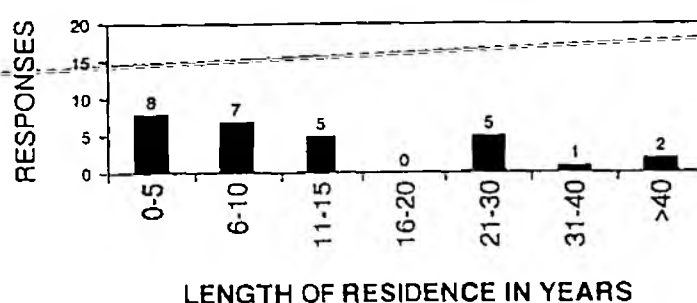
SIZE OF HOUSEHOLD FOR STOCK GREEN



TOTAL OF 28 RESPONSES

Qu.4: Length-of-Residence in the Village

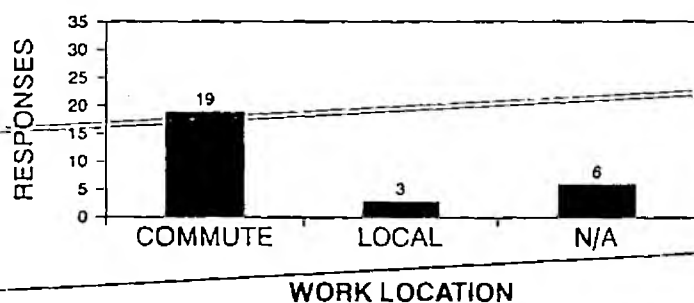
LENGTH OF RESIDENCE FOR STOCK GREEN



TOTAL OF 28 RESPONSES

Qu.5: Work Location (if applicable)

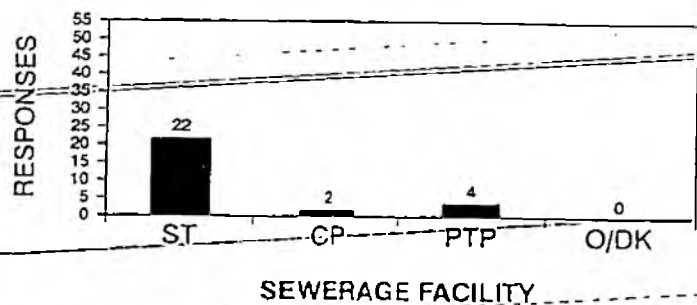
WORK LOCATION FOR STOCK GREEN



TOTAL OF 28 RESPONSES

Qu.6: Type of Sewerage Facility

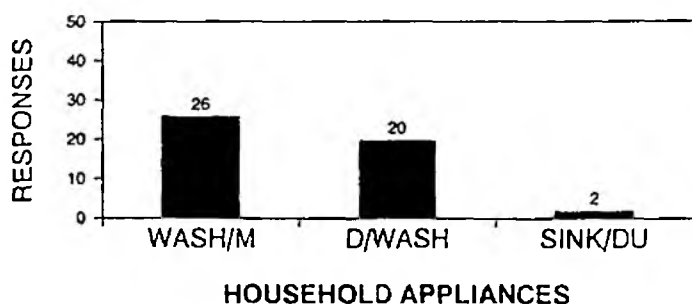
HOUSEHOLD SEWAGE SYSTEMS FOR STOCK GREEN



TOTAL OF 28 RESPONSES

Qu.7: Water Consuming Appliances Used

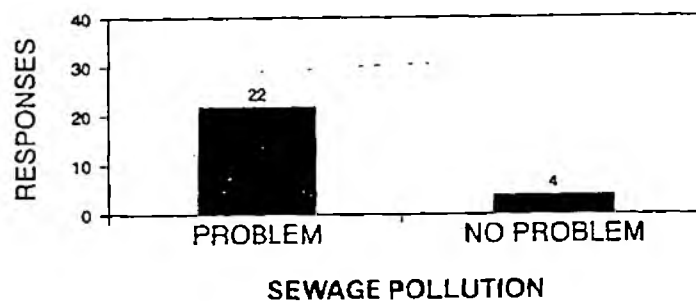
HOUSEHOLD APPLIANCES FOR STOCK GREEN



TOTAL OF 48 RESPONSES

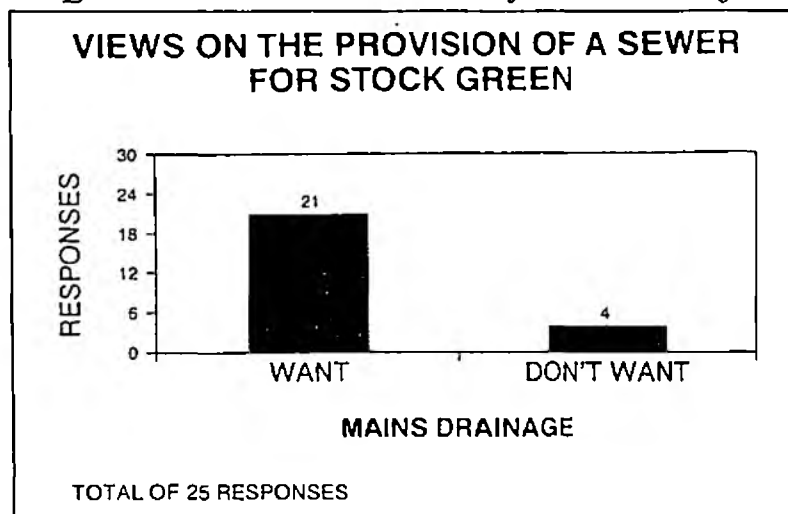
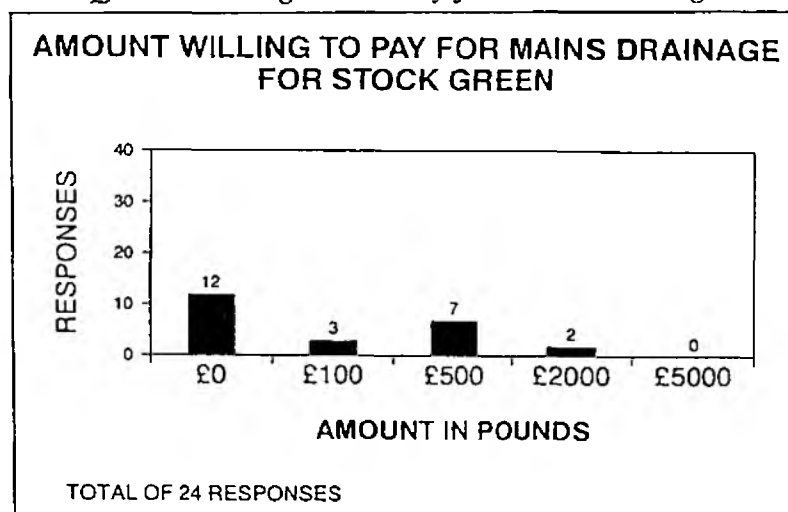
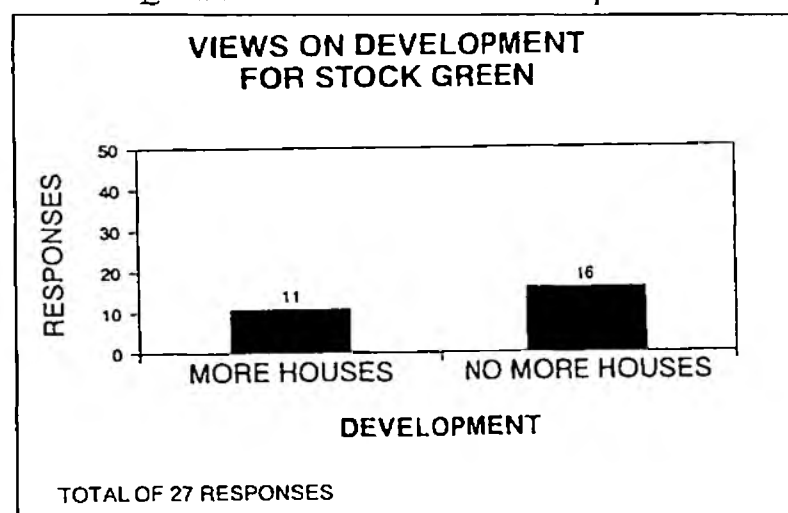
Qu.8: Attitude to Drainage Problems

VIEW OF LOCAL SEWAGE POLLUTION FOR STOCK GREEN

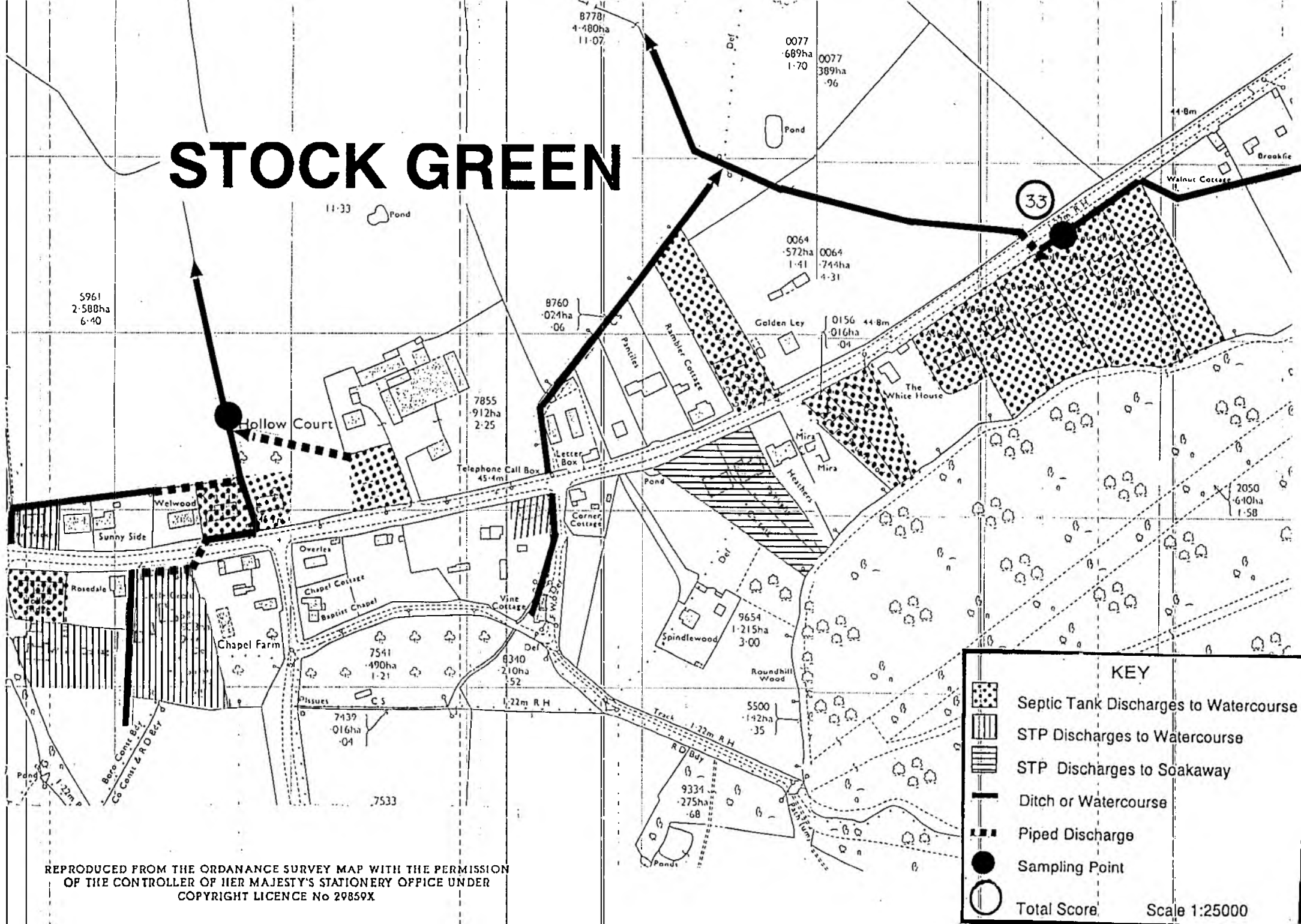


TOTAL OF 26 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

STOCK GREEN



REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION
OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER
COPYRIGHT LICENCE No 29859X

9.11.17

Site 55: UPTON SNODSBURY

IMPACT SCORE: 15

Description

Upton Snodsbury lies six miles east of Worcester and lies along the A422 Worcester to Stratford Road (NGR: SO 944 543).

Soil Drainage Characteristics

The village lies on heavy clay, and drains to the Bow Brook. The soil type is a stagnogleyic argillic brown earth (5.72). Under the Groundwater Vulnerability Classification the area has Non-Aquifer status.

Development Pressure

Development within Upton Snodsbury has been consolidated through housing developments and a number of infill plots. Over the last ten years fifteen properties have been built. The Council have stated that they will resist further development, other than infilling within the outlying area of Upton Snodsbury to prevent encroachment into open countryside and to prevent further development along the A422 Worcester to Statford Road.

Foul Drainage

The nucleus of the village, which lies to the south of the Red Lion Inn on the B4082 Pershore Road, is connected to the main sewer. The council houses that lie to the north of the A422 were connected to the mains sewer by Wychavon District Council in 1993. However properties lying to the south of the A422 have not been connected, and their septic tank effluent discharges to a drain leading to the Bow Brook. One property is served by a package treatment plant.

Pollution

Polluted conditions were detected at one main point in the village, with a contribution from 7 properties. At the scoring point water quality was indicative of a Class 1B watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
0.23	2.5	7	46

Environmental Health Complaints

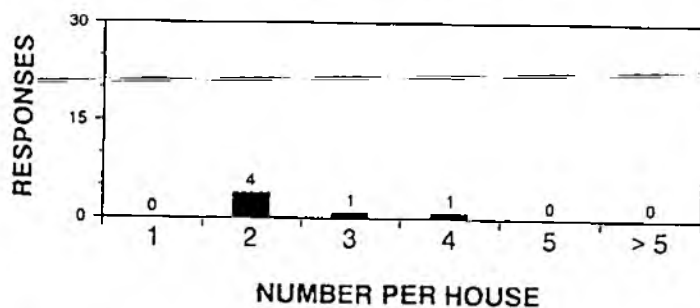
Wychavon District Council receive occasional environmental health complaints from this village.

VILLAGE NAME: UPTON SNODSBURY

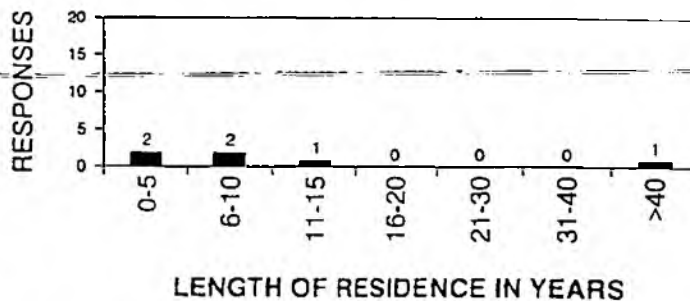
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	11-20	3
NO OF DISCHARGE POINTS	1-2	1
NO OF HOUSES DISCHARGING AT SCORING POINT	9-16	4
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	100M	1
B.O.D. 10M D/S OF SCORING POINT	<5	1
AMMONIA 10M D/S OF SCORING POINT	<0.7	1
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	60-41	2
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	NONE	0
PUBLIC ACCESSIBILITY	MEDIUM	2
TOTAL SCORE		15

NUMBER OF QUESTIONNAIRES SENT OUT:	12
NUMBER OF QUESTIONNAIRES RETURNED:	8
PERCENTAGE OF QUESTIONNAIRES RETURNED:	66%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	33%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	66%

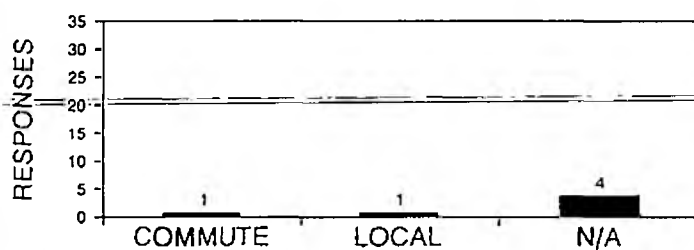
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property*SIZE OF HOUSEHOLD
FOR UPTON SNODSBURY

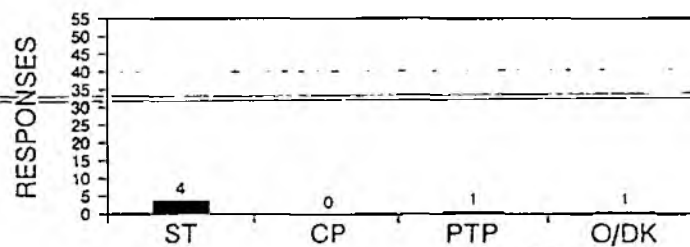
TOTAL OF 6 RESPONSES

*Qu.4: Length of Residence in the Village*LENGTH OF RESIDENCE
FOR UPTON SNODSBURY

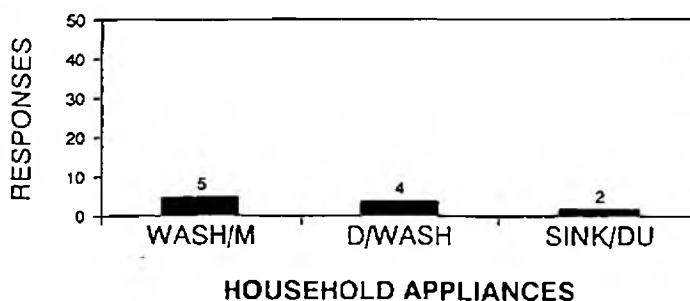
TOTAL OF 6 RESPONSES

*Qu.5: Work Location (if applicable)*WORK LOCATION
FOR UPTON SNODSBURY

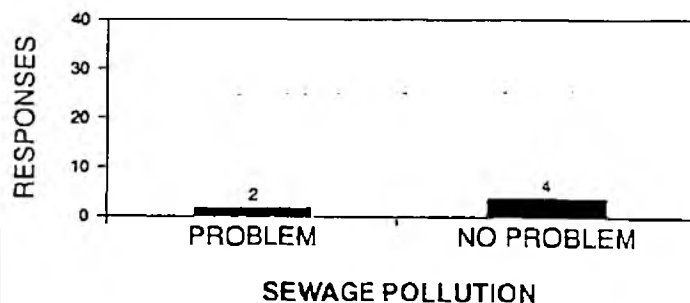
TOTAL OF 6 RESPONSES

*Qu.6: Type of Sewerage Facility*HOUSEHOLD SEWAGE SYSTEMS
FOR UPTON SNODSBURY

TOTAL OF 6 RESPONSES

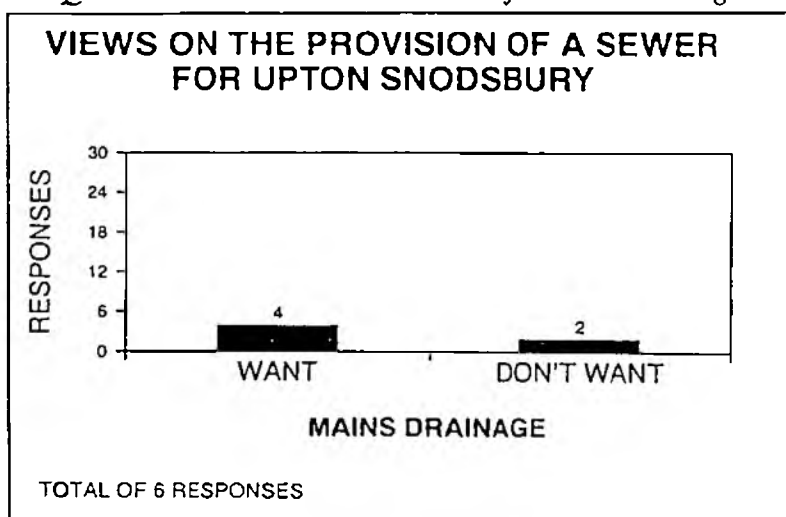
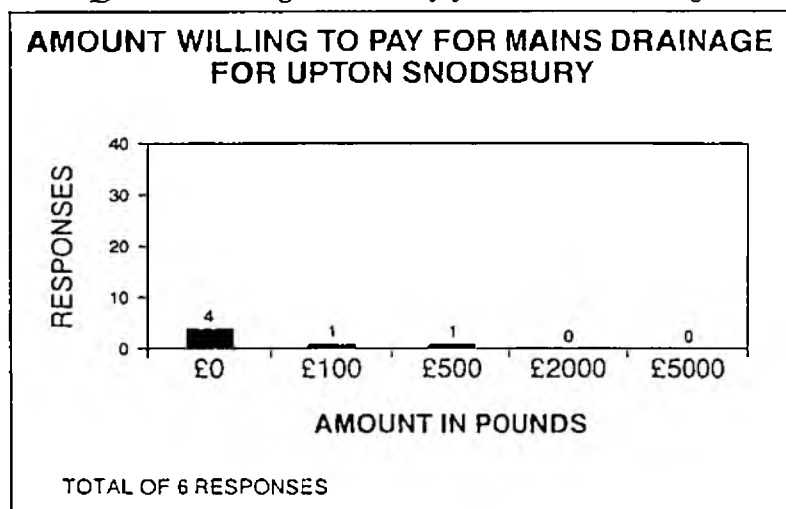
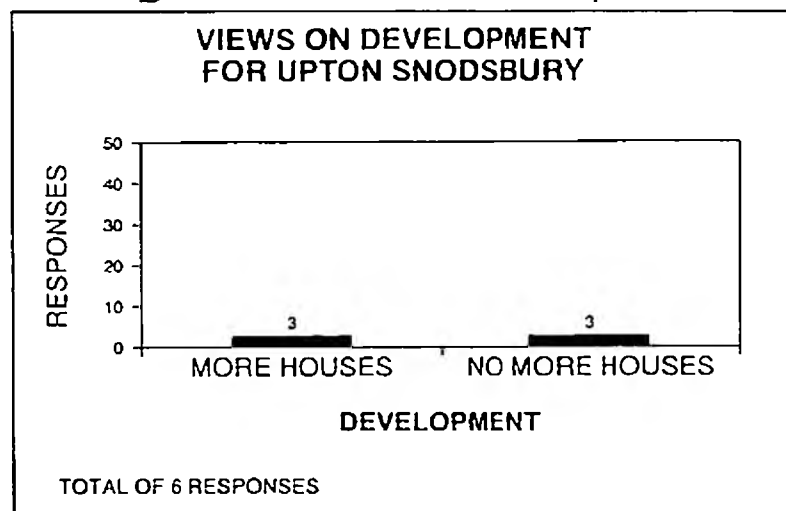
*Qu.7: Water Consuming Appliances Used*HOUSEHOLD APPLIANCES
FOR UPTON SNODSBURY

TOTAL OF 11 RESPONSES

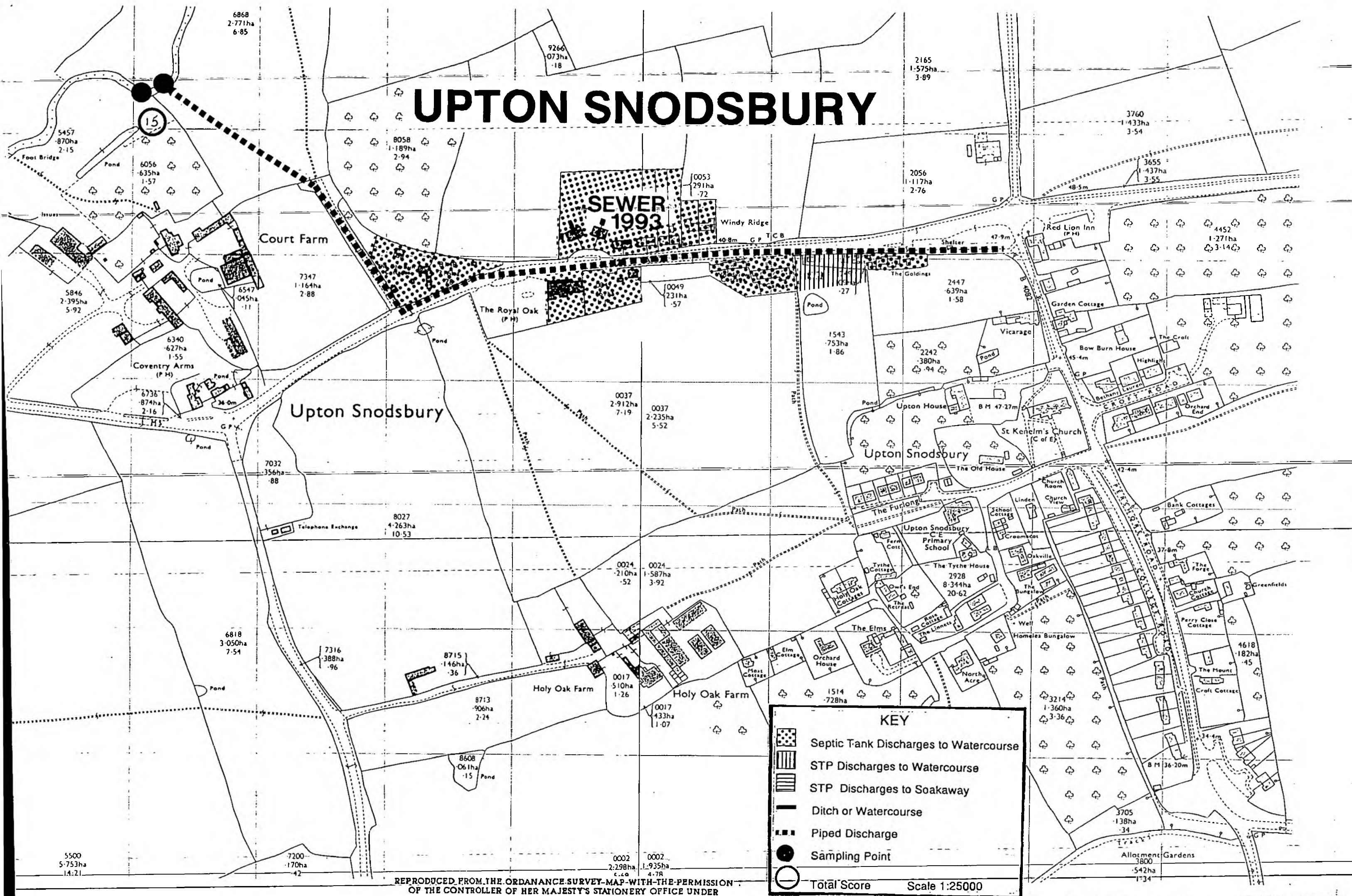
*Qu.8: Attitude to Drainage Problems*VIEW OF LOCAL SEWAGE POLLUTION
FOR UPTON SNODSBURY

TOTAL OF 6 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

UPTON SNODSBURY



9.11.18

Site 56: WHITE LADIES ASTON

IMPACT SCORE: 36

Description

White Ladies Aston is situated approximately four miles south-east of Worcester (NGR: SO 922 525). The village was once known as Aston Episcopi Aston. The 'White Ladies' were the nuns of a Cistercian Order based at Whitestone in Worcester in approximately 1300.

Soil Drainage Characteristics

The settlement lies on heavy clay, and drains to the Saw Brook, a tributary of the Bow Brook. The soil type is a stagnogleyic argillic brown earth (5.72). The area has been given Non-Aquifer status.

Development

Development has been in the form of infilling and minor consolidation. Over the last ten years two houses have been built.

Foul Drainage

All properties in the village are served by septic tank/soakaway systems. A village drain picks up septic tank effluent from the Sherwood Place area. This discharges to the Saw Brook at NGR: SO 919 524. The discharge is unconsented.

Pollution

Polluted conditions were detected at 6 points in the village. At the score pointing point water quality samples were indicative of a Class 3 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
4.6	8	6	49

Environmental Health Complaints

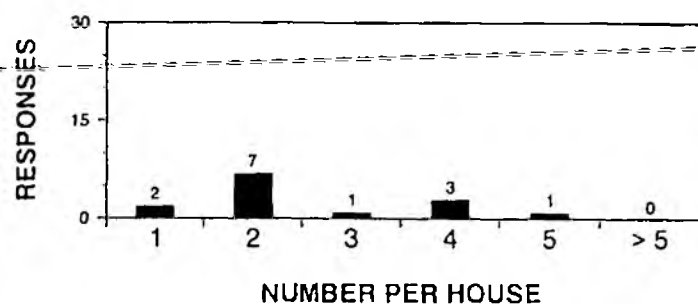
Wychavon District Council has received occasional environmental health complaints from this village.

VILLAGE NAME: WHITE LADIES ASTON

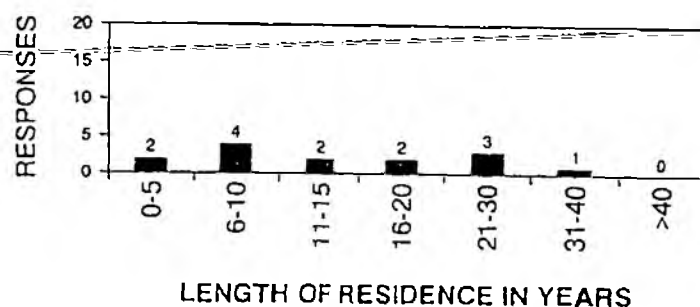
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	21-40	4
NO OF DISCHARGE POINTS	5-8	3
NO OF HOUSES DISCHARGING AT SCORING POINT	9-16	4
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>400M	15
B.O.D. 10M D/S OF SCORING POINT	5-9	2
AMMONIA 10M D/S OF SCORING POINT	2.6-5.0	3
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	60-41	2
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	10M	2
PUBLIC ACESSIBILITY	LOW	1
TOTAL SCORE		36

NUMBER OF QUESTIONNAIRES SENT OUT:	27
NUMBER OF QUESTIONNAIRES RETURNED:	15
PERCENTAGE OF QUESTIONNAIRES RETURNED:	55%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	28%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	28%

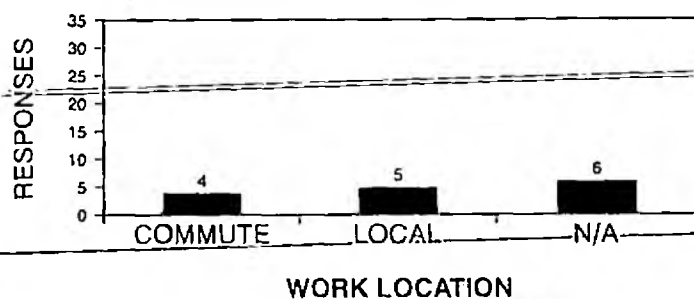
ANALYSIS OF QUESTIONNAIRE

*Qu.3: Number of People in the Property*SIZE OF HOUSEHOLD
FOR WHITE LADIES ASTON

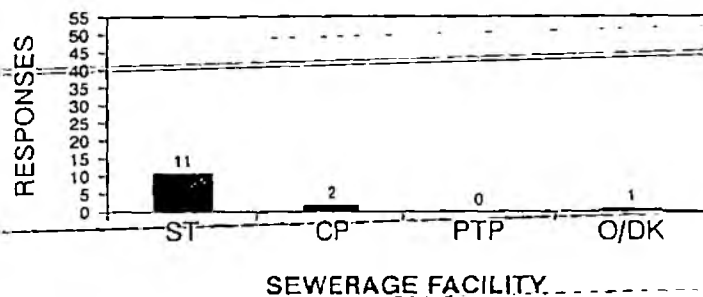
TOTAL OF 14 RESPONSES

*Qu.4: Length of Residence in the Village*LENGTH OF RESIDENCE
FOR WHITE LADIES ASTON

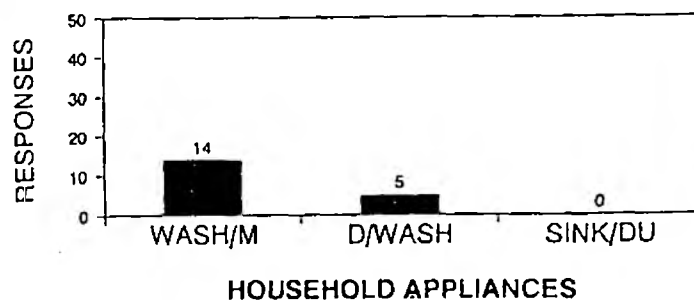
TOTAL OF 14 RESPONSES

*Qu.5: Work Location (if applicable)*WORK LOCATION
FOR WHITE LADIES ASTON

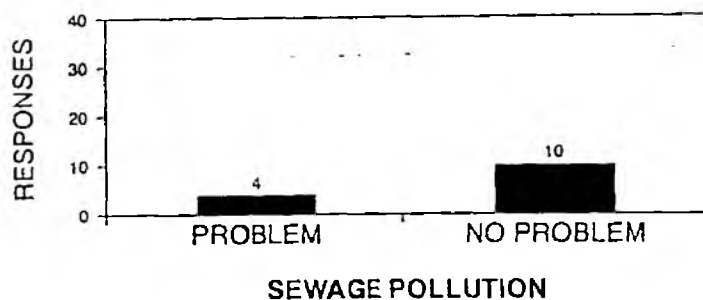
TOTAL OF 15 RESPONSES

*Qu.6: Type of Sewerage Facility*HOUSEHOLD SEWAGE SYSTEMS
FOR WHITE LADIES ASTON

TOTAL OF 14 RESPONSES

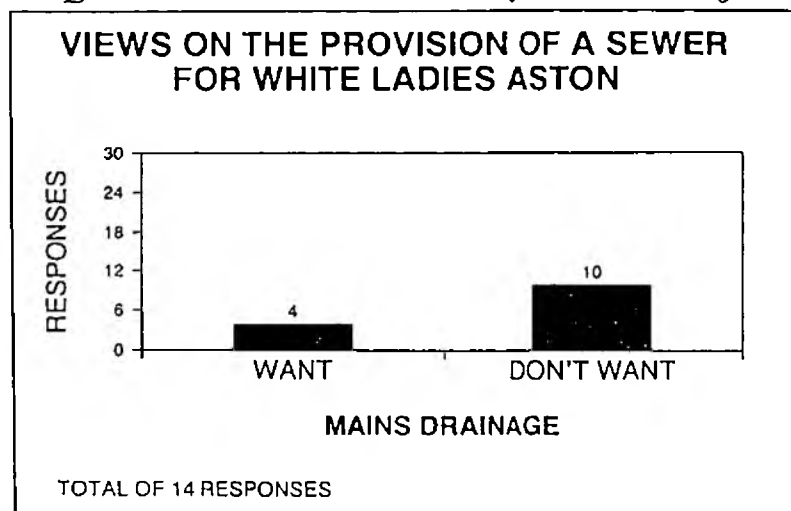
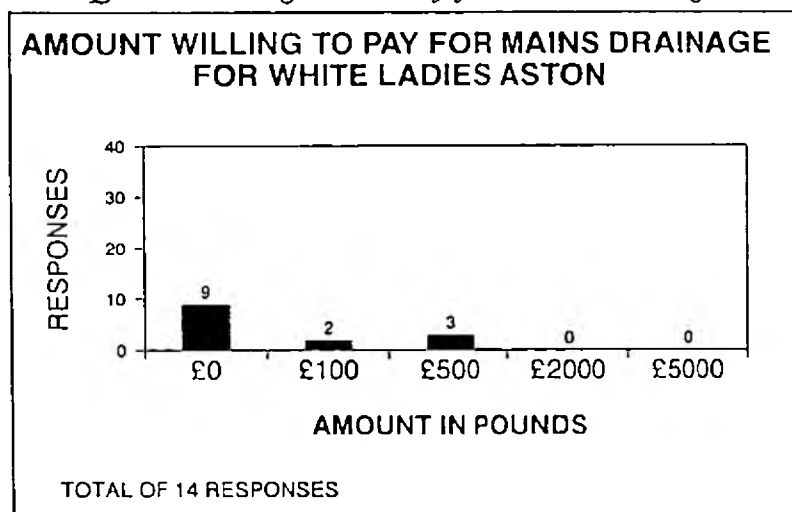
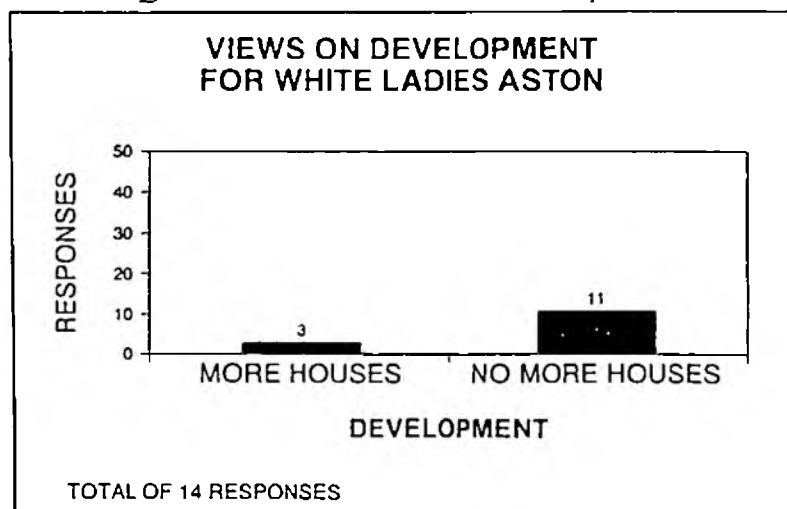
*Qu.7: Water Consuming Appliances Used*HOUSEHOLD APPLIANCES
FOR WHITE LADIES ASTON

TOTAL OF 19 RESPONSES

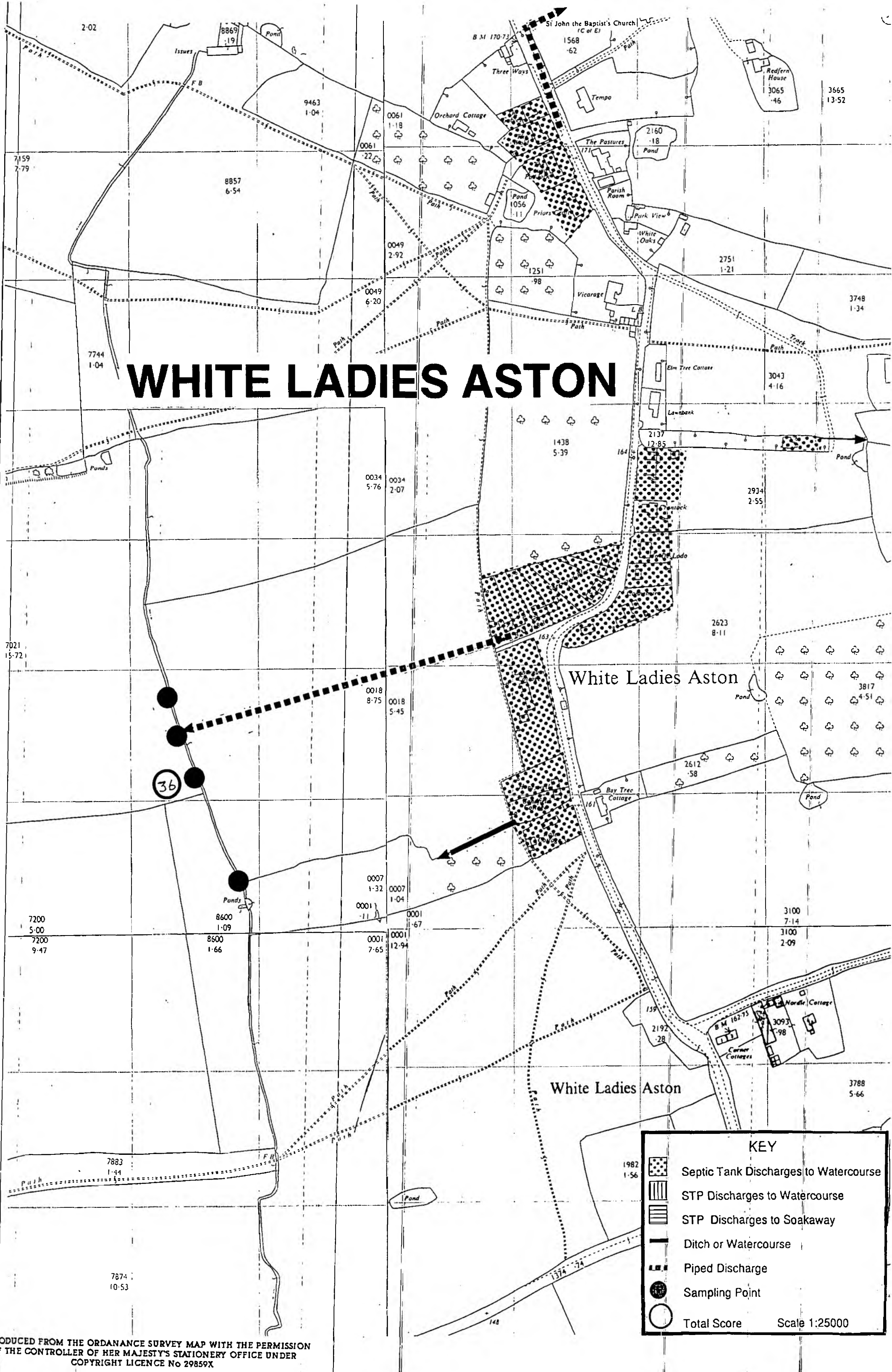
*Qu.8: Attitude to Drainage Problems*VIEW OF LOCAL SEWAGE POLLUTION
FOR WHITE LADIES ASTON

TOTAL OF 14 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*

WHITE LADIES ASTON



9.11.19

Site 57: WHITTINGTON -

IMPACT SCORE: 42

Description

Whittington is a settlement on Worcester's south-eastern boundary (NGR SO: 875 526). The settlement has two principle parts; the main part close to the A44 Worcester to Evesham road and a smaller group of houses to the north around Church Lane and Berkeley Close.

Soil Drainage Characteristics

The village lies on clay and drains to a tributary of the Stoulton Brook. The soil type is a argillic brown earth (5.72). Under the Groundwater Vulnerability Classification this area has been given Non-Aquifer status.

Development

There is pressure for development in the form of infilling and consolidation.

Foul Drainage

A small treatment works serves the properties in Berkeley Close. The majority of the village is sewered to a septic tank in the orchard at Church Farm. From there it is piped under the motorway and discharges to a ditch. Septic effluent from properties in the south end of the village around the Swan Inn drain to another sewer running underneath the motorway to a ditchcourse. The group of houses on the A44 discharge septic effluent to an open ditch.

Pollution

Polluted conditions were detected at three main points, with contributions from approximately fifty five properties. At the scoring point water quality samples were indicative of a Class 4 watercourse (see table).

WATER QUALITY INFORMATION

Ammonia mg/l	BOD (ATU) mg/l	SS mg/l	DO %
30.8	141	116	68

Environmental Health Complaints

Wychavon District Council receive occasional environmental health complaints from this village.

VILLAGE NAME: WHITTINGTON

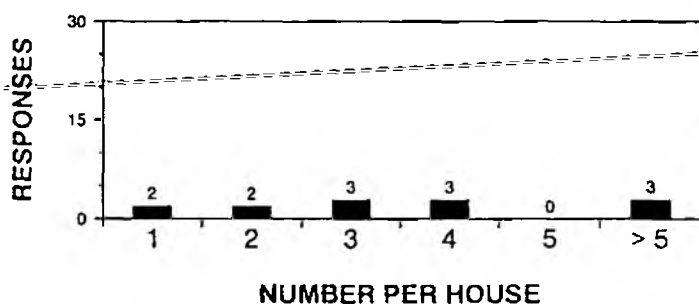
IMPACT SCORE	BAND	SCORE
NO OF HOUSES DISCHARGING	>40	5
NO OF DISCHARGE POINTS	3-4	2
NO OF HOUSES DISCHARGING AT SCORING POINT	>16	5
DISTANCE TO 10:1 DILUTION D/S OF SCORING POINT	>400M	15
B.O.D. 10M D/S OF SCORING POINT	>40	5
AMMONIA 10M D/S OF SCORING POINT	>20	5
DISSOLVED OXYGEN 10M D/S OF SCORING POINT	>60	1
EXTENT OF SEWAGE FUNGUS D/S OF SCORING POINT	11-25	3
PUBLIC ACESSIBILITY	LOW	1
TOTAL SCORE		42

NUMBER OF QUESTIONNAIRES SENT OUT:	27
NUMBER OF QUESTIONNAIRES RETURNED:	15
PERCENTAGE OF QUESTIONNAIRES RETURNED:	55%
PERCENTAGE OF PEOPLE CONSIDERING THAT SEWAGE POLLUTION IS A PROBLEM:	53%
PERCENTAGE OF PEOPLE WANTING MAINS DRAINAGE:	54%

ANALYSIS OF QUESTIONNAIRE

Qu.3: Number of People in the Property

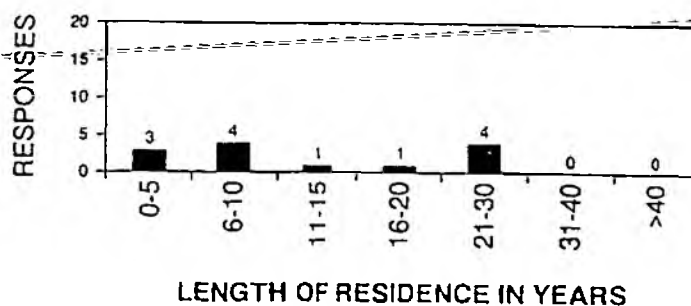
SIZE OF HOUSEHOLD FOR WHITTINGTON



TOTAL OF 13 RESPONSES

Qu.4: Length of Residence in the Village

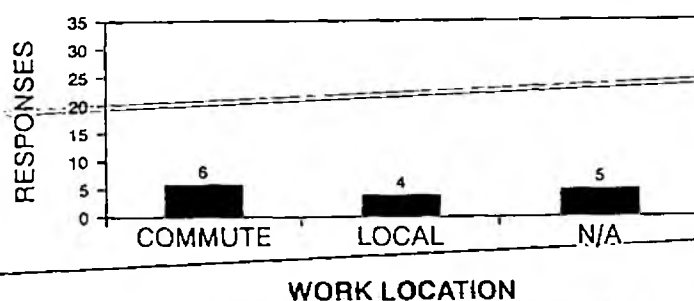
LENGTH OF RESIDENCE FOR WHITTINGTON



TOTAL OF 13 RESPONSES

Qu.5: Work Location (if applicable)

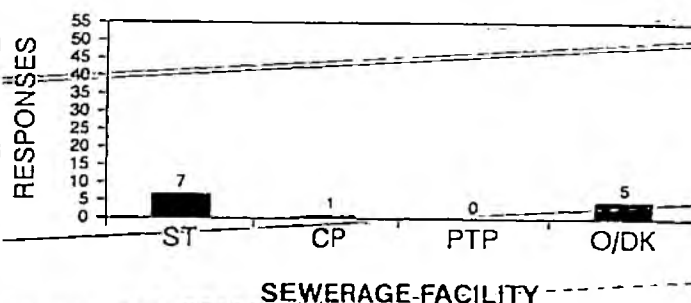
WORK LOCATION FOR WHITTINGTON



TOTAL OF 15 RESPONSES

Qu.6: Type of Sewerage Facility

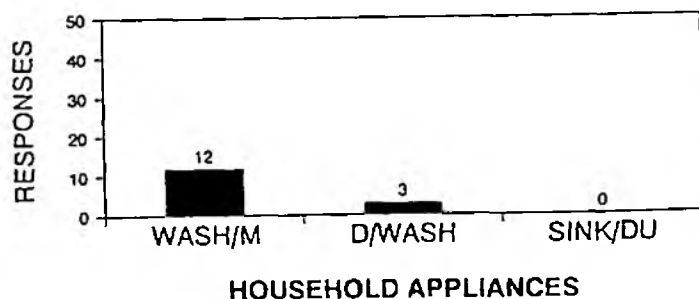
HOUSEHOLD SEWAGE SYSTEMS FOR WHITTINGTON



TOTAL OF 13 RESPONSES

Qu.7: Water Consuming Appliances Used

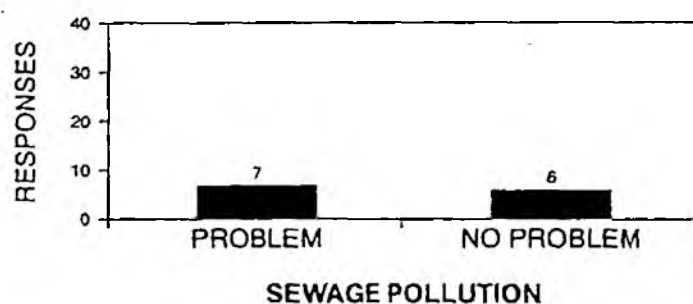
HOUSEHOLD APPLIANCES FOR WHITTINGTON



TOTAL OF 15 RESPONSES

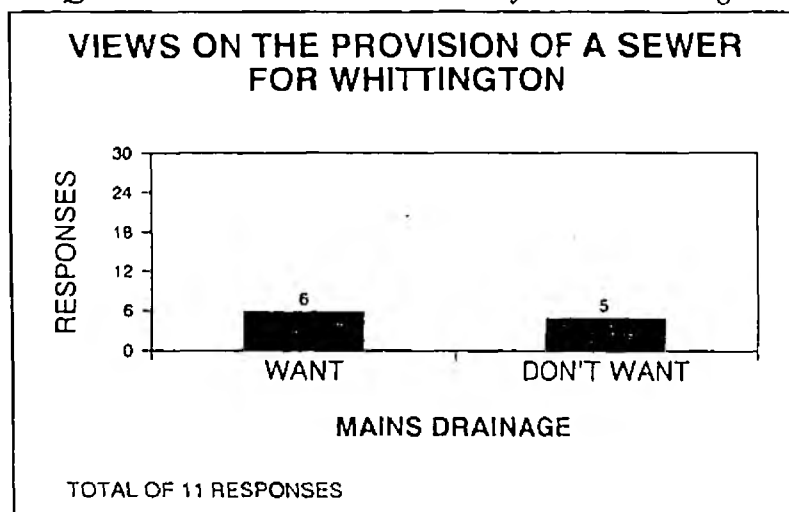
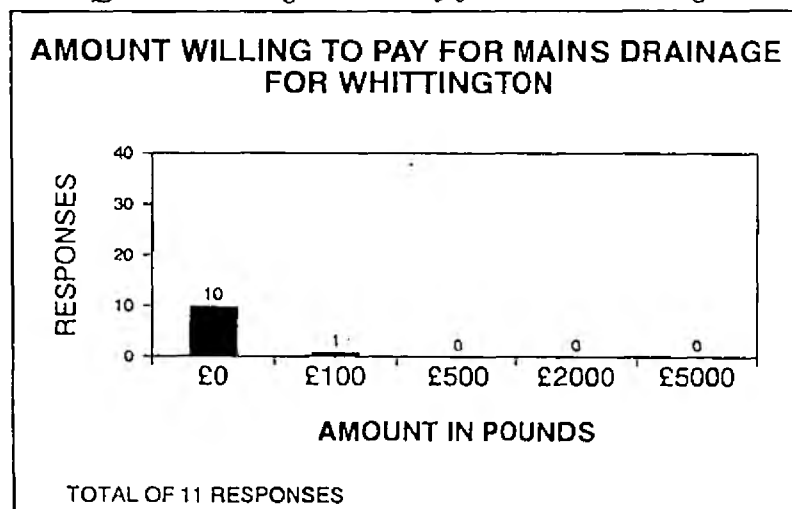
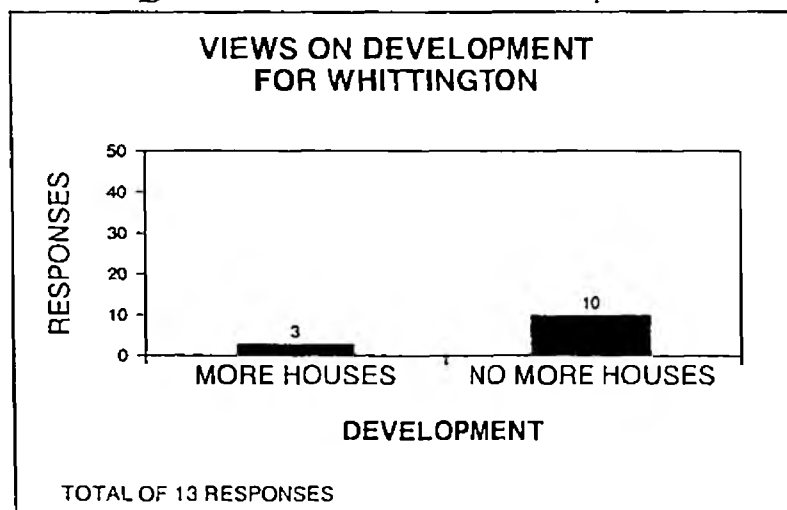
Qu.8: Attitude to Drainage Problems

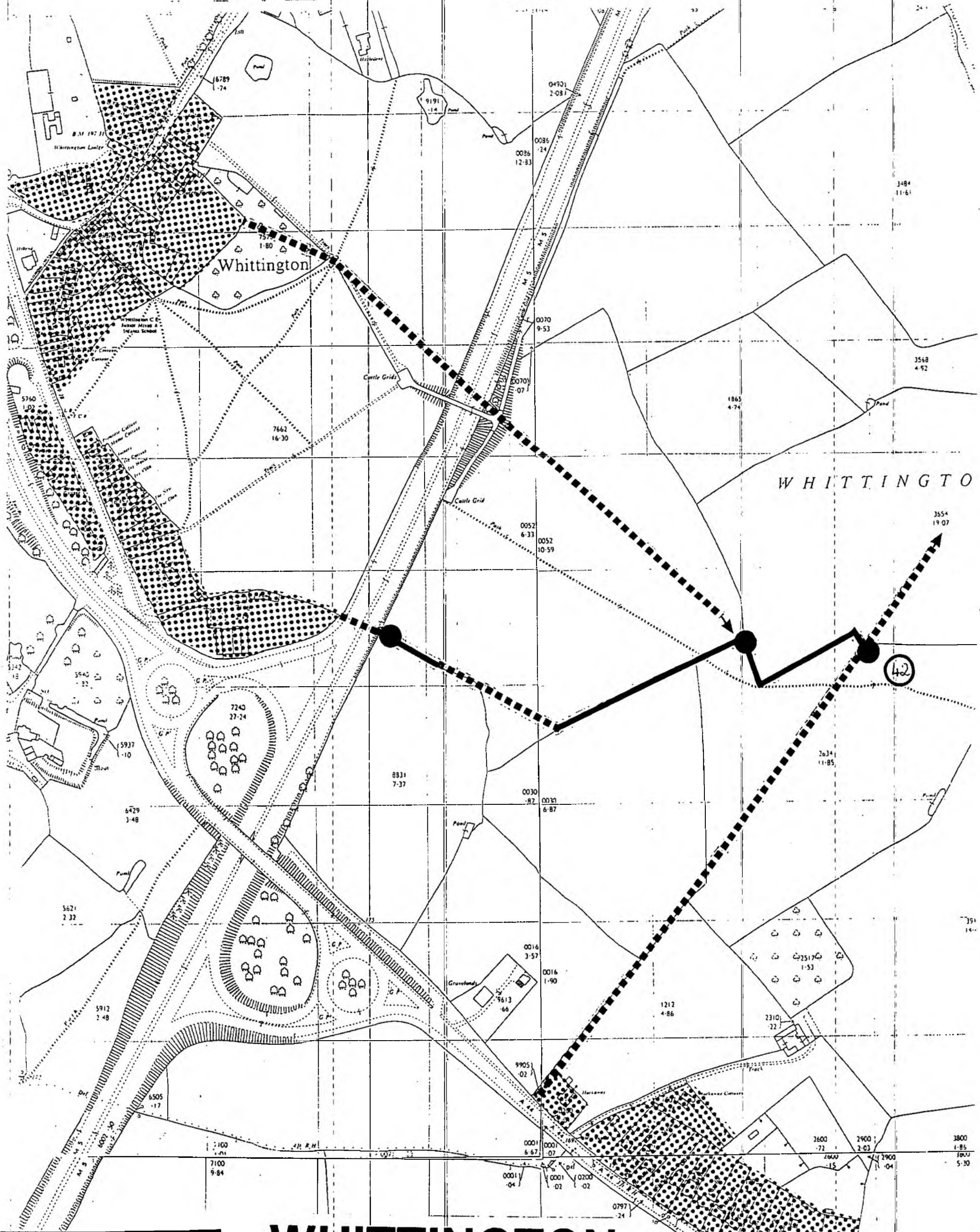
VIEW OF LOCAL SEWAGE POLLUTION FOR WHITTINGTON










TOTAL OF 13 RESPONSES

ANALYSIS OF QUESTIONNAIRE

Qu. 9. Attitude to the Provision of Mains Drainage*Qu. 10. Willingness to Pay for Mains Drainage**Qu. 11. Attitude to Further Development*



KEY

-  Septic Tank Discharges to Watercourse
-  STP Discharges to Watercourse
-  STP Discharges to Soakaway
-  Ditch or Watercourse
-  Piped Discharge
-  Sampling Point
-  Total Score Not to Scale

WHITTINGTON

RURAL SEWAGE POLLUTION IN THE '90S REFERENCES

REFERENCES

BRITISH STANDARDS INSTITUTION (1983) "Code of Practice for the design and installation of small sewage treatment works and cesspools" BS6297:1983

CIRIA (1993): JA Payne & D Butler: "Septic tanks and small sewage treatment works. A guide to current practice and common problems". CIRIA-Technical Note 146, 1993

DEPARTMENT OF THE ENVIRONMENT (1993) Draft Planning Policy Guidance "Planning & Pollution Control" (1993)

MINISTRY OF HOUSING AND LOCAL GOVERNMENT (1966) "Technical Problems of River Authorities and Sewage Disposal Authorities in Laying Down and Complying with Limits of Quality for Effluents more Restrictive than those of the Royal Commission."

OFFICE OF WATER SERVICES (1992) Information Note 10: "Increasing Competition in the Water Industry"

OFFICE OF WATER SERVICES (1992) Information Note 11: "First Time Rural Sewerage"

GARNER, JF (1991) "The Law of Sewers and Drains". Shaw and Sons, Catford

THE RURAL SEWERAGE FORUM

THE RURAL SEWERAGE FORUM

The Rural Sewerage Forum was established as part of the Rural Sewerage Project, with the aim to promote discussion of problems relating to inadequate rural sewerage and investigate the extent of these problems throughout the country. Its aim is to act as a focus for development of new ideas and practical, affordable solutions to rural sewerage problems.

MEETING OF THE FORUM - 8 DECEMBER 1993

The second meeting of the Forum on 8 December 1993 received contributions from seven speakers and input, via discussion, from NRA, local authority and other representatives. The main speakers and their topics are given below, followed by a list of those participating and a summary of the presentations and discussion.

Two of the presentations, from Michael Williams of the DoE and from David Walker of OFWAT are given in full.

Copies of the full Proceedings can be obtained from the NRA at Lower Severn Area (cost £3.00).

SPEAKERS

Session 1: Mr Charles Tucker (NRA: Rural Sewerage Project Leader)

PROGRESS OF THE RURAL SEWERAGE PROJECT

Session 2: Mr Martin Davis (Tewkesbury Borough Council)

POWERS AND DUTIES OF LOCAL AUTHORITIES

Session 3: Mr Robin Gray (Wormley & District Drainage Association)

A-CASE STUDY: WORMLEY, SURREY

Session 4: Mr Michael Williams (DoE)

THE DoE REVIEW OF FIRST TIME RURAL SEWERAGE

Session 5: Mr Roy Harris (British Water), Mr R Lewis (Tuke & Bell Ltd)

COMPETITION IN SEWERAGE AND SEWAGE DISPOSAL

Session 6: Mr David Walker (OFWAT)

INSET APPOINTMENTS

Session 7: Dr Peter Chave (NRA: Head of Water Quality)

SUMMATION FOR THE NRA

LIST OF REPRESENTATIVES ATTENDING THE RURAL SEWERAGE FORUM

8 December 1993, Brooke House, Warwick

N.R.A.

Bristol Head Office:	Dr P Chave
Anglian Region:	Mr M Sargeant
Northumbrian Region:	Mr G Hoddy, Mr J Ellis, Mr Peacham
Severn Trent Region:	Mr K Wagstaff, Mr C Tucker, Miss J Kimber
Southern Region:	Mr J Frake
South-West Region:	Mr A Holt
Thames Region:	Mr P Chatfield
Welsh Region:	Mr T Whittaker
Wessex Region:	Mr I Legge, Mr P Hall, Mr B Grey
Yorkshire Region:	Mr P Evans

Local Authorities

Bassetlaw DC (Notts):	Mr E Hillom, Mr C Jones
Cheltenham BC:	Mr Philip
Cotswold DC:	Mr A Lowe
Coventry City C:	Mr N Eaton, Mr R Webster
Daventry DC:	Mr M Derbyshire
Eden DC (Cumbria):	Mr D George, Mrs H Bane
Gloucester City C:	Mr D Wise
Harborough DC:	Mr Dixon
Leominster DC:	Mr Preece, Mr Tector
Malvern Hills DC	Mr M Robinson
Redditch BC:	Mr R Matthews
Rugby BC:	Mr J Bell
Stratford on Avon DC:	Mr T Barrett, Mr Ashford
Stroud DC:	Mr D Jones, Mrs L Edwards
Tewkesbury BC:	Mr M Davis, Mr Pike
Warwick DC:	Mr I Jermond
Wychavon DC:	Mr S Boyes, Mr M White, Mr R Taylor

Others

British Water:	Mr R Harris, Mr R Lewis
C.P.R.E. Worcestershire:	Mr D Burlingham
C.P.R.E. Warwickshire:	Mr Farr
D.o.E.:	Mr M Williams
O.F.W.A.T.:	Mr D Walker
Wormley & District Drainage Assn:	Mr R Grey, Mr E Erde
R.C.C. Warwickshire:	Mr J Hicks

SUMMARY OF PROCEEDINGS

SESSION 1

Presentation of the Rural Sewerage Project progress to date, including details of Attitude Survey carried out in affected villages and Priority Score system developed to rank the communities in terms of pollution impact.

Key Issues:

- The national scale of the rural sewerage problem and its growing impact
- The effect of increased affluence and water consumption in villages and development pressures
- The need to establish legal responsibility for old village sewerage systems, accepted as public in the past and now rejected by the Water Companies.
- The inadequacy of package treatment plants as a general solution.
- Project completion and publication of Report in March 1994

SESSION 2

Presentation of local authority duties and responsibilities, under Planning, Building Control and Environmental Health legislation. The limited value of Environmental Health powers and the inability of local authorities to tackle matters for which they do not have specific authorisation.

Key Issues:

- The need for a legal test of the Water Companies' Duty under S94 of the Water Industry Act 1991 and OFWAT's interpretation
- The high cost of requisitions and the difficulty of securing funding for sewerage when viewed in competition with other local authority capital schemes
- Concern at the attitude of Water Companies forcing an apparent return to pre '73 reliance on local authorities for sewerage provision.

SESSION 3

A Case Study of Wormley, Surrey, outlining the frustrations of local people in attempting to secure action from, initially, Southern Water Authority, then Southern Water Ltd. Confusion over Ministerial pronouncements. The judgement by OFWAT, that, although Wormley is not "effectually drained" (S.94, Water Industries Act 1991) the cost of making it so must be borne by the beneficiaries and not Southern Water.

Key Issues:

- The Director General of OFWAT's interpretation of S.94, as detailed in their Note 11 (See Appendix 4)
- The technical inadequacy of solutions proposed by OFWAT
- The need for rapid decision on the DoE Review

SESSION 4

Report on the DoE Review of Rural Sewerage and First Time Sewerage Grants, which is awaiting Ministerial Decision. A critical discussion of the powers of Local Authorities, the NRA and OFWAT in respect of rural sewerage. Examination of the costs likely to be generated, their distribution and the mechanisms needed to enable solutions to be progressed.

Key Issues:

- The key role of Local Authorities through Planning and Building Control powers
- The need for the NRA to establish clear procedures for addressing planning applications in areas lacking adequate sewerage
- The need for clarification of S.94 and a review of OFWAT's ruling in Note 11, which does not carry conviction
- The need to involve the NRA in determining whether an area is "effectually drained"
- The need for a decision on mechanisms to decide the distribution of costs

SESSION 5

An outline of the role of British Water and a discussion of competitive sewerage and sewage disposal provision and the ability and willingness of private companies to undertake "Inset Appointments". The need for equitable Licences and suitable conditions to encourage the private sector to take on the role of Statutory Undertaker.

Key Issues:

- A number of private companies will accept responsibility for Consent Compliance provided they can design, build and maintain the plant used
- The need for careful consideration of process design, even for very small sewage plants
- The need for clear forward planning of consent standards and agreed mechanisms for cost adjustment in the event of changed circumstances

SESSION 6

A presentation of the history of procedures and legislation affecting rural sewerage and a discussion of OFWAT's views on S.94, as expressed in Note 11. OFWAT's views on Water Company charges for requisitioned schemes and on alternatives to connection to existing main drainage. Licence issues raised by the possibility of "Inset Appointments".

Key Issues:

The Director General's wish to encourage competition through "Inset Appointments" and the need for simplified Licences for simple Appointments

The problem presented by the right of connection to a public sewer and the possible uncertainty for an "Inset Appointment"

- The need for careful consideration of the pros and cons of Management Companies vis a vis "Inset Appointments"
- The need for planning of Consent conditions by the NRA for a timescale of up to 30 years

SESSION 7

Summation and feed-back from delegates.

Key Issues:

- The need to maintain momentum on the issue
- The wish of the NRA to act as a facilitator and establish a Centre, probably developed from the Rural Sewerage Project to act as an internal and external contact on the subject
- The need to involve the Water Services Association in future Forum meetings
- The next meeting of the Forum to discuss the Project Report, in spring 1994.

KEY ISSUES ARISING FROM DISCUSSION BY DELEGATES:

- The national scale of the problem
- The need to consider potential groundwater pollution as well as surface water
- The difficulty of gaining public agreement for schemes dependant on significant individual contributions and the need for local public involvement in proposed solutions
- The change in legislation between the 1973 Act and 1989/91 Acts, removing the requirement for sewers to be requisitioned as the only route for provision and the need to test the Water Companies' continued emphasis on the requisitioning route
- The shortcomings of cesspits as a strategic solution, considered acceptable by OFWAT
- The lack of Case Law in this area
- The possibility of very local "Inset Appointments", covering single villages, with all residents being shareholders in the company
- The potential problem of trade effluents for "Inset Appointments" Concern at the proliferation of individual private plants
- The effect of a proposal for an "Inset Appointment" in getting Water Companies to reduce their costs and thereby obviate the need for a separate Appointment.

TEXT OF SESSION 4

Presentation by Mr Michael Williams, DoE

The following is the whole agreed text of Mr Williams presentation.

I am pleased to be able to speak to the Forum. I am sorry not to be able to announce my findings. I completed the review some time ago but the report is still being considered at a higher level within the Department. I may have to address some points again. All I can do today is to give an indication of the main issues addressed in the report. Bearing in mind that it is still a document within the Department I will try and be as open as I can be but I must say that you will have to treat my words as, for the moment, my own views. They can not be taken to commit the Department.

I have been addressing two main questions. First, what can be done to ensure that new developments include satisfactory provision for sewerage?
Second, what is the most cost effective way of dealing with the problem caused by existing developments?

I'll begin with the first.

Here we must look to the planning system and building regulations. The planning system has been criticized but it does in fact offer some help.

The adequacy of sewerage arrangements is a material consideration that planning authorities are expected to take into account when deciding planning applications; but they have to consider applications on an individual basis, and sewerage considerations cannot always be paramount. It must be, and will remain, a case by case pattern.

Building Regulations cannot be relied upon to prevent problems. Local Authorities can reject builders plans that fail to show "satisfactory provision for drainage" but they, i.e. Local Authorities, are prevented by a legal ruling of 1947 from taking account of the potential wider environmental consequences. They are expected simply to rely on their other powers to deal with nuisances after the event. Now I have become very familiar with difficulties when using these powers.

I did, however, find some encouragement with respect to package treatment plants. Prices seem to be falling and the quality improving. The trade body, i.e. the Small Treatment Plant Manufacturers Association, commissioned WRC to prepare a draft British Standard which the BSI have now circulated. Comments are due by the 15th of March and I understand from the BSI that the final version is expected in about a year's time. It will cover a package treatment plant's ability to produce an effluent of an acceptable standard and the maintenance requirement for the plant.

I think local authorities are best placed to prevent new problems from arising because of their combined responsibilities for Planning, Building Regulations and Environmental Health. Many of you have a good deal of experience in this area and I should welcome your views.

It may be that the Department could help by issuing guidance reflecting the best current practice. This advice would need to be drawn up in consultation with the NRA, the Local Authority Associations and the relevant professional and commercial bodies. Planning Authorities could then refer to this advice in their development plans thus providing a framework to guide developers and landowners. They could then tailor the advice to suit local circumstances when considering individual planning applications.

In addition I think the NRA could bolster their position by establishing clear procedures for commenting on planning applications in sensitive areas and by proceeding with the planned detailed mapping of groundwater vulnerability. An option for government would be to extend Building Regulations to cover the impact on the environment of septic tank soakaways and drainage fields thus removing the inhibiting effect of the 1947 legal ruling. Of course there is a problem with changing the legislation in the light of deregulation initiatives.

I doubt if there is a panacea that will prevent any new problem from arising, but I think that a mix of measures of this kind taken together would prevent the great majority.

Now for my second question - how can we solve existing problems? One main obstacle lies in the lack of a clear responsibility for extending the sewerage network. Section 94 of the Water Industry Act 1991 places upon Sewerage Undertakers the obligation to "provide, improve and extend such a system of public sewers and so to cleanse and maintain those sewers as to ensure that their area is, and continues to be, effectually drained".

As we know the Sewerage Undertakers argue that this obligation applies only in respect to responding to requisition. They will say what is the point of having a requisition procedure if the obligation lies with us. They therefore shift the onus back onto local authorities and householders. Local Authorities for their part are showing increasing reluctance to exercise their powers to requisition. This is shown by the declining level of expenditure on requisitioning in recent years.

Recent rulings by the Department and OFWAT have done nothing to clarify matters. On Fulmer, the Minister has said "we do not accept the argument that the duty to provide public sewers so that the area is effectually drained, can be discharged solely by responding to requisitions. Equally however, we do not think that a Sewerage Undertaker is required to provide public sewers so as to drain every single property in its area". The problem is that it does not really say in what circumstances it does apply. Of course that is a matter ultimately for the Courts.

On Wormley the Director General has said that he would be ready to enforce the duty to drain only in areas where "unsuitable geology, potential aquifer pollution risks or other practical problems render existing or alternative systems impractical". So far as I can judge -and I think this is confirmed by what has been said earlier - cesspools would be feasible in virtually all circumstances provided (and it's a large proviso) they remain impermeable and are emptied frequently enough. Fine in theory, but the problem lies in ensuring that they are kept watertight and are emptied regularly.

The Director General does not address these problems and therefore his ruling has failed to carry conviction.

What we need it seems to me is a mechanism for deciding:

1. Whether sewage disposal and treatment arrangements for an area of existing development are unsatisfactory;
2. If so, whether improvements should be by way of improved non-mains systems or by mains connection;
3. If improvement is to be by means of mains connection then who is to pay.

At the moment Local Authorities are left to judge the need and to meet the bulk of the cost. The only alternative is to appeal to the Director. But we have seen that the chances of success are slim. And there is any case something odd about requiring the Economic Regulator to rule on the essentially technical matter as to whether or not an area is effectually drained.

Any arrangement for judging the need for mains connection must balance costs and potential environmental gain. It seems to me that there are two possible ways forward. The first would be establish a right to apply to the NRA to rule on whether there was an environmental case for mains connection, while permitting the Sewerage Undertaker to apply to the Director to rule on whether it could be justified on cost grounds. Another would be to require the Director to consult the NRA before ruling on whether an area is effectually drained.

Under either route there would need to be some mechanism for ensuring that cost and environmental considerations are weighed together - that seems to me to be axiomatic. But then the problem is who is to pay.

We have arrived at the present impasse by relying mainly upon Local Authorities with some help from the Exchequer. For obvious reasons we cannot look for more money from either quarter. Realistically there are only two ways of generating more money to pay for extending mains sewerage where there is a need. Either the householders, or customers generally, will have to meet the bill.

The first option - looking to the householder to meet the cost - might be justified in terms of a strict application of the polluter pays principle, but it would need to be accompanied by a number of measures.

First: it would have to be easier for groups of householders to requisition mains sewerage, e.g. they might be permitted to apply to the NRA for a ruling that the area was not effectually drained and for authorization to establish a company to remedy the problem and to levy a charge on the lines of the sort of management company used by residents in blocks of mansion flats.

Second: users of septic tanks and package treatment plants that required discharge consents would need to be given a financial incentive to meet the cost of mains connection. One obvious way would be for the NRA to charge for all discharge consents and not just for the small minority affecting effluents of more than 5 cubic metres a day.

Third: sewerage would need to be given greater prominence in the process of buying and selling a house. The government has no power over the contents of the forms used in conveyancing, but it could invite the Law Society and the Local Authority associations when next revising these forms to consider ways of giving greater prominence to sewerage e.g. through questions relating to planning conditions or discharge consents.

Fourth: there would need to be some help for low income families if the burden was to be placed on householders. The obvious channel is through house renovation grants payable in support of repairs and improvements to dwellings judged unfit for human habitation. Works to provide an effective sewerage system qualify for mandatory grant.

Fifth: the infrastructure charge would have to be rendered less onerous. Now here there is already some progress. The Director General has said that the charges should be limited to £200, in all but exceptional cases.

Now that is one option and I would be interested in hearing your views on that.

The second would be to require the Sewerage Undertakers to meet the cost. The argument for this option is that people without mains sewerage have already contributed through local and national taxation towards the cost of mains connection elsewhere and therefore have a reasonable claim upon people that already benefit from mains connection. Under this option Local Authorities and householders would be able to seek a ruling that an area was not effectually drained and could be brought to that condition only by mains connection. If the balance of costs and benefits was favourable then the Sewerage Undertaker would be allowed to recover, through general charges, the costs now met through the requisitioning charge.

Householders would continue to bear the connection charge and the infrastructure charge. We cannot be precise about the potential cost of a programme of mains connection which would need to be decided case by case.

About 800,000 properties in England and Wales lack main sewerage. The NRA have recorded incidents of pollution or nuisance effecting about 30,000 across the country as a whole, i.e. about 4% of the total. The distribution varies widely. The area served by Anglian Water is estimated to contain more than half of these problem properties.

My economist colleagues, using a model developed by OFWAT and the NRA figures, have calculated the potential cost of a ten year programme on the following tough assumptions.

1. The average cost per property would rise to £10,000, i.e. twice current figures.
2. The entire cost would be met by annual bills upon householders only, i.e. excluding industrial and commercial customers.
3. The investment would be required to generate a 7% return on capital. (Now that probably needs to be revised in the light of recent publications, but I don't think it's going to alter the broad figures.)

The biggest impact as you would expect would be upon customers of Anglian Water. The additional cost after 10 years would be about £5, equivalent to 4% of the current average bill

of £132. Elsewhere the impact would be much less: no more than £2 after 10 years. Of course, these figures are purely indicative.

It seems to me that the choice between these two options is essentially a political one. The first option would be complex and fraught with difficulties, but one can see the possible attraction for the government. The second would be simpler but would involve increasing the charges which are causing considerable anxiety in any case. Whatever the choice I would expect the government to want to consult before reaching the decision.

I have said nothing about either requisitioning or Rural Sewerage Grants. I see no reason to remove the present powers to requisition. Under either option there would be cases where local authorities might wish to take the initiative. Similarly, it would be possible under either option for the government to continue to make a contribution. The decision whether to retain the present powers to pay grants will be one for Ministers and one which I would not want to anticipate at this stage.

DISCUSSION

Mr. Hillom, (Bassetlaw DC)

Referring to the Water Companies' duty and the requisitioning procedure, Section 14 Subsection 14 of the 1973 act defined the duty of every Water Authority to provide adequate or effectual drainage. Section 16 was the critical section on requisitioning which made it possible for the Water Authorities to say "if you want a sewer you must requisition it and therefore pay for it". Section 16 Subsection 14 says that "nothing in Section 14 above (which is the duty to provide) or any arrangements made under Section 15 above shall be taken to impose on a water authority any such obligation to provide a public sewer as may be imposed on them under this section without the requirements for this section being satisfied".

That was the reason the Water Authorities could say, "if you can requisition it we don't have to provide it without that requisition".

That clause did not appear in the following Acts. The only clause that remains defines the duty falling upon the Water Company. If the duty falls upon the Water Company the cost must also fall upon them, since the obligation that was laid down under S16(14) of the 1973 Act has gone. But the old section is still seemingly being used to say that the Local Authority must requisition in order to enable the Water Company to provide sewers!

The whole thing hinged on that section in the 1973 Act. I took legal opinion in '75-76 and that was the clause I was quoted - "the Water Authority has a duty but the requirement for requisitioning takes precedence".

I have again taken legal opinion and am now advised that since the critical clause has disappeared from the legislation, the "hat-hook" has gone and therefore the "hat" has fallen!

Mr Williams

I think the argument would be that it's a different regime now following privatisation and that

the appropriate recourse is to the Director General to enforce that obligation. He would then decide on a case by case basis the circumstances in which the obligation would apply.

Mr Hillom

But surely that was done (at Wormley) and as I understand it was deemed by OFWAT that the people who benefit should pay. Where does it say that within the Act?

Mr Williams

OFWAT have a responsibility broadly to avoid cross-subsidy. As far as possible prices should be related to costs. On the principle of avoiding cross-subsidy they argue that the cost of mains provision should be borne by the beneficiary. They do acknowledge I think that there would be external benefits and that you cannot confine the cost to the householders. But again their argument is that you need to decide the distribution of cost on the merits of a particular case.

The problem is we don't have a body of Case Law. We have in effect two judgements, one in the case of Fulmer and the other one by the Director General in the case of Wormley. They are rather similar but there is quite insufficient Case Law to date to provide real guidance.

Mr Hillom

I can see the duty to provide falls upon Water Companies, but I can't see any reference anywhere else to the fact that they can charge. It appears we are now arguing that they have the duty to provide but no responsibility to pay for what they are providing.

Mr Williams

I think you need to look at a particular provision within the context of the Act as a whole, and I am sure there are provisions for them to charge for their services. They are commercial undertakings, they don't operate "pro bono publico", and there is the recourse to the Regulator.

I've acknowledged that there are problems in expecting an Economic Regulator to rule on what is essentially a technical matter, i.e. judging the extent to which non-mains arrangements could work effectively in a particular area. Now I have said that you need to have some means of judging the need, some means of balancing cost against environmental protection considerations-that seems to be axiomatic. At the moment we don't have that and so it is not surprising that OFWAT find themselves in difficulties by making this ruling which does not seem to command conviction.

Dr Chave

This area (of paying for sewerage) is outside the NRA remit, but it seems to me that it is not an economic argument as much as a licence argument. The licence for the Water Companies to operate will contain this duty, and that is the bit that needs to be addressed.

Mr Hillom

Villages are suffering because they have no mains drainage. Virtually the only recourse the District Council has is to serve notice, using Environmental Health powers, on the very people that are suffering. The Water Company answer is always "it is not our problem, you must ask the District Council to requisition". I feel that that is wrong.

Mr Walker (OFWAT)

I would like to point out that requisitioning is not limited to Local Authorities and any group of people can requisition. The conditions they then have to meet are rather onerous and OFWAT intends to see those properly regulated and not abused by the companies.

I thought Michael Williams was very helpful in analysing the situation in the way he did, without committing his Ministers.

He mentioned to me that he was not optimistic about Inset Appointments providing the way forward so I think it would be helpful to have a brief indication of his concerns.

Mr Williams

I reached that conclusion in the light of discussion I had with one of your colleagues about 6 months ago. I felt in practice that any company that was likely to take on the role was likely to offer much the same costs as the Water Company and there wouldn't really be much of a saving.

I've pursued the rather similar idea that householders could set up a management company of some kind to operate a local scheme.

Mr Davis, (Tewkesbury BC)

Take the example of Walton Cardiff, with 16 properties. An Inset Appointment would presumably involve the Local Authority and some other bodies. But the cost of the scheme would still be £260,000 because Severn Trent would be the receiving neighbouring utility and would still insist on positive foul drainage and positive surface water. The alternative of a sewage treatment plant would make it cheaper but is difficult because the village is in the middle of the flood plain.

Mr Walker

On an important point of information, if an Inset Appointment was proposed, the technical conditions would be nothing to do with Severn Trent Water. The technology to be adopted and the need to separate surface and foul would be a matter for the Inset Appointee to negotiate with Severn Trent NRA. If a cheaper solution could be found then that might assist the way forward.

Mr Williams

But why should it be possible for another company to come up with a cheaper mains drainage solution than the existing undertaker?

Mr Lewis (British Water / Tuke & Bell Ltd)

Mr Chairman, can I answer that. I'm from one of those commercial companies. Commercial companies don't enjoy the same level of profits, the same level of pay, or anything like the same level of costs or overheads. We aren't saddled with a specification evolved over 50 years whereby clauses are added and never taken away. We can also adopt new technology. There are plenty of commercial opportunities. You work out a Water plc's profits and then tell me if they can't be beaten!

Mr Erde (WADDA)

If an ordinary householder was here today they'd be absolutely amazed at this quagmire and the way in which government, Water Companies and Local Authorities have got themselves tied in knots. It's utterly absurd.

Mr Tucker

Could I make a comment on Michael's point about management companies being set up to run a communal plant. The management company comes from local people working together whereas the inset appointment is effectively approaching it from the other end, i.e. a company which comes in to provide a service in a locality. There is little difference between them apart from the degree of protection for the shareholders. They're both trying to achieve the same end and an Inset Appointment, with the correct degree-and I emphasise the correct degree - of regulation and licence conditions which ensure that it is viable and has permanence, offers a very suitable way forward.

Mr Williams

My discussions with OFWAT on this point were some six months ago, so it may well be that thinking in this area has developed and its certainly something that I'll come back to.

Mr Lewis

My company and a number of others maintain and operate private sewage treatment plants at schools and major retail parks. For example, we're doing a job in Italy at the moment and a key factor is the ten year operating agreement. They're judging us by whole-life costs, not just the capital cost. New technology can move faster in certain companies than in others.

TEXT OF SESSION 6

Presentation by David Walker, OFWAT

The following is the whole agreed text of Mr Walker's presentation.

I'd like to outline the history before I come on to Inset Appointments. As everyone in this room appreciates, this is not a new problem. Statutory Undertakers, whether public or private, have never had the obligation to serve every household in the country or to serve every household at the same price. The fundamental problem is how far should the Statutory Undertaker extend its system and how should it charge people for those extensions.

I spend much of my time questioning exorbitant connection charges, either by electricity companies or by water companies, but at the same time I am also concerned not to expect other customers necessarily to contribute to rural sewerage.

After the war, rural sewerage was extended on the basis that the rural district council paid a third, the county council paid a third and the government paid a third. Quite a lot of work got done under that system, the bigger villages being dealt with first.

By 1961 it was beginning to be appreciated that people were making windfall gains out of this system where they owned the land next to the new sewer and promptly built new housing estates on it. So there was considerable "Planning Gain".

~~The government's first attempt to recover some of this gain was in 1961 - well before~~ requisitioning in 1973 - when they legislated to allow local authorities to collect contributions from the beneficiaries of the rural sewers.

~~These provisions were ineffective and in 1973 requisitioning came in. Working parties~~ laboured long at the National Water Council to recommend how the requisitioning procedures ought to work.

The situation was affected again in 1975 by Mr Daymond in Devon who resented paying for sewerage when he was not connected to the sewer. The House of Lords, by a majority of three to two, decided that he should not have to pay, to the consternation of the water industry.

This affected rural sewerage in two ways: firstly, there was a greater reluctance on the part of the undertaker to contribute to the new scheme from the general body of tax-payers, because it was no longer the case that the people in the unsewered village had been paying already through their rates. The other problem was that people now realised that if they were going to be connected to the sewer they were going to pay more. So there was a greater reluctance to connect.

The Daymond case was quite a set-back for the cause of rural sewerage and it came at the same time that the water authorities were under pressure to reduce public spending. This was also when the more expensive villages were expecting to become sewered. So there were a

lot of things happening against rural sewerage in the mid-'70s.

Where there is a problem in a village the question needs to be answered "is main drainage the solution and who should pay for it?" Often, main drainage increases house values. It certainly increases land values if people have got planning permission. There may be scope through "Grampian Conditions" to extract the planning gain.

Then there is the problem that some are unwilling to connect and some resent development anyway so don't want a sewerage scheme. The point was brought out earlier that in rural areas you can still have industry, with some quite nasty effluents - farm waste, vegetable processing, turkey farms etc. The solution needs to be looked at as a whole.

Coming on to the present day, the OFWAT Note 11 has been eloquently referred to already. In this the Director General says that even where he has made an order that the company has not made arrangements effectually to drain the area, he would seek an arrangement that the costs are not borne by the general body of customers but are properly levied on those who will benefit by the scheme.

Unusually for Ian Byatt, he says it again. In the next paragraph he says "the Director General believes that charges must be properly levied on those who create the costs. He will not support general charge increases to fund extensions to the system." This reflects the fact that the Director General feels that his obligation is to keep down the bills of the generality of customers. It is clearly a very important issue.

On the other hand, the Director General, in seeking to encourage companies to recover costs from the beneficiaries would also want, very strongly, to avoid any risk of double charging. It would be most unfortunate if a water company through its connection charges, infrastructure charges, requisitioning and all the rest, collected the whole cost of the scheme and then levied the normal sewerage charges, with "rpi + k" on top and perhaps made the people who paid for the rural scheme pay for other people's quality improvements as well.

So the first plus point is that, in asking the recipients to pay, OFWAT would be determined to ensure that the revenue from their charges was taken into account and that they didn't pay for other people's schemes as well.

The second point is that the Director General is very conscious of his obligation to facilitate competition from new entrants and that is why he would like to look very seriously indeed at Inset Appointments.

The third point you may know is that he's taking a pretty close look at the rate of return on new investment at the moment and is determined to confine this to a reasonable level.

Inset Appointments fall within the following range of solutions:

- a requisition on the established undertaker under fair terms, which may be a requisition from a group of persons other than the local authority. OFWAT will make sure that the arrangements for guarantees and deposits are not unreasonable.

- the Inset Appointment, i.e. an arrangement under which any limited company can apply for an appointment as a water or sewerage undertaker (or both) for any "green-field" site. A village is of course a "green-field" site if there are no water company sewers in the area. Anyone can apply for appointment as a sewerage undertaker and I'll come to the conditions in a moment.
- the third arrangement is some sort of Management Company. The choice between an Inset Appointment and a Management Company is a very fine choice and shouldn't make a lot of difference in the end to the costs.

There are some other important differences. An Inset Appointment needs a Licence and, at the moment, the only Licence on offer is this one (the Water Utilities Licence, a thick document). If people really wished to pursue Inset Appointments for rural sewerage I think that we, OFWAT, would need to consider simplified forms of Licence for simplified Appointments.

An Inset Appointee has the advantage that he has powers to lay pipes in the highway and powers of compulsory purchase. He has the disadvantage that he requires a Licence and becomes subject to price control. Mr Davis raised the very important point that anyone can then connect. That may be not too bad for foul sewerage only, but there are big questions that might arise from rights for other people to discharge surface water or trade effluent.

It seems that, once you've got a sewer, anyone can join in and put anything down it. That is really quite tricky - particularly if there is a turkey farm - and is something that would need to be considered very carefully in the pros and cons of the Inset Appointment versus the Management Company.

The Inset Appointee would definitely be responsible for sewerage and sewage treatment unless he happened to be near to a public sewer and wanted to negotiate an arrangement with the neighbouring sewerage undertaker, but I don't think that would be a winner.

Customers would have to pay for treatment as well as sewers, but that's the smaller part of the bill and the companies aren't giving it away at the moment. Although you only requisition the sewers, you can be sure that you're going to pay for the treatment one way or another.

Many of the things Dick Lewis said about a private company offering scope for more cost effective arrangements are valid, but of course the customers would be very well advised to seek references from people who are already served by that company. OFWAT would like to see a few people competing to provide "Build and Maintain" Inset Appointments and all of us would want to know what sort of job they do. That's the best safeguard there is.

The price control would need very careful thought - the water companies at the moment have "rpi + k" for 5 years ahead. It would be interesting to find out if the Director General might be prepared to consider "rpi + 0" for 30 years instead. That's something that would need to be explored with the Appointees and the customers.

Finally, I would hope that Inset Appointments, if we could overcome the important problem of the right to connect, would be useful in putting pressure on the NRA as well. I think the potential appointee would want to know what the consent conditions were -and not just for a year or two, but for the next 30 years. Neither the appointee or the Director General would want the Licence opened up again with new consent conditions. Hopefully there would be pressure on the NRA as well as the Inset Appointee to negotiate reasonable terms at the beginning of the job.

I emphasise Dick Lewis's point that the Inset Appointment does offer scope for a lower cost solution but not by any means a cheap solution.

DISCUSSION

Mr Holt (NRA South West)

You're talking about a 30 year time window and suggesting the environmental standards would be some sort of tradable commodity. We all know that within a 30 year period development takes place. The standards which the NRA would apply within, say, a 5 year time frame, would certainly change with further development. How are you going to take that into account?

Mr Walker

This is linked up with the point about the right of connection. I'm not saying it has got to be a 30 year Appointment, I'm just worried that a lot of the reasons for this document (the water company licence) being so thick is that there is the scope for reopening and changing the rules. I wonder if one way to reduce the thickness of this document would be to define more of the conditions "up-front" at the beginning and make it last for a longer term.

I hope that the NRA would be able to look ahead in environmental terms, but I entirely accept the point that we would all need to think what happens if you get extra load on the new works. You want to get an inset package that is well defined, but I don't think the law would allow us to keep future developments out of the sewers. This is one question that I'm going to take away today.

Mr Davis

Section 2.3 of my paper sets out the local authority's planning powers. You can use "Section 106" agreements and establish a strategic policy within your District Development Plan in harness with the Inset Appointee. The two must run together. I think legislation is still weak at DoE level.

Mr Walker

I would hope that planning powers and building control could be used in a more draconian way, but the trouble is, people can't have a free, de-regulated, stand-on-your-own feet society on Mondays, Wednesdays and Fridays and help-your-neighbourshare-the-cost-of-the

~~sewerage, society on Tuesdays, Thursdays and Saturdays!~~

People have got to decide whether they're willing to accept the conditions on planning and building control which would enable us to do this sort of deal.

Mr Wagstaff

Surely, as now, if you get a developer coming along wanting an extension to a treatment plant he has to pay for that extension, so the same should apply here you have an Inset Appointment.

Also, would Inset Appointees have the same powers to apply trade effluent consents?

Mr Walker

A sewerage appointee with an Inset Appointment would have exactly the same powers and duties to control trade effluent and to charge for it as any other sewerage undertaker.

As to contributions, OFWAT finds it hard to understand why incomers should have to pay the whole cost of new plant and then pay the normal charges. In his latest document - published in November - the Director General is against high infrastructure charges and the idea that if you pay for new plant you also pay through normal charges for existing plant. We need to work out how far people are paying through the contribution or paying through the normal charges, to make it clear that there's not double counting.

~~So the incomers would have to pay similar contributions and similar charges to the initial users~~
within an Inset Appointment.

Dr Chave

Would the normal charges cover increased capital expenditure if that was necessary?

Mr Walker

It depends on the "club rules". The trouble is that if the existing "club" have agreed to pay £5000 up-front and £200 a year - and I'm trying to put forward realistic numbers - then they would want to make sure that any new joiners had to pay at least the same amount, but, we would hope, not more. The problem might be enforcing the same "club-rules" on the incomers - who have a right to connect! That's what we've got to think out.

Mr Wagstaff

If you get industrial developers coming onto a sewerage system and paying the cost of extension of sewage works they can have their trade effluent charge proportioned to their contribution. There are ways and means through the charging mechanism to make newcomers into Inset Appointments meet the rules. It doesn't have to be all or nothing and their annual charge could be set against the contribution they're making to the extension of the works.

Mr Walker

Yes I agree that may be the best way to control the incomer problem, that while people have the right to connect they're subject to the same charging arrangements as other people, i.e. in respect of the same combination of up-front contribution and annual payment. But it will be difficult at the same time to keep Inset Appointments simple.

Mr Lewis

In these type of communities, trade effluent isn't a major problem, though I accept it is occasionally. The normal problem is sewer capacity and the greater cost is in the sewers, not the treatment plant. Extending a treatment plant can be done relatively cheaply, but increasing sewer capacity is costly.

As to trade effluent problems, more and more those sorts of difficult premises wouldn't be getting planning permission anyway, because of other planning constraints. I accept the problem has to be covered but I don't think it would be the normal situation.

Mr Holt

To take up the point about the stability of consent conditions. One way would be an understanding that the original conditions were set on a load basis relative to the dilution in the watercourse, so that if there was an increase in load to the works the consent conditions would have to be varied accordingly, to keep the loading constant on the watercourse.

Mr Walker

The existing water companies sometimes seem to overlook the fact that extra load means extra revenue. They come to OFWAT and say "Oh dear, people are putting extra load on our facilities, can we have it back in "k" and can we have a bigger investment programme". Their job, as enterprising companies, is to secure the revenue that goes with it. Ian Byatt's theme on paying for growth is that if you've got your charges right the growth should pay for itself.

But we want the Inset Appointee to have a predictable arrangement otherwise he won't be interested in taking it on.

Mr Lewis (to Mr Holt)

Can I explain the problem. A 25/45 standard means a conventional plant, but a tighter standard means tertiary treatment. Then if you hit me with a tight ammonia standard I'm into ridiculous treatment. Unless that is quantified up-front, no commercial company will take on the risk, i.e. that you have the right to tighten the consent on the basis of load v. dilution. The problem is the movement from one type of treatment to another.

Mr Walker (to Mr Lewis)

You made the point yourself that existing incumbents will soon create trouble if the Inset

Licences seem loaded in favour of the new Appointees. I'm not disagreeing with you but we've got to work out the balance and try to make it predictable. The Management Company route may still be better.

So far, while OFWAT has had 3 or 4 applications for Inset Appointments, none of them has matured. In all cases the incumbent has looked at its figures again and discovered, surprise, surprise, that it can afford to offer a better deal than it at first thought! Thus competition can reduce costs.

Mr Lewis

If I were the water plcs, I'd look to Mercury and BT as the parallel and I would deem even a financial loss preferable to allowing anybody else in. So we might actually help people by forcing the incumbents into doing something. From their point of view, I'd not want any form of competition, because that allows OFWAT some comparison figures for the first time.

Mr Tucker

As you say the licence conditions are the key to Inset Appointments. I'm interested to note in OFWAT's document on encouraging competition that you say that any Inset Appointment would have to be developed in conjunction with the NRA and that all these questions would have to be discussed and agreed at the beginning. So I hope that the problems which you're talking about would be more theoretical than real. The situation where there was a problem with trade effluent would, in fact be very rare.

I'm interested in the way in which Inset Appointments would actually come about. As you rightly said, Mr Lewis, you weren't looking at funding. Whether an Inset Appointment would be 10%, 20% cheaper or not is neither here nor there if nobody has actually got the money.

For the small communities we're talking about, local acceptability of the scheme is a key issue and therefore the integral involvement of the people in that community and their representatives in the District Council or whatever. It won't happen unless there is local commitment.

With local acceptance and involvement, I think that the questions of public access to the sewers and the detailed licence conditions could be resolved and put together as virtually an agreed package to come to OFWAT, ready to go.

If the people in the area are prepared and want to see it happen then the funding will follow.

Mr Lewis

Obviously, any commercial company has to identify the risk. It's predictability that we need and as soon as you have predictability you can put together the financial engineering. In the end it's a question of whether people like the price or not.

So, assuming the right Licence can be worked out, which is predictable, the funding can follow and, while it should give a cheaper package than what is currently being offered, it will not be a cheap package.

Mr Tucker

Could I ask one further question of David. In a situation where a company has been set up to serve one community and one community alone would you see the Licence conditions being the same as for a company that covered a much wider area?

Mr Walker

Well, OFWAT, so far, has not been able to work out an easier Licence for Cholderton Water Company, which is a very small company in Wessex, but Ian Byatt would be prepared to ask his colleagues to put their minds to a simpler Licence for a simpler situation, provided it was not discriminatory.

A simplified licence is not available now, but it is something that OFWAT ought to look at if there are real people really interested.

Mr Holt

I can appreciate the problem with the variation of consent conditions, but if you set consent standards without a fixed volume, then you're sanctioning downgrading of the watercourse.

Mr Lewis

A consent comes with a volume and quality conditions. You come back to the connection issues, the right to connect. The other thing is that the consent might be banded. It has got to come down to "if this changes by x", a bit like the water companies, "I get pass-through on my "k" factor."

You have to have the ability to pass on charges if stricter standards are called for. You've got to have some sort of key points that trigger the next level of investment, with the appropriate level of payback.

Mr Chatfield, (NRA Thames)

I'm a little concerned at some of the things I've been hearing about consent conditions. It might be better to have some form of treatment rather than none. In most cases these are very small ditches which don't have quality objectives, so would it not be much better to accept that we're going to get a 45/30 standard discharge into it rather than the settled septage that we're getting now?

Dr Chave

I think Phil's made a very good point here. We're talking about the lowest possible size drains

or works and at the moment we only set descriptive standards in any case.

Mr Lewis

Speaking as someone who used to run works, I'd much rather have a numeric consent.

Mr Derbyshire (Daventry DC)

I think when we start with the principle that those who benefit have to pay, I can't see a solution to the problems unless some fundamental issues are addressed.

With highways, we've got agreements where the County, the District, the Parish and the Residents all pay so much towards the cost and we get a solution to the problems.

If the DoE joined with the water companies, the district council and the residents and actually started to work together we may find solutions which are going to be achievable. If you continue to say that those who benefit must pay you'll get nothing done that's measurable.

Mr Walker

This is the nub of the problem. In Upper Severn Division of Severn Trent we did get a few villages sewered on the basis of sharing the costs between a variety of beneficiaries including incoming developers.

The question is "who are the beneficiaries"? You can sometimes put a deal together whereby the new developer and the existing incumbents meet a good deal of the costs with contributions from the water company and the local authority. But it requires a lot of work.

It's a political issue whether others should share the cost of the rural sewerage schemes. We need a consistent set of principles. But cost sharing is not government policy at the moment.

Mr Derbyshire

We're dealing with villages which are normally very sensitive to development and the chances of getting money in any amount are very remote. I went to a village which we've recently sewered and one of their prime concerns was that the public sewerage system would create an attraction for community development. That is the starting point for most of the villages in my area.

Mr Walker

I agree with you. The question then arises if these ten houses want to keep their village unspoilt by incomers and its going to cost £150,000 to provide a sewerage system, how much do you think the rest of us should contribute?

Mr Derbyshire

I think there are some villages which we will never respond to because the problem is relatively small, but there are others where I think the public purse has got to be prepared to contribute towards a solution. The majority of us benefited from the communal contributions that have been received in the past and really we are putting an unfair burden on problems which need to be resolved now, by taking the line we're currently adopting.

Mr Walker

That may be true in respect of other things as well, but we have to work within the political environment that we've got. I thought Michael Williams' analysis was very clear but it may not be very palatable to ministers.

Mr Gray

I'm going to be agreeable because I realise we've had some very interesting talks. I only want to point out that, excellent though Mr Williams was in his analysis - and civil servants are extremely able - some very difficult decisions have got to be taken. The position is whether the sewerage undertakers are going to be obliged to carry out the general duty, or whether all these brilliant ideas such as Inset Appointments will be seized upon as very good stuff (to add to the delay).

You yourself said, Mr Walker, that the problem was known about in 1975, but despite that, what was done about it in the 1989 act? Nothing really and now all that OFWAT - who two years ago were looking at this, it was all in their Annual Report - has given us after a lot of delay is Information Note 11. Not another word has been said about it in their Annual Report - you'd think the problem had gone away. Now we realise that you're thinking about it! Every time you ask something you find "that's a problem that's got to be solved".

My colleague points out that all communities are a bit different. I tried to get a hundred people to requisition but it was impossible in a local village to get people together.

I come back to my last point. It's not a question for you Mr Walker, you can't answer it. When is the Minister, who said it would be the Autumn, actually going to give the answers? Or is he sitting there saying "Oh, OFWAT is still working on it. Do you think you could hold it up till May?" I shall be looking at everything everybody says, to see a) who's trying to delay, and b) who's trying to get something done in terms of pits in the ground. Not necessarily in a major way, but to make a start on actual work and less talk!

Mr Walker

When ministers are presented with the choice between Michael Williams' two solutions I suspect that if Mr Gray was advising them they'd say "Ah, well, we need more advice from OFWAT on Inset Appointments". We need to see this clarified. I'll be reporting to Ian Byatt and colleagues on today's discussions and we'll try to prepare further advice on Inset Appointments.

PROJECT NEWSLETTER - JUNE 1993

Rural Sewerage Project

Project Co-ordinator: Charles Tucker

Project Officer: Julia Kimber



NRA

National Rivers Authority
Severn-Trent Region

RURAL SEWERAGE FORUM GETS OFF THE GROUND

The first meeting of the Rural Sewerage Forum, held in Tewkesbury on 11th May 1993, was attended by over thirty delegates - from 11 District Councils, 6 NRA Regions, 2 Rural Community Councils, CPRE and the DoE.

The proceedings opened with a welcome from Keith Wagstaff - Principal, Pollution Control, in Lower Severn Area of NRA Severn Trent Region and Project Manager of the Rural Sewerage Project.

Charles Tucker, Senior Pollution Control Officer (Project Leader) and Julia Kimber (Project Officer) presented the NRA perspective.

Local Authority views were demonstrated by Martin Davis of Tewkesbury Borough Council.

Michael Williams of DoE then gave a presentation of the Review of Rural Water Supply and Sewerage Grants being carried out by the Department.

There was general agreement that problems from unsewered rural communities were not confined to Severn Trent, but were widespread throughout the country. Lack of proper disposal facilities gave rise to nuisance and pollution, but the present legislative and financial framework presented major obstacles to efforts to get the problems resolved.

Requisitioning sewers was an increasingly unreal prospect and private sewage treatment plants had many technical and legal shortcomings.

In the absence of a structured means of promoting and financing communal solutions, many communities would face the 21st century with 19th century sewage disposal facilities.

Two further Forum meetings are planned - in October and February - to follow up the issues raised and explore new approaches to resolving the problems of Rural Sewerage.

THE PROBLEM

Rural Sewage pollution raises many issues and questions - technical, legal, financial and political.

THE ISSUES

- ☐ Sewage pollution from inadequately sewered rural communities is a problem affecting all areas of the country - not just the Shire Counties.
- ☐ Septic tanks and soakaways which worked successfully for many years have increasingly failed under the loadings imposed by modern lifestyles.
- ☐ Development pressures and "infilling" within villages has increased effluent volumes while reducing the land areas available for dispersal by soakaway.
- ☐ The performance of private sewage treatment plants is poor and adequate maintenance is difficult to enforce.
- ☐ The Water Utilities argue that they are not responsible for providing sewerage unless requisitioned and financed by others. The Director General of OFWAT has supported this view.

(.... continued overleaf)

Lower Severn Area
Riversmeet House
Newtown Industrial Estate
Northway Lane
Tewkesbury
Glos GL20 7JG
Tel: Tewkesbury-(0684)-850951
Fax: (0684) 293599

THE PROBLEM (continued)

- ☐ Unit costs of rural sewerage are greater than for urban schemes.
- ☐ Local Authorities' capital resources are under intense Central Government pressure.
- ☐ "First Time Sewerage Grants" cover only 35% of qualifying expenditure.

THE RESULT

- ☐ Pollution and public health nuisance will continue to increase and the communities affected will face the 21st Century wallowing in a rising sea of sewage unless ways are found to address the issue - and the constraints preventing its resolution
- ☐ Properties will be blighted and legitimate development will be stifled

THE QUESTIONS

- ☐ Who should be responsible for remedying the problems - The Water Utilities, Local Authorities or the individuals concerned?
- ☐ Is present legislation adequate, or does it require fresh interpretation?
- ☐ Are there effective new ways of tackling the problem other than public sewerage?
- ☐ What role should the NRA have in the process?
- ☐ Is the present First Time Sewerage Grant Scheme an adequate financial mechanism to assist Local Authorities?
- ☐ Should Grant be extended to private companies other than the Water Utilities?

THE RURAL SEWERAGE PROJECT

Severn Trent Region of the NRA has funded a £20,000, 12 month study of rural sewerage problems in the Lower Severn Area of the Region.



*National Rivers Authority
Severn-Trent Region*

THE AIMS OF THE PROJECT ARE TO

- ☐ identify and survey pollution from rural drainage systems to assess the scale of the pollution caused
- ☐ assess the consequences if no action is taken
- ☐ collate information from local authorities and other sources to document the extent of the problem
- ☐ analyse current constraints on the provision of public sewerage



Lower Severn Area
Rural Communities with
Identified Sewerage Problems

- ☐ investigate alternative methods of resolution
- ☐ generate debate on the problem within the communities affected and rural authorities
- ☐ produce a Report for debate within a broad forum
- ☐ prompt action to amend funding provision and legislation if necessary.

FOR FURTHER INFORMATION, OR COPIES OF THE DISCUSSION PAPERS PRESENTED AT THE FORUM ON 11 MAY 1993, CONTACT JULIA KIMBER AT THE ADDRESS SHOWN ON THE FRONT PAGE.

COMMENTS ON THE ISSUES INVOLVED AND LOCAL EXPERIENCE ELSEWHERE WILL BE WELCOMED.

PROJECT OUTLINE

&

DRAFT WORK PROGRAMME

SEVERN-TRENT REGION

FINANCIAL APPRAISAL FOR ALL PROJECTS

Project Title: RURAL SEWERAGE / SEWAGE POLLUTION INVESTIGATION

Project Number: 49326

Planned Start Date: JAN '93

Approval Stage: /

Function:

Area:

1	2	3	4	5	6	7
A	B	C	D	E	F	
FD	CM	EQ	FCR	BS	R&D	
US	UT	LS	LT			

Location: RIVERSMEET HOUSE, TEWKESBURY

Project Manager: K WAGSTAFF

Date:

Specific budget provision included: YES

NO

(if no, indicate how expenditure is to be met)

REQUEST SUBMITTED TO DR WATERS

FOR VIREMENT TO AREA BUDGET

Summarise briefly the options considered and conclusions reached: (identify costs by financial year, and include internal costs, benefits and expected income, continue on a separate sheet if necessary)

SEE ATTACHED MEMO + PROJECT JUSTIFICATION

SPEND PROFILE	:	1992/3	4000
		1993/4	16337
			<u>20337</u>

Preferred option:

(state why this option represents value for money)

EMPLOY TEMPORARY STAFF MEMBER FOR 12 MONTHS (GRADE 3) WITH IN-HOUSE SUPERVISION & INPUT FROM EXISTING STAFF.
(SEE PROJECT JUSTIFICATION)

If preferred option not the lowest state reasons for decision:

LOWEST COST OPTION

Outline consequences of do nothing option.:

- INCREASED POLLUTION
- RESTRICTION ON DEVELOPMENT
- RESOURCE IMPLICATION OF OTHER APPROACHES
- POOR PUBLIC RELATIONS

(SEE PROJECT JUSTIFICATION)

Project Manager Approval

To the best of my knowledge and belief the information is accurate in all respects.

Name: K. WAGSTAFF

Designation: PPCO.

Signature: K. Wagstaff

Date: 5/11/92

Regional Manager Approval:

Signature: [Signature]
Date: 23/11/92.

Regional Accountant Approval:

Signature: [Signature]
Date: 27/11/92

GIN

RURAL SEWERAGE / SEWAGE POLLUTION INVESTIGATION - PROJECT OUTLINE

PURPOSE OF PROJECT AND WORK REQUIRED

- 1) Survey pollution from rural foul drainage systems within the Lower Severn Area, drawing on existing knowledge in the section and elsewhere, liaising with Local Authorities and carrying out field investigations to an agreed programme:
- 2) Identify problem villages, the scale of pollution involved and implications for the future if action is not taken:
- 3) Collate and analyse data to document the scale and distribution of the problem:
- 4) Publicise the action being taken
- 5) Produce a Report for publication and debate in a wide forum.

PROJECT OUTLINE & BUDGET COSTS

Number of rural communities to be investigated	50-75
--	-------

DURATION OF PROJECT	12 Months
---------------------	-----------

START DATE	Jan '93
------------	---------

ESTIMATED ADDITIONAL RESOURCE REQUIREMENTS

STAFFING	COST (£)
- 1 Full-time temporary post (Grade 3) for 12 months (including 30% On-Costs)	14337
- Other staff time (estimated 100 hours)	900
- Essential Travel (10000 m) *	2500
- Out of pocket Expenses *	750

ANCILLIARY COSTS

- Training/ Protective clothing	250
- Telephone/ Stationery/ Postage	400
- Analytical Charges	600
- Additional Publicity/ Costs of Report	600

TOTAL	20337

* Including Supervising Staff

PROJECT JUSTIFICATION

The project is to gather information on a problem for which there is no easy answer - for the reasons stated in the explanatory memo - and use that information to encourage debate and identification of solutions.

The Project is necessary in that:

- the degree of pollution caused by inadequately sewered villages has increased and will continue to increase.
- Individual solutions are not necessarily available or adequate and may require funding beyond individual means
- Pollution Control does not have the staff resources to investigate and document the problem adequately
- there is growing awareness of the problem among the public & Local Authorities
- the wider resources needed to tackle the problem cannot be identified until its scale is known and properly documented
- the Sewerage Undertaker clearly does not consider it has any responsibility to take action
- Local Authorities' Resources are increasingly restricted

The benefits of the Project include:

- identifying problem areas and priorities for action
- arresting decline (and ultimately improving) water quality
- tackling an acknowledged pollution (and environmental health) problem in a co-ordinated and cost-effective way
- drawing public attention on a broad scale to the problem and the action being taken by the NRA to address it
- releasing resources to deal with other issues

The implications of doing nothing include:

- accepting increasing local pollution
- restriction on development in villages affected
- increased pressure on NRA to prosecute individuals
- resource implication of tackling problems on an individual basis - or co-ordinating action by several households
- poor public relations as the NRA is seen to be ineffective in resolving problems

Other Options for the Project include:

- undertake project work in-house using existing resources only
- employ consultants

In-house resources are already fully stretched and the Project could not be completed in any reasonable timescale without additional resources. Employing temporary staff would be likely to involve lower cost than Consultants because:

- temporary staff can be accommodated at nil extra cost
- there are no additional project management charges involved in employing temporary staff
- other staff time costs would be greater in liaising with Consultants
- there would be no travelling costs for liaison meetings with Consultants

PREFERRED OPTION

Employ temporary staff member (Grade 3) as outlined, with in-house supervision and input from existing staff.

VALUE FOR MONEY

The Project provides Value for Money by employing temporary staff at the lowest possible salary grade commensurate with necessary technical ability, supplemented by in-house knowledge and experience of other staff. In-house supervision will enable the maximum benefit to be obtained within defined costs.



CGJ Tucker
SPCO

RURAL SEWERAGE PROJECT

KEY TASKS & DRAFT PROGRAMME

KEY TASKS

- Establish extent of problems/knowledge in other parts of the Country. Circulate details of Project to other Areas, Regions & HQ and seek comments/share experience.
- Carry out programme of investigations into drainage problems in selected settlements involving:
 - establishing selection criteria (e.g. number of houses affected, extent of pollution, development pressures)
 - defining scope of general investigations (i.e. general method of working)
 - defining scope of detailed investigations (i.e. in-depth method of working)
- Establish realistic measures of pollution caused, effects on communities involved, cost-benefit of alleviation, scale in relation to other inputs (e.g. farming) etc.
- Classify & categorise settlements in terms of pollution and benefit from alleviation
- Establish contact with District & Parish Councils, CPRE, CALC, STW Ltd etc.
 - to give information about the Project
 - to exchange information about rural drainage problems
 - to establish interest in forming a Rural Drainage Forum
- If sufficient interest is identified, establish Rural Drainage Forum of LAs, PCs, STW Ltd and other bodies to:
 - analyse history of constraints
 - explore future consequences
 - investigate methods of resolution (e.g. local financing and/or management of treatment plant)
 - mobilise opinion to press for action and environmental improvement
- Maintain internal NRA liaison on progress (i.e. Areas, Regions & HQ)
- Prepare Report, including:
 - General legislative history, review of present position, constraints, future predictions
 - Analysis of data from Survey Programme
 - Classification of settlements and present problems
 - Discussion of future problems and options
 - Appendix of details from Survey Programme

DRAFT PROGRAMME

MONTH 1

- Induction of temporary employee (as required)
- Draw up list of villages to be investigated and prepare working maps
- Set up database or spreadsheet for areas to be investigated
- Circulate other Areas, NRA Regions and HQ to seek comments
- Write to District Council Chief Executives to outline project and seek comments, also contacts (CT)
- Identify and write to Parish Councils (via CALC), CPRE, WIs and other rural bodies, to outline project and seek comments (CT)
- Initial Press Release

MONTH 2

- Visit Councils and other bodies to follow up letters, discuss project and explore interest in setting up RDF (CT)
- Set up database or spreadsheet for contacts and local information, plus other records
- Refine programme of field work in light of comments received
- Start field work and establish rate of working
- Press Release (if appropriate) (CT)

MONTH 3

- Continue field work and refine programme in light of progress
- Project Review
- Establish measures to be used to analyse data
- Hold initial Meeting of RDF (if established) (CT)
- Press Release and/or article to local paper(s) (CT)
- Prepare bones of Report (headings etc) (CT)

MONTH 4

- Continue field work and refine programme in light of progress
- Establish Classification and categorisation scheme

MONTH 5

- Continue field work and refine programme in light of progress
- Hold 2nd Meeting of RDF (if established)
- Press Release (if appropriate)

DRAFT PROGRAMME (CONTINUED)

MONTH 6

- Continue field work and refine programme in light of progress
- Project Review
- Commence 1st Draft of Report

MONTH 7

- Continue field work and refine programme in light of progress
- Continue writing 1st Draft of Report

MONTH 8

- Continue field work and refine programme in light of progress
- Complete 1st Draft of Report
- Hold 3rd Meeting of RDF (if established) to discuss 1st Draft of Report
- Press Release and/or article to local paper(s) (CT)

MONTH 9

- Project Review
- Continue field work and refine programme in light of progress

MONTH 10

- Aim to complete field work programme
- 2nd Draft of Report
- Press Release (CT)

MONTH 11

- Complete any outstanding field work
- Hold 4th Meeting of RDF (if established) to discuss 2nd Draft of Report

MONTH 12

- Complete Final Report
- Press Release (CT)

NOTES

STAFFING

The Project Manager will be Keith Wagstaff (Principal, Pollution Control, Lower Severn Area). Day to day project control and direction of the temporary employee will be through Charles Tucker (Senior Pollution Control Officer, Lower Severn Area).

TIMESCALE

The Project is scheduled to run for 12 months and is ready to start as soon as resources are confirmed and the temporary employee is taken on.

GENERAL

The Programme shown on the preceding pages will be refined in the light of working experience, with the aim of getting the maximum benefit from field work (using temporary employee) to cover a large number of settlements throughout the Lower Severn Area. Present indications suggest the main workload will lie in Worcestershire and Gloucestershire.

Interest has been expressed by two District Councils in the proposed Rural Drainage Forum, which they see as a means of widening awareness of the problems of rural drainage infrastructure and exploring acceptable and affordable alternatives to public sewerage.

If established, this body could continue after the Project is complete and help define a standard approach and post-privatisation strategy for rural sewerage. This would have obvious national significance.

RURAL SEWAGE POLLUTION IN THE '90S

APPENDIX 4

SURVEY QUESTIONNAIRE



NRA

National Rivers Authority
Severn-Trent RegionRURAL SEWERAGE SURVEY

The National Rivers Authority is carrying out a survey of unsewered rural communities and attitudes to the provision of mains drainage. The aim of the project is to record and document the scale and significance of rural sewage pollution and its effects on the community and local environment.

It would aid the study if you could take the time to fill out the following questionnaire, and return it to the N.R.A. in the enclosed envelope.

1. NAME -----

2. ADDRESS -----

3. HOW MANY PEOPLE LIVE IN THE PROPERTY ?

4. HOW LONG HAVE YOU LIVED IN THE VILLAGE ?

5. DO YOU:	COMMUTE TO WORK	A
	WORK IN THE VICINITY	B
	NOT APPLICABLE	C

6. DO YOU HAVE EITHER: SEPTIC TANK A
- SEALED CESSPIT (NO DISCHARGE) B
- PACKAGE TREATMENT PLANT C
- OTHER/DON'T KNOW D

7. DO YOU HAVE AN AUTOMATIC WASHING MACHINE YES/NO
- DISHWASHER? YES/NO
- SINK WASTE DISPOSAL UNIT? YES/NO

8. DO YOU FEEL THAT SEWAGE DISPOSAL IS A PROBLEM IN YOUR VILLAGE? IF SO, WHY?

9. WOULD YOU LIKE TO SEE A MAINS DRAINAGE SYSTEM PROVIDED FOR THE VILLAGE? IF NOT WHY NOT?

10. HOW MUCH WOULD YOU BE PREPARED TO PAY FOR THE BENEFIT OF MAINS DRAINAGE? (NO COMMITMENT IS IMPLIED)

A: NOTHING B: £100 C: £500 D: £2000 E: £5000

11. DO YOU THINK THERE SHOULD BE MORE HOUSES IN THE VILLAGE?

THE INFORMATION GATHERED IN THIS SURVEY WILL BE TREATED AS CONFIDENTIAL.