

Rural Sewerage Project

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Project Officer: Julia Kimber



NRA

*National Rivers Authority
Severn-Trent Region*

RURAL SEWERAGE FORUM SECOND MEETING

8 December 1993:
1000 - 1530

PROCEEDINGS



NEA THAMES 220



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The Rural Sewerage Forum was established as part of the Rural Sewerage Project run by Lower Severn Area of Severn Trent Region of the National Rivers Authority.

It aims to promote discussion of problems related to inadequate rural sewerage and investigate the extent of these problems throughout the country.

It aims to act as a focus for development of new ideas and practical, affordable solutions to rural sewerage problems.

The first meeting of the Forum was held in Tewkesbury in May 1993, attended by 33 delegates, representing local authorities within the Project Area, other regions of the NRA, the DoE and local branches of CPRE and the RCC. It became clear that the problems experienced in Lower Severn Area were shared throughout the country and the reasons for difficulties in resolving them were similar in all cases.

The Forum discussed the legal, financial and organisational constraints surrounding the problems and the heightened significance generated by privatisation of the Water Industry. It was agreed to meet again at the end of the year to discuss developments and results from the Rural Sewerage Project and to develop ideas and thoughts raised at the meeting.

Delegates to the Forum have received Newsletters detailing the progress of the Rural Sewerage Project. Further copies are available on request.

One copy of this digest of Proceedings from the second meeting of the Forum is being sent, free of charge, to all bodies represented at the Forum. Further copies will be available at a charge of £3.00, to cover photocopying and postage.

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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**

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

BASSETTLAW DC (NOTTS):	MR E HILLAM, 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 BC:	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

LOWER SEVERN AREA, SEVERN TRENT REGION
RURAL SEWERAGE PROJECT AND FORUM

WEDNESDAY 8TH DECEMBER 1993 : BROOKE HOUSE, SPARTAN
CLOSE, TACHBROOK PARK INDUSTRIAL ESTATE, WARWICK

AGENDA

10.00 COFFEE

10.30 REPORT AND PROJECT PROGRESS
(MR.C.TUCKER, MISS.J.KIMBER-N.R.A)

11.00 POWER AND DUTIES OF LOCAL AUTHORITIES
(MR.M.DAVIS-TEWKESBURY BOROUGH COUNCIL)

11.30 COFFEE

12.00 SECTION 94(WATER INDUSTRIES ACT 1991)DUTIES OF WATER
COMPANIES:A CASE STUDY(WORMLEY)
(MR.R.GRAY-WORMLEY AND DISTRICT DRAINAGE ASSOCIATION)

12.30 OUTCOME OF THE D.O.E.'S REVIEW OF THE FTSG SCHEME(IF
ANNOUNCED)
(MR.M.WILLIAMS-D.O.E)

13.00 BUFFET LUNCH

14.00 COMPETITION IN SEWERAGE AND SEWAGE DISPOSAL
(MR.R.HARRIS-BRITISH WATER)

14.30 INSET APPOINTMENTS
(MR.D.WALKER-O.F.W.A.T)

15.00 THE NATIONAL RIVERS AUTHORITY SUMMATION
(DR.P.CHAVE-HEAD OF WATER QUALITY N.R.A)

RURAL SEWERAGE FORUM, 8 DECEMBER 1993

CHAIRMAN: DR PETER CHAVE, HEAD OF WATER QUALITY
NRA HEAD OFFICE, BRISTOL

Dr Chave opened the Meeting by commenting that the majority of people think of rural pollution as pollution by farm wastes, but if the findings of the Rural Sewerage Project could be extrapolated there could be as many as 2000 communities in England and Wales with pollution caused by inadequate sewerage, affecting a population equivalent of half a million. This was equivalent to a fair amount of farm pollution.

The problem is widespread and has no obvious solution, so could slip through the net of pollution control effort. It had been around for many years, but tended to get swept under the carpet and did not have a high public profile in relation to farms and major sewage works.

He hoped that the days proceedings would help identify an action plan for tackling the problem and points to take up together for the future.

SESSION 1

Presentation by Mr.C.Tucker

(NRA, Severn Trent Region, Project Leader, Rural Sewerage Project)

Papers from this session are reproduced in Appendix 1.

Mr Tucker opened his presentation by showing an extract from the B.B.C. Midlands Today Regional TV News Programme of 1 December 1993, which highlighted the problems of "Village Drains" in two rural communities in Worcestershire. This illustrated the fact that the local Water Company (Severn Trent Water Ltd) had taken no active steps to resolve the problems.

He noted that the first meeting of the Rural Sewerage Forum in May had attracted 33 people, while there were 48 people attending this second meeting. He felt that this increase in numbers illustrated the degree of interest in the problem throughout the country and in the outcome of the Rural Sewerage Project.

The Project background was presented with the aid of overheads, which showed the foul nature of discharges and their environmental impact. Problems that were once minor have got worse over the years with increased prosperity and the loadings imposed by modern life styles, coupled with infill developments, e.g. at Flyford Flavell, Worcestershire.

While package treatment plants are often thought of as solving such problems, experience showed that their performance was only as good as the design and standard of maintenance. Where this was inadequate, the problems could actually be increased.

Some 59 communities have been identified within Lower Severn Area of Severn Trent NRA as having identifiable pollution problems resulting from inadequate sewerage.

It had been estimated that 10% of the study area is not on mains drainage, compared to the national estimate of 4%. The communities in the study represent 10% of the unsewered population, i.e. 1% of the total population in Lower Severn Area.

1457 survey questionnaires had been delivered to date to householders in the affected communities. 782 replies had been received so far, i.e. a response rate of 54%. The questionnaire also acted as a "calling card" and information sheet and its use had helped ensure a positive reaction to the investigations.

All District Councils in Lower Severn had been informed of the Project and invited to send delegates to the Forum. All relevant Parish Councils had been informed of investigations within their areas.

The survey questionnaire was presented and the questions discussed. It had been designed to elicit peoples' attitudes towards drainage problems and the provision of mains sewerage and to get a picture of lifestyles and factors influencing pollution. It did not claim to be particularly scientific, but should enable valid conclusions to be drawn on different attitudes within and between villages and provide comparisons with national data. Personal information would not be used in the analysis.

Maps of each village surveyed are being produced, showing the drainage problems found. A scoring system has been developed to quantify the severity of pollution in general terms and rank the communities in order of environmental impact.

Details of the scoring system were given and the rank order for the villages scored to date. The scores ranged from 13-48, with a median value of approximately 25.

Mr Tucker informed the meeting that the Project Report would be available in draft form by the end of February and suggested that a further Forum meeting could be held to discuss the draft if delegates wished to do so.

DISCUSSION

Mr. Erde (Wormley & District Drainage Association)

WADDA represents a community of approximately 400 houses. They carried out a local survey, which highlighted the low level of knowledge of sewage problems. Householdors were very largely ignorant of their sewerage systems or of the maintenance required. Many thought they were connected to mains drainage.

The general attitude found was amazement that such a problem could be allowed to continue. People were confused who was responsible. Local authorities passed them to the Water Companies and the Water Company gave them a lot of gobble-de-gook about legal responsibilities, leaving them totally baffled.

With regard to cesspools / septic tanks and STPs it was found that what people spend on maintaining their sewage systems was much lower than it should be. But the level of capital expenditure was often surprisingly high, though in many cases it was spent on quite inappropriate measures offered by local contractors. The high expenditure showed the high level of concern.

Mr Taylor (Wychavon DC)

One thing which is apparent is the sheer volume of water being used by householders and the widespread usage of chemicals eg. detergents and bleach. Are you going to do any research on this side?

Mr. Tucker

The chemical aspects are significant and the amounts of domestic products used in villages must have increased several-fold in the past 20 years or so. Strong cleaning products do have an impact on the efficiency of any treatment system, but less so with septic tanks, which provide little more than settlement. What is of more concern is the use of garbage grinders, or sink waste disposal units. These not only require greater water use, but are estimated to add 30% to the organic load in sewage.

Mr. Eaton (Coventry City Council)

You are basing your pollution rating on surface water. What implications are there for ground water from septic tank soakaway systems, particularly in water supply areas such as Coventry?

Mr. Tucker

It is difficult to assess groundwater pollution, without drilling boreholes for sampling and this is beyond the scope of the Project. It should not be ignored though.

The scoring system does relate to surface waters, because that is where the vast majority of problems lie. The typical situation is an area of heavy clay subsoil, where soakaways do not work.

Coventry is a notable exception and there are three areas near the city where ground water could be affected. However, none of the sites fall within Zone One of the old Aquifer Protection Policy of Severn Trent N.R.A. Region, or zones likely to be protected under the new Groundwater Protection Policy.

SESSION 2

Presentation by Mr. Davis (Tewkesbury Borough Council)

Mr. Davis's paper is reproduced in Appendix 2.

In his presentation he concentrated on Section 6 of the paper, covering legal and planning views of the local authorities. He emphasized that local authorities are creatures of statute and cannot deal with matters for which they do not have specific authorisation.

The following references are to specific sections of the paper.

6.1 Mr. Davis felt that OFWAT's interpretation of Section 94 (of the Water Industries Act 1991) had got to be tested through the courts as a matter of principle.

6.2 Local Authorities can continue to requisition sewers, but the question must be - should they? The cost of requisitioning has to be weighed against other community projects, for example, the provision of a car park. It is a member decision that the local authority must make and Finance is often the over-riding consideration.

6.3 Section 112 (Water Industry Act 1991) powers. Local Authorities are well placed, using their planning powers, to seek to get developers to adapt their sewers to suit the rest of an area, e.g. to pick up pollution hotspots, but this will be of little use in rural villages without any sewers, or prospect of development.

6.5 The Building Regulations have limited control as they do not cover the ground /soakaway system.

6.6 An Environmental Health Nuisance cannot be presumed and controls can only address individual problems. In the absence of a public sewer, Environmental Health Officers cannot do anything more than ask people to pump out their septic tanks, unless there is a progressive and deteriorating nuisance. If a sewer is available the situation is different and it is then possible to insist that people connect.

Two and a half years ago the village of Walton Cardiff was given the opportunity of going on mains drainage. The cost was £265,000 for 16 properties, due to the fact that Severn Trent stipulated that there must be a separate surface water sewer. The Environmental Health Department could not support spending £16,000/property on environmental health grounds.

Mr. Davis was interested to note that Walton Cardiff had now been given a high pollution score in the course of the RSP investigations.

6.7 Local Authorities cannot provide treatment facilities themselves. They would have to set up an arms-length Company to operate as an Inset Appointment under the Water Industry Act. The Authority must have a share but cannot be the major shareholder. It now seems that to tackle the problem, local authorities have to replicate that which existed before 1974.

Mr Davis questioned what had been the benefit of 20 years of successive legislation.

6.8 Private requisitions and local treatment for pollution hotspots would have to overcome the difficulty of getting people to co-operate to reach a solution. The Water Company attitude to such schemes cannot be predicted.

6.9 Local Authorities can foster and contribute to schemes, but the question remains - should they? I believe they should, but it is equally a matter for DoE, OFWAT and the NRA to address the morass of legislation which has acted to disadvantage rural communities.

DISCUSSION

Mr Holt (NRA South West)

In order to resolve these problems, the residents in the community itself must have the will to do so. Some will be willing, but others won't. How can persuasion be achieved?

Mr. Davis

One village in my District actually refused to accept a first time sewerage system, because they didn't want any more development. In the absence of public will for the scheme and with little information on pollution levels it dropped right down the priority list.

The solution lies in proving that pollution levels are environmentally unacceptable and then persuading people of the need for the system.

Mr. Gray (WADDA)

When the survey was carried out in Wormley, only a few people expressed concern about mains drainage leading to development. To these people I said that the absence of mains drainage had not yet stopped infilling! DoE guidelines at the time for infilling asked Inspectors to pay almost no regard to any possible drainage problem.

Our local authority, not unnaturally, isn't prepared to serve notices on such a large number of houses, as we would simply vote the councillors out in the next election!

Mr. Davis

The district development plans will go some way to control development. We have made some investigations into the possibility of a planning embargo. The view of our borough solicitor is that this is not possible when there are technical solutions. What you can do is to have a policy in the development plan that developers should take proper steps to avoid pollution, together with the use of Grampian conditions.

Mr. Hicks (Warwickshire Rural Community Council)

I am concerned that you are concentrating on a single issue when there are so many issues to be addressed in rural communities. I believe the questions in the questionnaire lead people in a rather naive way, for example by suggesting that they could connect to the sewer for £100, when we've heard that £12000 to £16,000 is a more realistic figure.

Mr Davis

Community needs are researched through the development plan process and the NRA survey was not designed to duplicate that. The questionnaire may have led people in a certain direction, but at least it got answers. Over 50% response is astonishing.

Mr. Walker (OFWAT)

What is a Grampian condition?

Mr. Davis

It is a negative condition, i.e. development cannot proceed positively until something is done. It may mean that development cannot proceed if that condition cannot be satisfied.

Mr. Derbyshire (Daventry DC)

Daventry District Council has recently completed a sewer requisition in one of our villages. Initially, we believed that an old drainage ditch was a public sewer, but unfortunately we couldn't find the historical information to confirm that.

The Parish Council had indicated their desire for a sewer, but a public meeting gave the opposite impression. Then we did a proper survey which showed a majority in favour, with 60% likely to connect!

The Water Company wanted a scheme which was twice the price of our proposal, but the lower cost scheme had had the backing of the Rivers Divisions before privatisation, so we were able to get our proposal approved. This involved a local treatment plant.

Through the involvement of the local MP, Anglian Water agreed to waive the infrastructure charge (£50,000 for 68 properties) and in the end 92% connected up to the new system.

Mr Davis

Two points come from that. Firstly, local treatment can be a good solution and cost-effective, avoiding massive capital infrastructure costs. Secondly, you need time, resources and the good luck to pick up things from archives to be able to get the Water Companies to accept old systems as public sewers.

Mr. Hillom (Bassetlaw DC)

Pre 1974, our predecessor Rural District Councils had produced the plans for large rural drainage schemes but these were shelved by the Water Authority. After some fairly earnest discussions, they agreed to look favourably at schemes for villages with rudimentary drainage systems where these were accepted as public, provided the Council requisitioned some short lengths of sewer within the villages, in order for the scheme to be eligible for grant.

The requisitioning problem ties in with the 1973 Act, where section 14 and section 16 created requisitioning and virtually said that it was not up to the Water Authority to provide a public sewer. Since the 1989 and 1991 Acts, the emphasis on requisitioning has changed and I feel that the onus now lies completely on the Water Company to provide adequate sewerage. Here we run into legal problems. The solicitors agree with me, but will it stand up in court?

Local Authorities cannot get First Time Rural Sewerage Grant, it is only the Water Company that can claim this.

Mr Davis

The fundamental decision has got to be whether the Section 94 powers are to be implemented and used by the Water Companies. The 1973 legislation created the problem, the 1989 legislation has compounded it. Once the matter is in the private arena, the question of whether it's right for a private company to charge or not to charge becomes rather more contentious.

SESSION 3

Presentation by Mr. Gray (Wormley & District Drainage Association)

Papers from this session are reproduced in Appendix 3.

Mr. Gray said he was speaking as a consumer.

The community of Wormley has approximately 400 unsewered properties plus a school and a small manufacturing site as well as a nursing home and the National Institute of Oceanography. Many of the private systems are totally run down, but some had had large amounts of money spent on improvements which Mr Gray believed would not work.

A sewerage scheme for Wormley had been in preparation in 1973 but did not proceed.

WADDA (Wormley and District Drainage Association) was formed in 1985 to try and solve the sewerage problems in the village.

Mr Gray's presentation highlighted the problems and frustrations faced by WADDA in pursuing the problem and also the tremendous delays encountered. They had found it difficult to believe the muddle and obfuscation which they encountered.

In 1986, when Southern Water admitted that the previous scheme had been abandoned, WADDA approached Waverley Borough Council to see if they would sewer the village. The outcome was that the Council said requisitioning would be too expensive and in any case it was not their responsibility.

Following privatization of the water companies in 1989, WADDA wrote to the present Home Secretary, then Minister for Water (when he dealt with Fulmer) to question the issue of responsibility. His reply stated that Sewerage Undertakers would have plans to "extend" sewerage facilities and drew attention to Lord Hesketh's statement in the HL of 18th May 1989.

It was felt that this letter was unequivocal assurance that the Sewerage Undertakers would have to extent the mains drain, and not only through the requisitioning procedure.

WADDA wrote to OFWAT in June 1990 to state that they wanted mains drainage and to make a complaint about Southern Water. Eighteen months later they received a letter from the DOE as it was thought that they, not OFWAT, should handle the complaint!

In April 1992 OFWAT sent an Inspector to Wormley to assess the situation and he concluded that Wormley was not "effectually drained". Then, before announcing its conclusions on Wormley, in August 1992 OFWAT issued the infamous Information Note No 11, which stated that those who benefit from mains drainage should pay for it.

WADDA believes that there is a public benefit from mains drainage in Wormley and it is a very narrow definition to limit it to those whose properties are to be connected to the new system. Secondly, it is at variance with the approach to charges in other public services, i.e. higher charges are not applied in rural areas.

WADDA was concerned that the consumer watchdog OFWAT appeared to have a very close relationship with the DoE and to be more concerned with government policy on prices and inflation than with serving consumer interests.

The present situation is that WADDA is contesting Information Note No.11 and the decision that although Wormley is not "effectually drained", the residents would have to pay for the benefit of mains drainage. They are considering taking OFWAT's interpretation of S94 to judicial review, although they do not feel that it is a favourable option. They await the outcome of the DoE's Review with great interest.

DISCUSSION

Mr. George (Eden DC)

From what you describe as your problem, the geological factors contributed significantly to the "ineffectual" drainage of Wormley. Have you got anywhere with this argument?

Mr. Gray

The Inspector's report concluded that geological conditions in Wormley were not suitable for septic tanks. That left us with the option of cesspools, costing about £1000 a year to operate.

Mr George

So, rather than go for a main drainage system, they've taken a further step backwards to cesspools.

Mr Gray

The logic of OFWAT's conclusion is ridiculous. The only real options are either to leave us in the mire as at present or to put in a mains system.

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 way of improved non-mains systems of 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 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.

SESSION 5

Presentation by Mr Harris (British Water)

Mr Harris outlined the formation of British Water in October 1993 in a merger between the British Effluent and Water Association and the British Water Industries group. He explained that it serves the water and waste water organization world wide.

Membership of British water does not guarantee performance, but it does mean that the member company has been vetted by its peers.

BW are looking towards EEC performance specifications, that is WG41 and WG42. These may have a great effect on ensuring the performance of treatment plants.

Presentation by Mr. Lewis (British Water / Tuke & Bell Ltd)

Firstly, Mr Lewis said he would leave the aspects of legislation and funding well alone.

He believed that Inset Appointments can be competitive and cheaper than the plc. alternative. Mr. Williams had suggested that this was not the case, but private companies can offer lower overheads and profits, and standardization of equipment. Water Companies often bring in consultants to do the work, often with little "real life" experience of the problems themselves. And too many people may have their finger in the pie.

Overseas, Design & Build contracts allow his company to do the job and take responsibility for it. In the UK they are told what to put in and then blamed when it doesn't work.

When a small package treatment plant is purchased, through agents or builder's merchant it is usually "off the shelf" and often with little regard to the "process" side, ie. to sizing or whether it will be a pumped or gravity system, separate or combined. How is the plant expected to operate properly?

When the onus is thrown purely onto the consumer - the householder - in that way, he is just not prepared to pay the price for a proper specification plant.

Reference had been made earlier to the problem of detergents in small package treatment plants. Mr Lewis felt that the principle problem is grease and the lack of maintenance of grease traps.

How many people - often architects - specifying a package treatment plant know what to look out for? Usually, said Mr Lewis, they just pick the first three names from a trade journal!

Regarding EEC standards, he felt that these are going in the wrong direction and are specifying the wrong things. To guarantee effluent standards, he said, you need to guarantee the details of the influent. It was not enough to specify standards of physical construction. Process design must be taken into account for every application.

Summing up, Mr Lewis said that the private sector had the ability to compete against the Water Companies in Inset Appointments and win on the basis of lower overheads and profits. What they did not have was the ability to create the funding mechanism. That must be the province of OFWAT and the DoE, with whatever pressure the NRA can bring to bear.

DISCUSSION

Mr. Chatfield (Thames NRA)

Mr. Tucker was talking earlier about the compliance of small package treatment plants with Consents. So often the biggest problem, as you said, lies in an incorrect initial specification, particularly with pubs. Grease traps are a continual problem here. We need to see better quality in specifying these plants.

Mr Lewis

The key is in getting rid of the things that complicate treatment. the grease, grit, screenings, sludge. The liquid part is then easy! Many problems are so obvious, so simple to cure, if they are taken into account during the design.

Mr. Wagstaff (NRA Severn Trent)

The basis of our concern is that we don't want 40 separate small treatment plants in a village. We are looking for the mechanism by which the properties can be linked together into one plant, including the pub, and by which you as a private company take on the overall responsibility, both for putting in sewerage and for operating the plant.

Mr Lewis

There isn't a technical problem, but there has to be an Appointment of some sort before you start, because of the costs of feasibility studies and design.

Mr Holt (NRA South West)

Can I ask who takes ultimate responsibility for the running of your treatment plants and for effluent quality?

Mr. Lewis

If they are our plants, and we maintain them, we will take legal responsibility for the effluent quality. If we're given a Design & build job, we're quite happy to take the consent risk.

Mr Holt

What happens if the consent standards change?

Mr Lewis

That is a matter for the licence conditions and pricing structures. We would have to say that our licence was based on a given consent standard and if it was to change we would have to have the same provisions as the Water Companies, i.e. a "K" factor.

Mr George (Eden DC)

We have a situation in Cumbria where the plc will not requisition a sewer for 6 villages on limestone. The Water Company will not do a deal on the requisition because of the cost of a treatment works. They will not take on a private contractor because they argue that the plants are not robust enough and won't be able to meet NRA consent standards. If we can get a private company such as yourselves who are prepared to guarantee a quality standard, it could make the whole thing possible.

Mr Lewis

200 of our RBCs are on plc sites anyway, though each one has a different specification. We're more than happy to guarantee the standards of effluent from our plant, as long as we install it and we operate it.

Mr Davis.

If an Inset Appointee lays a sewer it would become a public sewer and anyone would have the right to connect. That means you could get surface water connected. How would you cope?

Mr Lewis

I go back to the old days when you had 6xDWF overflows. Provided you design for it there probably isn't a real problem. But the price you offer must depend on the standards you are required to meet, including stormwater if that is specified. And ammonia too.

Mr. Tucker

The possibility of inset appointments does open up opportunities for new thinking and new approaches. On the question of rights of connection, I see no reason why that could not be overcome in the case of an Inset Appointment. If all the people connected to the system were shareholders of the company, could it not be a condition of being a shareholder that you only discharge in accordance with an agreement? That doesn't take away your right of connection, but you would be limited by your contractual obligation as a shareholder.

Also why must a sewer be provided that is designed to take whole sewage? If everyone is on septic tanks can the sewer not be designed to take the effluent from the septic tanks only and make savings that way? Again that would depend on agreement to do so.

Mr. Lewis

But you still have to pay for septic tank emptying, which could tip the cost the other way. Normally it is volume that determines the cost of a treatment plant, not the organic content unless there is an ammonia standard, when nitrification is the main cost element. Ammonia would not be removed in a septic tank so, in that case, you would still have the same cost of treatment. So I don't think a system using septic tank collector drains would be economically viable

You don't want to get too far away from the standard Licence either. The closer you are to the standard Licence the less likelihood there is of objection from the Water Companies and accusations of preferential terms.

Mr Derbyshire (Daventry DC)

When we requisition the Council pays for sewers, but not treatment plant. If we had to pay for treatment as well, it would be a non-starter. The onus needs to be directed to the Water Companies if we're to tackle the main problems.

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 a help-your-neighbour, share-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 where 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.

SESSION 7

Summation by Dr Peter Chave

Dr Chave said he did not intend to sum up the previous sessions as there were too many issues involved. There had been reports of the work the NRA was doing, the views of Local Authorities and details of a real life situation at Wormley, from Mr Gray. There had been potential solutions from Michael Williams - and the NRA, as well as others, would be chasing for a decision on his Report.

A Digest would be produced of the proceedings, setting out the key points from the day.

The NRA would certainly promote whatever it could to deal with the problem, though it had to be solved by others.

The NRA could act as a facilitator and he would be proposing to try and maintain the momentum, perhaps through Charles Tucker and colleagues acting as contact points and facilitators, both within the NRA and outside.

Dr Chave sought delegates' views on whether the Water Services Association should be represented at the Forum. It was agreed that they should be invited to future meetings.

It was similarly agreed that the day's proceedings had been worthwhile and that a further meeting of the Forum should be held to discuss the Project Report in early spring.

APPENDIX 1

RURAL SEWERAGE PROJECT 1993/4



*National Rivers Authority
Severn-Trent Region*

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, wholly 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 the Water Companies of any responsibility for providing new sewerage, while the continued pressure on Local Authority capital resources makes it difficult to justify sewerage projects benefitting limited numbers of people in relation to other priorities.

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

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. Severn Trent Water has "disowned" old drainage systems which were treated as public by its predecessor (STWA).

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 perception that sewerage and sewage disposal was the responsibility of the Water Authority and now of the WSPLC and is in stark contrast to the active role that Local Authorities took in the '50s and '60s, when they promoted rural area sewerage schemes, with DoE financing.

There is continuing resentment that a number of Local Authority schemes which were in the pipeline on re-organisation in 1973 were shelved and then abandoned by STWA.

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. 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.

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.

This was one of the reasons why Local Authorities were encouraged to accept responsibility for dealing with drainage problems in the early 1960s. Of course, there was then a central funding framework which ensured that sewerage schemes could be financed.

THE WATER ACT 1973 - THE ROOT OF THE PROBLEM

Before 1973, the philosophy underlying the provision of sewerage was that of a "public good". Now, a generation on, that view has disintegrated and we are faced with having to rehearse the entire debate again in order to regenerate it.

The root of the problem lies in the Water Act of 1973, which changed the rationale towards sewerage, presumably on the perception that there was no longer a general problem to be tackled and that the Requisitioning procedure would be adequate to "mop up" any remaining minor cases.

Twenty years on, many of these minor cases have grown worse, while Water Privatisation has hardened the WSPLCs' attitude against extending public sewerage, and the squeeze on local authority finances makes Requisitioning an unpalatable proposition.

The result is that many rural communities face entering the 21st century wallowing in an rising sea of sewage unless a way is found to address the problem.

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, even 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!

On a purely commercial basis one can understand this argument, as the Companies would have to justify the expenditure to their shareholders. However, if Section 94 is NOT applicable in such cases it's purpose is entirely unclear.

It appears that Water Companies see new sewerage, in general, as an unattractive financial proposition.

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 local communities that sewerage will lead to development.

THE RURAL SEWERAGE PROJECT

The Rural Sewerage Project is a 12 month initiative taken by the NRA 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

Approximately 70 villages and rural communities with inadequate sewerage leading to significant nuisance and pollution have been identified in the Lower Severn Area.

Nearly all the locations have now been surveyed, to identify discharges, their sources and the scale of pollution caused. Questionnaires have been distributed to all residents to seek their views on the adequacy of local drainage and the provision of public sewerage. All District Councils affected have been invited to participate and Parish Councils have also been approached for comments and information.

A Rural Sewerage Forum has been established, comprising representatives of District Councils, CPRE, Rural Community Councils and the DoE as well as several Regions of the NRA. The Forum has met once to discuss the issues and consider potential solutions. The next meeting is planned for November 1993.

Alternatives to public sewerage are being investigated, including communal provision by Parish or District Councils, and private companies. Cost is always an over-riding constraint and any solution must be affordable. Equally, any proposal must be sustainable in the long term and adequate safeguards for maintenance and legal liability secured.

The Project Report will be published at the end of March 1994, to include a legal and technical analysis of the problem, its history and significance in a national context, together with a discussion of the financial constraints and consequences if action is not taken.

Findings will be presented for each location surveyed, with a ranking of pollution significance and priority for action.

CONCLUSION

Rural sewerage pollution and the infrastructure needs of village communities cannot continue to be ignored. Effective means of addressing the environmental problems must be found and financial mechanisms to ensure both that rural communities have adequate infrastructure and that the solutions do not impose an ever growing burden on the NRA as Environmental Watchdog.

CGJ Tucker
Project Co-ordinator
October 1993



NRA

*National Rivers Authority
Severn-Trent Region*

THE RURAL SEWERAGE PROJECT

- UPDATE FOR RURAL SEWERAGE FORUM

8 DECEMBER 1993

The Rural Sewerage Project is a 12 month initiative set up by the NRA to:

- identify and survey pollution from rural drainage systems in the Lower Severn area and assess environmental impact
- 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" sewerage and 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

Approximately 60 villages and rural communities with inadequate sewerage leading to significant nuisance and pollution have been identified in the Lower Severn Area.

If these figures can be extrapolated more widely, there could be 250 communities in Severn Trent Region with similar problems and 2000 throughout England and Wales. The population affected could be up to 0.5 Million.

Nearly all the locations have now been surveyed, to identify discharges, their sources and the scale of pollution caused. Questionnaires have been distributed to all residents to seek their views on the adequacy of local drainage and the provision of public sewerage. All District Councils affected have been invited to participate and Parish Councils have also been approached for comments and information.

A Rural Sewerage Forum has been established, comprising representatives of District Councils, CPRE, Rural Community Councils, the DoE and other Regions of the NRA.



Community Development Grants from the EC have been explored and may offer assistance in certain areas.

Alternatives to public sewerage are being investigated, including communal provision by Parish or District Councils, and private companies. Cost is always an over-riding constraint and any solution must be affordable. Equally, any proposal must be sustainable in the long term and adequate safeguards for maintenance and legal liability secured.

INSET APPOINTMENTS

The formation of sewerage and sewage disposal companies licensed by OFWAT as "Inset Appointments" within existing Water Company areas has many potential advantages for a structured approach to tackling small community problems, such as:

- Technical standards appropriate to the locality, rather than those required by existing WSPLCs, which may not be the most cost-effective
- Ability to claim first time sewerage Grants
- Community involvement in resolving their own problems
- Monitoring through OFWAT of a company's financial performance and service standards, asset management plans, etc. giving confidence that standards will be maintained in the long term

An "Inset Appointment" would have the statutory duties and powers of the present Water Companies within the area defined in the Licence. OFWAT envisage that plans for "Inset Appointments" would be developed in conjunction with the NRA.

THE PROJECT REPORT

The Project Report will be published at the end of March 1994, to include a legal and technical analysis of the problem, its history and significance in a national context, together with a discussion of the financial constraints and consequences if action is not taken. Alternatives for resolution will be presented and costs discussed.

The Survey Questionnaire will be analysed and conclusions presented.

Field survey findings will be presented for each location identified, with a ranking of pollution significance and priority for action.

THE FUTURE

The attendance at this meeting of the Rural Sewerage Forum shows the extent of interest in the subject and the need for solutions. Current legislation and financial restrictions lead to the conclusion that a simple technical approach is unlikely to succeed.

New initiatives will have to be developed and co-operation will be needed between interested parties, i.e. the NRA, OFWAT, WSPLCs, Local Authorities, Parish Councils and other Community bodies, in order to achieve appropriate and affordable solutions which address both Environmental and Community needs.

CGJ Tucker
Project Co-ordinator
December 1993



NRA

*National Rivers Authority
Severn-Trent Region*

RURAL 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 AND SOAKAWAY 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.

SCORING SYSTEM

1. NUMBER OF HOUSES DISCHARGING

1-5	6-10	11-20	21-40	>40
1	2	3	4	5

2. NUMBER OF DISCHARGE POINTS

1-2	3-4	5-8	9-16	>16
1	2	3	4	5

3. MAXIMUM NUMBER OF HOUSES DISCHARGING TO ANY ONE POINT

1-2	3-4	5-8	9-16	>16
1	2	3	4	5

4. DISTANCE TO 10:1 DILUTION D/S OF WORST DISCHARGE

100m/SOAKAWAY	100-200m	>200-400m	>400-800m	>800m
1	5	10	15	20

5. B.O.D. 10m D/S OF WORST DISCHARGE (mg/l)

<5	5-9	10-17	18-40	>40
1	2	3	4	5

6. AMMONIA 10m D/S OF WORST LOCATION (mg/l)

<0.7	0.7-2.5	2.6-5.0	5.1-20	>20
1	2	3	4	5

7. DISSOLVED OXYGEN 10m D/S OF WORST LOCATION (%)

>60	60-41	40-21	20-10	<10
1	2	3	4	5

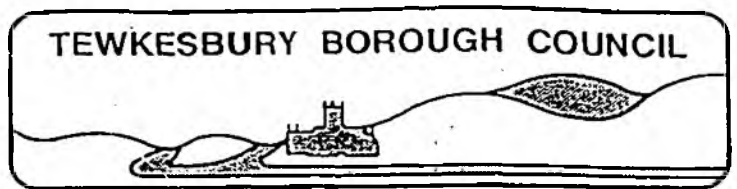
8. EXTENT OF SEWAGE FUNGUS D/S OF WORST LOCATION

OUTLET	10m	11-25m	26-50m	>50m
1	2	3	4	5

9. PUBLIC ACCESSIBILITY

LOW	MEDIUM	HIGH
1	2	3

APPENDIX 2



RURAL SEWERAGE

LOCAL AUTHORITY POWERS - ALTERNATIVE SOLUTIONS

BY

M.J.H. DAVIS, FIWEM, MIHT, FIE, MBIM

CHIEF ENGINEER

TEWKESBURY BOROUGH COUNCIL

RURAL SEWERAGE

LOCAL AUTHORITY POWERS - ALTERNATIVE SOLUTIONS

1. Introduction

1.1. In the light of the debate at the initial meeting of the Rural Sewerage Forum, and the need to consider possible alternative solutions to the problem of existing pollution and the difficulties of developing in rural and unserved areas, the question of the enabling role and possible alternative strategies has been further examined.

1.2. The following sections set out the express limits within which Local Authorities are statutorily obliged to remain within, and provide a synopsis of alternative options and comment on possible solutions which are not without difficulty.

2. Planning Control

2.1. The Local Planning Authority could, in the light of local environmental problems, seek to gain community benefit by negotiating with prospective developers to provide either new sewerage infrastructure or a new treatment facility to deal with existing dwellings.

The success of this approach would depend, of course, upon the relative scale of the new development and the proximity of the existing properties that are contributing to the problem. There is no settled law or procedure by which Local Authorities could insist on this but it does offer an opportunity, subject to scale, and perhaps worthy of further consideration. In the case of private treatment, there remains, of course, the long term maintenance security.

2.2. If it were possible to provide or promote new potentially adoptable sewers, a Local Authority could then, using its environmental health powers, insist on connection, subject to them being adequately sized.

This latter requirement could be addressed either by the Local Authority in substitution of its first-time sewerage powers or by the water and sewerage companies utilising Section 112 of the Water Industry Act 1991 to require "a proposed sewer or drain to be so constructed as to form part of the general system". The cost so incurred would be properly payable by the water and sewerage company; the Local Authority could voluntarily assist. It must be remembered that local residents may

resist such solutions in rural communities because of the fear or "threat" of new development, and this is another dimension that would need to be considered.

The opportunity for such solutions will not readily occur because the majority of large developments take place within the aegis of a structure or local plan, which invariably will develop a sewerage strategy, but it does offer a potential solution, given the right circumstances.

- 2.3. It is quite proper for a Local Planning Authority to require a developer, through a Section 106 agreement, to ensure that the foul sewerage arrangements (which may include treatment) for a new development are properly provided and thereafter maintained. The agreement will run with the land and is, therefore, enforceable.

This does not mean, however, that the sewers and any treatment plants covered by the agreement would necessarily become adopted as part of the public sewerage system. Their acceptability or otherwise would need to be verified with the sewerage company.

- 2.4. It must be understood, however, that the Local Authority cannot insist on such a provision if there is no overriding planning reason for refusal.

- 2.5. Such agreements are, by definition, voluntary and enhancements to normal conditions, and are as such a planning gain. The circumstances would change, of course, if a developer wished to extend a development site some time in the future because such an agreement could then quite properly be used compulsorily to avoid overloading the plant. This is of particular significance if local privately operated sewage treatment plants were to be used.

- 2.6. In examining the development control powers of Local Authorities with specific regard to treatment plants, it is curious to note that, although the Local Planning Authority has some control with regard to planning legislation, and can deal with such installations under the Building Regulations, the tertiary systems or outfall to a watercourse are not as readily controllable, being outside the scope of the Building Regulations.

The prevention of a proliferation of unsatisfactory sewage treatment systems does, therefore, rely on the Local Planning Authority being able to take a pro active stance, but is further complicated by the fact that a nuisance cannot be anticipated and the constraints within which Local Authorities operate in dealing with statutory nuisances.

- 2.7. These difficulties have been identified within CIRIA Technical Note 146 by Dr. J. Payne and Dr. D. Butler, which deals with current practice and common problems arising from "septic tanks and small sewage treatment works", and which is shortly to be published. This excellent reference work provides comprehensive background to the problems of local treatment and the anomalies within legislation and practice.

It proposes certain procedural changes and the use of Grampian conditions with regard to sewage disposal and treatment amongst others, and it is understood that a suite of good practice guides will follow, which will hopefully address the present need and reduce problems in the future.

The problem of dealing with the present still, however, remains!

3. Environmental Health Powers

- 3.1. Examination of the legislation does not provide encouragement in seeking a solution because, although Section 59 of the Building Act 1984 allows a Local Authority to require the owner of a building to make satisfactory provision for drainage where this does not exist and ought to be made, or where a drainage facility is prejudicial to health or a nuisance, it is silent as to the extent of subsequent powers.

- 3.2. There is for most purposes the difficulty of showing that the facility is "prejudicial to health or a nuisance" and this may be a difficult hurdle to surmount since something more than a potential water quality problem seems to be envisaged.

Moreover, the reference to "a building" in the wording of the section seems to indicate the drainage condition of each premises needs to be considered on its merits, and there is some doubt, however desirable, whether taking a blanket common coordinated approach to a group of properties would be a proper manner in which to exercise this power.

- 3.3. Whilst limited, the opportunity to secure new sewerage infrastructure provision, either by way of community benefit through the planning process or the use of Section 112, would give a Local Authority the power to more forcibly seek a solution rather than by repetitive enforcement action which might not necessarily achieve a totally satisfactory result.

In seeking to enforce householders to make proper provision, particularly in rural areas, it will be necessary for the Local Authority and the NRA to be able to work closely in proving that particular discharges are detrimental

- (a) with regard to public health nuisance and the health implications, and
- (b) with regard to water quality and the environment.

if the courts are to be convinced. It is, therefore, important that the scale of the problem is known and action defensible, and perhaps a pro active role taken by Local Authorities and the NRA in the identification of public health risk, if such exists.

- 3.4. In summary, Local Authorities have only a very limited role in instigating sewerage improvements other than through the requisition procedure, which is referred to under Sections 98-101 of the Water Industry Act 1991; and discussed later in the text. There is certainly no evidence or settled law confirming that it may act as a coordinator in gathering together small groups of properties to facilitate the provision of privately maintained treatment plants.
- 3.5. Local Authorities may only carry out duties that they are statutorily empowered to do. Sewage treatment, unless associated with one of its statutory functions, e.g. housing, is clearly vested with the water and sewerage companies and, therefore, no opportunity exists in law at present to provide or maintain sewage treatment plants.
- 3.6. Given the changes within the Water Industry, it is highly unlikely that sewage treatment powers will ever be returned to Local Authorities, although it is perhaps conceivable that independent undertakers could be given the opportunity to compete with the water and sewerage companies in the interests of competition and service delivery.
- 4. Providing or "Enabling"
- 4.1. Historically Local Authorities progressively sewered communities in an almost philanthropic approach to the resolution of public health problems, and the programmes were largely inherited from over a century of change in public health legislation. Many Authorities continued to accept the cost of sewer requisitions after 1974 presumably because the sewerage function remained within the public sector, and followed custom and practice.

However, the sewerage responsibility has now clearly transferred to the private sector through Section 94 of the Water Industry Act 1991. It is, therefore, debatable whether they should continue to do so and an apparent contradiction in that sewerage legislation is so drafted to permit this dichotomy.

- 4.2. In examining and interpreting Section 94, it is evident that the word "general" in the context of sewerage duties needs some emphasis since it is not apparent that this duty will conclusively determine the outcome in relation to any particular project for the provision, improvement or extension of a sewerage system.

Moreover, as regards both the Secretary of State and the Director General of Water Services, it is to be read in conjunction with the duty to ensure that undertakers are able, by securing reasonable return on their capital, to finance the proper carrying out of their functions under s.2(2)(b) of the Water Industry Act 1991.

- 4.3. Accordingly, economic issues, such as the recent OFWAT statement of policy are material in relation to cost effectiveness of particular projects and may justify undertakers declining to take action where this factor militates adversely. It is difficult to know precisely what cost effectiveness view will be taken but it is certainly an issue of policy which is presently justifiably taken and on which there is little practical guidance.

- 4.4. If the OFWAT determination on cost effectiveness is sound, the only other option that remains is the use of Section 112 powers referred to earlier and there is no firm guidance at present as to the willingness or otherwise for the water and sewerage companies to use this power. Such occasions would, however, only be windfall opportunities and would certainly not occur regularly, and the point may, therefore, be somewhat academic.

- 4.5. It is evident from the recent OFWAT determination that they do not consider the Section 94 duty of the sewerage companies should extend to promote rural sewerage and indeed suggest that such costs (less appropriate grants) should be met by the beneficiaries or alternatively the Local Authority. It is, therefore, a moot point as to whether Local Authorities should promote such schemes and one that has possibly arisen through an incompleteness in the drafting of the Statutory Instruments relating to both the Reorganisation of Local Government in 1974 and the subsequent Water Industry Act 1991.

- 4.6. New properties or properties connecting to main sewerage for the first time are, of course, liable to pay the sewerage infrastructure charge. However, in the Severn Trent area at least, the present interpretation of the infrastructure charge is that it relates generally to sewage treatment and to main trunk systems.

There are very few such systems outside major conurbations, and consequently the requisitioner is responsible for providing the new sewerage main up to the point of connection with the present sewerage infrastructure (including any improvements) or to the sewage treatment works, whichever is the most appropriate.

The sewerage companies are obliged to provide treatment and it, therefore, becomes a test of reasonableness as to whether local treatment is provided or whether major expenditure is necessary to reach an appropriate outfall. This is, therefore, a grey area in terms of rural communities and a further test of the duty to provide and extend sewerage facilities, and it is evident that rural communities are now likely to be disadvantaged, both in terms of preventing pollution and in promoting new development.

- 4.7. Given the present interpretation of Section 94, and the lack of definitive guidance or powers to promote alternative solutions, it would appear that the only route a Local Authority can legitimately take to comprehensively resolve pollution problems is through the sewer requisition procedure.

5. Conclusions

- 5.1. Whilst not definitive, this brief examination does confirm that there are presently limited legislative and practical opportunities available to Local Authorities to address pollution problems arising through inadequate sewerage facilities, other than through the requisition procedure.

This is clearly a matter that requires further debate if the OFWAT determination on Section 94 powers is held to be correct.

- 5.2. It is clear that the question of rural pollution is too important to merely end here because, in the event of the OFWAT determination being reaffirmed, it would appear that the provision of rural sewerage infrastructure has not been properly taken into account in the reorganisation of the water industry.

There is, therefore, a fundamental need for the role of the water and sewerage companies, and indeed Local Authorities, to be re-examined in the context of the basic public health responsibility that was for so long the remit of Local Authorities.

It is, however, hard to imagine how this can now be achieved now that water and sewerage companies are now wholly independent enterprises and any move to extend their duties would almost certainly be challenged.

- 5.3. Rural sewerage initiatives intrinsically depend upon this interpretation because the legality of alternative options viz a viz the promotion of group or community treatment plants by Local Authorities appears doubtful. Before such initiatives could move forward, it would certainly be necessary for a definitive legal ruling in the absence of settled law.

Whether this would be sufficient to avoid conflict with the Audit Commission on Local Authority powers is another matter.

- 5.4. On balance it would seem fundamentally inequitable for Local Authorities to take on these burdens through the Council Tax, although there may be scope for them to enable appropriate schemes to proceed, possibly by way of windfall contributions, to water and sewerage company driven schemes, if there is no other alternative.

It may be, of course, that OFWAT are wrong!.....

6. The Options

This paper has briefly considered the constraints and possibilities for Local Authorities to assist in the resolution and prevention of pollution problems arising from inadequate sewerage facilities. It is evident that there is no instant panacea. The solution, if one exists, lies initially in further debate and research into the planning and sewerage legislation with the Department of Environment, either through the ADC or through an extension of the Rural Sewerage Forum.

There are a number of alternatives that can be pursued, and these are summarised below, together with comment as to the problems that need to be addressed.

6.1. Section 94 powers

The OFWAT determination should be challenged in the light of the apparent contradictions that now exist and which disadvantage rural communities.

This will clearly be contentious and it is likely to require discussion at the highest level. Whether it will be successful is debatable, given the "general" drafting of the legislation and the initial changes in water and sewerage that occurred in 1973/74, when the requisition procedure was first introduced, and which continues today.

It may be possible to achieve a compromise whereby, in appropriate cases, District Councils can support water PLC driven schemes on a cost sharing basis but even this requires a substantial change in attitude and interpretation. The situation will vary between Local Authorities and some already meet part costs by way of connections and infrastructure charges, but this in terms of the overall investment required is not the significant problem.

6.2.

Sewer requisitions (First-time sewerage)

Local Authorities can clearly continue to sponsor or facilitate first-time sewerage, either by total subsidy or part subsidy.

In considering this option, the only case that can really be made is that they have an overall responsibility for the well being of the community they serve.

This is a matter for individual Local Authorities, the only question that has to be addressed is should they?

6.3.

Section 112 powers

Although somewhat academic, it is essential that the view of water and sewerage companies is sought as to their approach to the problem using this route. The view of OFWAT would be similarly welcomed but it is probably unlikely that they would want to give a general view, given their specific response on the economics of rural sewerage.

6.4.

Planning control

Local Authorities can exercise far greater control of sewage treatment and disposal proposals by a more pro active approach through the planning system, either through the vehicle of 106 agreements or by the use of Grampian conditions.

The opportunity to seek community benefit through the provision of first-time sewerage will rarely occur but nevertheless should be grasped, particularly if water and sewerage companies are not prepared to use the Section 112 route.

Such solutions will, however, be rare. The problems with coordinating private treatment to cater for both new and existing properties remain and can only be by agreement and subject to scale. Long term maintenance would similarly need to be addressed.

Greater liaison and cooperation between Planners, Building Control officers, Environmental Health officers and the NRA is needed if this is to be successful, as confirmed by CIRIA Technical Note 146.

It is, however, essential to remain within the scope of legislation to avoid compromise and challenge.

6.5.

Building Regulation control

Improved liaison, as suggested in 6.4, will reduce the problems.

The fact inevitably remains that present legislation precludes the control of tertiary (ground treatment) or outfall systems, and it is uncertain whether the DoE would favour change, but this anomaly cannot be allowed to continue and the question must be addressed.

6.6.

Environmental health control

Nuisances cannot be presumed. Improved liaison procedures would appear to be the only opportunity for the future. The exercise of tighter environmental control to deal with present problems would appear to be the only solution and then at best address individual problems, which would not necessarily secure the solution that the various bodies are seeking.

If the problem is not to be compounded, legislation controlling tertiary treatment and the identification of nuisance potential will have to be addressed, but it will not be easy.

6.7.

Local treatment initiatives

Whilst there are clear legal problems in Local Authorities promoting local solutions, there clearly remains the option of private treatment to remove "hot spots" of pollution and to enable development in appropriate areas.

Local Authorities would seem to be the most favourably placed to facilitate such initiatives, but this would require new legislation, and clearly discussion with the DoE through either the ADC or a similar representative body.

The problem of financing such schemes remains, as does their future maintenance, although there are a number of private companies and manufacturers that offer both design and build and maintenance contracts. The comment made by the DoE representative at the inaugural meeting of the Forum with regard to the setting up of alternative organisations to provide competitive treatment is perhaps a further way forward.

6.8.

Private requisitions

The solution may lie with the water and sewerage company taking over community plants, subject to their being constructed in accordance with appropriate specification and fulfilling the requirements with regard to ownership and outfall discharge quality. It is also likely that they would need to be adapted or capable of adaptation to serve the remainder of the catchment. This could similarly include sewers draining those properties.

The problem of capital financing still, however, remains. Such a solution is feasible within the present legislation but would require a site specific determination from the water and sewerage company and it is unlikely that such solutions would be considered to establish precedent. It does, however, draw into context the Section 94 responsibility and all that it entails, and this would clearly be a factor in any such determination.

Alternatively, if the plants were to remain private, their maintenance could be secured through a maintenance agreement, with the water and sewerage company acting as contractor, and this, it is understood, is a route that is open. This would reduce the concerns of the NRA about the standard of maintenance and effluent quality problems.

6.9.

Facilitating

As ever we return to the fundamental question of who pays to provide. It would be for individual Local Authorities to determine what level of subsidy they are prepared to fund to achieve solutions, but it could conceivably remove the pollution hot spots referred to earlier.

It is considered that contributions could be made under Section 111 of the Local Government Act 1972 as the work is related to the general public health powers exercised by the Local Authority.

They could certainly take "a facilitating role" in explaining to the local communities the options that are available and, whilst they would not be promoting direct solutions, they would be addressing the problem.

The level of commitment would clearly depend on the problem, the resources available and the particular circumstance, which are outside the remit of this paper. However, it is necessary for any decision to be factually based and, therefore, a greater awareness of the extent of pollution is needed and the results of the Forum survey will give a pointer as to the level of need.

Until the various considerations have been examined and the legal practicalities clarified, it is perhaps premature to go further into the concept of private treatment. However, during the preparation of this paper, data and guidance has been obtained from Messrs. Alan Williams Drainage and Lewis James & Partners Ltd., who are both active in the field of sewage treatment and pollution control and install and maintain RBC and package plant systems.

This information is reproduced in Appendix A and contains both general costings of local treatment solutions and an evaluation of small population sewage treatment systems, together with their relative costs and design criteria.

Although this provides an objective base from which to consider such options, further investigation is clearly needed as the solutions must be

(a) site specific, and

(b) have regard to the geological and geographic circumstances in testing their suitability.

It is clear that this paper has possibly left more questions unanswered than answered, but it is hoped that it will promote thought and discussion in the common need to address the environmental problems that are presently experienced, and which will continue unless action is taken.

In conclusion, the only problem that remains is by who and how!

Acknowledgement

The contributions of Messrs. Alan Williams Drainage and Lewis James & Partners are gratefully acknowledged, as is the help and advice of the Legal and Planning Departments of Tewkesbury Borough Council and Professor William Howarth of Kent University for his over view of environmental law.

Thanks are also due to Dr. J. Payne of CIRIA for the "advance" copy of Technical Note 146.

APPENDIX A

Local Treatment Costs (Alun Williams Drainage)

- (i) There are a number of variable factors which make it difficult to establish average costs because the final effluent quality standards that may be required by the NRA vary and are further influenced by the salient ground conditions, topography and whether, of course, the discharge is to ground or to a watercourse.
- It additionally depends on the availability of power and other utility services but, nevertheless, the figures give a broad indication of the scale of cost and are useful, therefore, both in the context of resolving local pollution problems and in determining the viability of treatment facilities in rural and unserved areas.
- (ii) The other variable in the equation is the differing design cut off points in use by manufacturers. For instance, a plant required to serve 18 persons may fall just outside the range of a 17 population plant from one manufacturer and the next available size may be a 25 population system. It is clear, therefore, in considering individual solutions, the exact site circumstances and needs must be addressed and considered in relation to market availability if a properly compatible and economic solution is to be achieved.
- (iii) A number of design assumptions have to be made, and in Table 1 these have been based on a BOD load of 25 mg/litre and a suspended solids load of 30 mg/litre. The maximum occupancy has been taken as 3.5 persons per residential unit but rounded up to whole numbers. The installation prices presume optimum ground conditions and do not include removal of spoil from site, but this is a relatively small cost and can be easily assessed, but do include a contingency allowance of £500 for power supply. In all cases it has been assumed that a direct outfall can be achieved to a watercourse.

Because variations in percolation value and different soil types will necessitate different lengths of soakaway trench, this method of disposal could not be practicably included. Soakaways have, therefore, been discounted, although it is understood that the majority of the schemes installed by Alan Williams Drainage discharge to ground.

No allowance has been made for statutory fees.

- (iv) The annual running and maintenance costs include for electricity, desludging, servicing and replacement of worn parts. The per cubic metre costs are based on a dry weather flow of 180 litres per capita, based upon the number of residents assessed and not the plant capability (bracketed figures).

TABLE 1
(ALAN WILLIAMS DRAINAGE)

Units	Population	Plant & Installation	Annual Running
0-5	18 (25)	£9,500 £2,932/m ³	£1,100 £340/m ³
5-10	35 (35)	£11,500 £1,825/m ³	£1,100 £175/m ³
10-15	53 (65)	£15,000 £1,572/m ³	£1,650 £173/m ³
15-20	70 (75)	£16,000 £1,270/m ³	£1,800 £143/m ³

These figures confirm predictably that economies of scale will be achieved in direct relationship to the plant size.

**An Evaluation of
Small Population Sewage
Treatment Plants**

**by K. Williams of
Lewis James & Partners Ltd.**

Contents

Pages 1-2	Introduction.
Page 3	Definitions, formulae and sizing parameters.
Pages 4-5	Design of "Bottle" and "Cigar Shaped" Septic Tanks for a population range from 5 to 200 .
Page 6	Design of small revolving distributor plants with septic and humus tanks for a population range of from 5 to 200.
Pages 7-8	Design of elevated media package and modular units for a population range from 5 to 300.
Pages 9-10	Submerged media aerated filters (S.A.F.) sometimes known as Biological aerated filters (B.A.F.) for a population range from 5 to 300 persons.
Pages 11-13	Extended aeration plants - fine or coarse bubble - practical population range from 100 to 1000. Mechanical horizontal or vertical aerators for population range 100 persons and upwards to 1000 persons.
Page 14	Rotating biological contactors package units from 5 to 500 persons, modular units from 100 to 1000 persons per module.
Page 15	Comparison Table.
Page 16	Summary
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AN EVALUATION OF SMALL POPULATION SEWAGE TREATMENT PLANTS

This commentary is intended as a reference document which hopefully can be used to choose the right type of plant, the right size of plant, at the right type of cost to suit the particular application.

The commentary gives an insight into the design parameters, performance characteristics, running costs where applicable, and capital cost of the equipment, ex works. With particular regard to capital costs, all makes of plant form the same graphical pattern where the actual cost of a plant divided by the number of population (cost/P) is high at small populations following a napierian curve so that the cost per head of population steadily decreases as the number of population increases. This information is useful when the selling price of a range of units is known, since it will show up a costing error or whether, on a particular size, excess profits are being made on the unit, indicated by the co-ordinates for that unit not being on the curve.

As the price of electricity changes from year to year the power consumption/P for the particular design of plant is quoted in kWh/d/P per submersible pump or blower used. Where it is known that the particular unit has more than one such pump/blower operating, then the electrical units consumed/P would be multiplied by the number of pumps/blowers in operation and the cost per unit charged by the particular electricity board at that time. The assumption throughout would be that the pump/blower would be operating 24 hours per day. Hence if they are on timeswitch then it would be proportional relative to the number of hours of operation.

Following the style adopted in BS6297:1983, as far as practical, all design parameters have been related to the population P. For example the amount of free air required by an extended aeration plant, as recommended by BS6297, is $0.708P\text{-m}^3/\text{h}$. Assuming a 30% efficiency of the blower, the power demand at the motor shaft would be $0.016 P\text{ - kW}$ and the electricity consumed per day by the blower, assuming a motor efficiency of 70%, would be $0.55 P\text{ - kWh/d}$. If the cost of the electrical unit was 7p/kWh the running costs per day would be $3.85p/P/d$.

Throughout the commentary the following design data has been used for consistency and comparison purposes since an analysis of most of our competitors' units have adopted the same parameters to ensure their plants were competitive in the UK market.

Design dry weather flow (DWF) = 200 l/d/P.

Peak flow to receive full treatment = $3 \times \text{DWF} = 600 \text{ l/d/P}$.

Crude sewage BOD₅ applied load = 60 g/d/P.

Settled sewage BOD₅ applied load based on 30% reduction in the primary settling facility = 42 g/d/P.

Ammoniacal Nitrogen applied load = 7 g/d/P.

References to the final effluent achieved will be in strengths given as mg/l and in the order of suspended solids first, BOD₅ second and NH₃, indicating the residual ammonia in the final effluent.

DEFINITIONS, FORMULAE AND SIZING PARAMETERS

P = Number of contributing population.

Q = Dry weather flow per P :- $1/d/P$ taken as 200 $1/d/P = 0.00833 \text{ m}^3/\text{h}/P$.

PF = Peak flow receiving full treatment through plant, $3 \times Q \times P = 600 \text{ } 1/d/P = 0.025 \text{ m}^3/d/P$.

Bc = Crude sewage B.O.D.₅ applied load / P :- normally taken as 60 g/d /P.

Bs = Settled sewage B.O.D.₅ applied load / P :- normally taken as 42 g/d /P assuming a 30% reduction in B.O.D.₅ occurs in the P.S.Z.

P.S.Z. = Primary settling zone.

A.Z. = Aeration zone.

F.S.Z. = Final settling zone.

F = Food load applied to A.Z. = $B_c \times P/1000$. or $B_s \times P/1000$:-kg/d.

Mc = Mixed liquor suspended solids load. (M.L.S.S.) concentration :- mg/l.

M = M.L.S.S. load in A.Z. = $Mc \times AZ.Vol./1000$:-kg.

V = Volume :-m³ prefixed by P.S.Z., A.Z. or F.S.Z. to define the volume of the applicable zone.

A.P. = Aeration period at D.W.F. (Q) -hours, = $AZ.Vol. \times 1000./Q \times P$.

F/M = Food/Mass ratio = $d^{-1} = B \times P./Mc \times AZ.Vol.$ For EAPs ranges from 0.05 to 0.15 d^{-1} . For SAFs it ranges from 0.15 to 0.2 d^{-1} .

$AZ.Vol = M \times 1000/Mc = Q \times P \times AP./24000$.

O.T.E. = Oxygen transfer efficiency, dependent on the size of bubble, depth of diffuser below W.L. and other factors, in mixed liquor; it normally ranges between 0.025 to 0.05 (2.5 to 5%). For our design purposes we take 0.05 (5%).

S.T.P. = Standard temperature and pressure :- 20°C and 760 mm Hg.

D = Density of air @ S.T.P. = 1.205 kg/m³.

A. = Amount of oxygen in air = 21%.

U.F.V. = Upward flow velocity, = $P.F. (\text{ m}^3/\text{h})/\text{Area of tank}:- \text{ m/h}$.

SEPTIC TANKS

BS6297:1983 recommends that the volume of the septic tank should be at least:-
QP + 2000 - litres and the minimum size should be for four persons with a volume of 2700 litres.

Should there be sink grinders or other such additional sludge producing items incorporated in the contributing facility then the volume of the septic tank should be increased to allow for the additional sludge by providing 70 l extra volume per P to give additional storage.

Sludge and scum it is claimed accumulates at about 1.5 l/d/P and ideally should be desludged every 180 days, emptying completely by removing the sludge and effluent first to undermine the fatty scum which tends to adhere to the top of the tank and hence reduce the capacity of the septic tank if not removed. (This latter comment applies mainly to the cigar shaped horizontal circular tank and not the conventional design of rectangular tank made from reinforced or mass concrete.)

For design purposes it would normally be assumed that from a 300/300/35 influent an effluent achieving a 60%/30%/0% reduction in S.S./BOD₅/Amm.Nit. is achieved. In actual practice it is possible to consistently achieve an 80% reduction in suspended solids, at least a 50% reduction in the BOD and even 25% reduction in the Ammoniacal Nitrogen either being liberated or absorbed in the settled sludge.

The principle is claimed to be a form of cold anaerobic digestion of the sludge solids causing some degree of liquifaction and hence increase in the soluble BOD. In temperate climates for this to be effective there has to be at least 100 days' retention of sludge and a good impermeable scum blanket on top to ensure anaerobic conditions apply.

The effluent must by law discharge to the sub-strata as it is not considered suitable for discharge into streams or other receiving sources that might be used by other users for irrigation or animal consumption.

The bottle type septic tank normally rated to a range up to 20 P with a capacity range of up to 6 m³ is normally arranged in two and in some cases even three compartments in an attempt to create the best pseudo quiescent conditions and hence maximise on the suspended solids and BOD reduction. For small populations this is the cheapest form of treatment acceptable to the N.R.A.

The cigar shaped units are normally made up to 3 m diameter and 6 m long, partitioned to provide a $\frac{2}{3}$ volume and $\frac{1}{3}$ volume (which of course is two thirds and one third of the overall internal length) with trapped inlet and outlet pipes. Similar effluent standards to the bottle type septic tank are achievable with a well-maintained unit although the problem with scum adhering to the soffit surface of the tank can and does cause problems.

Both designs are used in conjunction with elevated or submerged media secondary units when a modular concept for full treatment is required.

SMALL REVOLVING DISTRIBUTORS WITH CONVENTIONAL PRIMARY SETTLING TANK OR SEPTIC TANK AND HUMUS TANK.

In accordance with BS6297:1983, the primary settling tank volume will be determined from the formula $Q \cdot P^{0.85} - m^3$, where $Q = 0.2 m^3/d/P$. The filter media volume will be determined from the formula $V = 1.5 P^{0.85} - m^3$ with the average depth being a recommended minimum of 1.8 m. The humus tank volume should be at least $0.135 Q \cdot P^{0.85} - m^3$ where $Q = 0.2 m^3/d/P$. The upward flow velocity should be restricted to a maximum of 0.9 m/h in both the primary and humus tanks at peak flow conditions, but if the peak flow is unknown then the primary tank surface area A_p should be at least $P^{0.85}/10$. $A_f = 3 P^{0.85}/40 - m^2$.

BS6297 gives the media size recommended and as Tuke & Bell (and others) make specially designed small distributors of the waterwheel and dosing-syphon type to cover up to 9 metre diameter filter beds, the population equivalent per unit maximum is in the region of 200 persons.

A humus return pump on timeswitch control is recommended for returning humus sludge to the primary settling tank and unless a sludge storage capacity is going to be provided in the primary settling tank, then suitable drying beds as recommended in BS6297 must be incorporated on site. Where sludge storage is provided then desludging should occur every six to nine weeks with the larger units to avoid effluent deterioration.

Normally the standard of effluent achieved would be well within the 30/20/25 standard: better effluents with some degree of nitrification could only be achieved by incorporating grass plots or root zone treatment downstream of the secondary treatment plant.

Although there are thousands of these plants still in operation throughout the UK they seem to have been totally superseded in preference by the modern package units of the elevated or submerged media types.

The cost of the mechanical equipment:- the revolving distributor, fittings and the small humus submersible pump, is very small indeed compared with the cost of the civil work if made from mass or reinforced concrete for the tankage.

The humus pump would normally be equipped with a 0.25 kW submersible pump, having a motor efficiency of about 70% and running 4 hours per day so that the units used per day would be approximately 1.5 kWh/d, irrespective of the population size of the plant.

ELEVATED MEDIA PACKAGE UNITS

This type of plant incorporates three zones, namely the primary settling zone - PSZ, the media zone - MZ, and the final settling zone - FSZ.

The PSZ volume (for units of 20 P. and upwards) is normally based on providing a 2-hour retention period at PF of $3 \times \text{DWF} + 90$ days sludge storage, assuming a sludge production of 1 l/d/P. This can be reduced to a formula $\text{PSZ volume} = 0.14 \text{ P}$. The volume and effective biological area of the media in the media zone (dependent upon the density of the plastic media, Tuke & Bell Sandex is $200 \text{ m}^2/\text{m}^3$) assuming a 30% reduction in BOD_5 in the PSZ, gives a BOD_5 applied load of 42 g/d/P . With a media loading of $2.5 \text{ g/m}^2/\text{d}$ the $\text{EBA/P} = 16.8 \text{ m}^2/\text{P}$. At a density of $200 \text{ m}^2/\text{m}^3$ the volume of media required $= 0.084 \text{ m}^3/\text{P}$. The final settling zone volume provides at least 3 hours retention period at P.F. so that the volume $= 0.075 \text{ P} - \text{m}^3$. The area of the FSZ is always checked to ensure that at PF the upward flow velocity is not greater than 0.9 m/h .

Some years ago one of the Water plc produced a paper on RBCs producing nitrified effluents. In the summary of that paper they quoted recommended ammoniacal nitrogen loadings on the revolving discs to achieve effluents with N.H_3 levels to $< 5 \text{ mg/l}$. The loading was in the region of 0.56 grammes of ammoniacal nitrogen/ m^2 media area/d. If we take an ammoniacal nitrogen loading on the media of $0.4 \text{ g/m}^2/\text{d}$ with an ammoniacal strength of 35 mg/l (7 g/d/P) the area of media required $= 17.5 \text{ m}^2/\text{P}$ and the volume $= 0.0875 \text{ m}^3/\text{P}$. On a BOD_5 applied loading basis this is equivalent to 2.4 g/d/P .

Competitor No1 media loading is $3 - 3.5 \text{ g/m}^2/\text{d}$ based on BOD_5 loading.

Competitor No2 media loading varies between 1.5 and $3 \text{ g/m}^2/\text{d}$, dependent upon the modular size of media unit used.

Operating on domestic sewage, the elevated media units should be capable of achieving at least a 30/20 final effluent if well maintained.

To achieve well nitrified effluent there are two major problems that definitely apply to all types of elevated media units, namely:

- (1) the effective distribution, wetting and hence use of all the EBA of the media.
- (2) the effective settlement and then return of the final sludge from the final settling zone.

The factors that provide the best conditions to oxidise the ammoniacal nitrogen are:-

- (1) an environment temperature higher than 13°C.
- (2) a retention period in the environment of at least 8 hours: Biostat media volume = 0.084 m³ /P and dry weather flow = 0.00833 m³/h/P. Therefore the retention period = 10.08 h at DWF or approximately 3.34 h at 3 x DWF.
- (3) After oxidising the carbonaceous BOD₅, there must be sufficient supply of oxygen to provide 4.57 g per 1 g of ammoniacal nitrogen applied.

With elevated media units, (3) cannot possibly be guaranteed.

With regard to running costs, the Biostat equipped with 0.15 kW motor(s) operating 24 hours per day (assuming a motor efficiency of 65%) will use 5.6 kWh/d per pump operating in the unit.

SUBMERGED MEDIA AERATED FILTERS (SAF)

There are two types currently available in the UK as described below:-

- (1) One type although developed for use on a modular basis is better suited for large population applications. One of the first units to be installed is located in the South East of England and is just being commissioned. Based on a modular concept, the sewage treatment plant has conventional screens, grit extraction and primary settling tanks. Secondary and tertiary treatment, it is claimed, is provided in the modular submerged aerated filters. There are no final settling tanks incorporated, or activated sludge return pumps, but effluent collection tanks are being provided. The plant is required to produce a 15/10/10 final effluent in winter and a 15/10/5 final effluent in summer.

The submerged media units provide a 2 hour retention at dry weather flow, have a two metre depth of media (which is a grit imported from Germany) 4 - 5 mm in size. The total depth of the tanks to water level is 2.5 m. The mixed liquor suspended solids concentration is ideally maintained at 12,000 mg/l. Hence the F/M ratio is in the region of 0.21 d^{-1} . Each module is given a one hour backwash and air scour with the dirty water being returned to the primary settling tanks: all the cycles are completely automated. The peak flow given full treatment is $3 \times \text{DWF}$.

- (2) Aerostat and competitors units are based on providing a total volume within the package or modular tankage of from 0.3 P to $0.4 \text{ P} - \text{m}^3$.

Up to 20 P have larger volumes than quoted above because of the surge flow conditions being much higher than the peak $3 \times \text{DWF}$ that is relevant to larger population plants.

Again allowing 90 days sludge storage facilities in the PSZ, the volume of the Aerostat PSZ will be at least $0.14 \text{ P} - \text{m}^3$, the AZ volume will be in the region of $0.1 \text{ P} - \text{m}^3$ to give at least 12 hours aeration period at DWF. The media volume will be in the region of $0.085 \text{ P} - \text{m}^3$ and the FSZ volume will be at least 0.075 P so that the total volume of the tankage is at least 0.315 P .

Allowing a O.T.E. of 5%, the free air discharge requirement of the blower will be at least $0.4 \text{ m}^3/\text{h}/\text{P}$ and the power demanded at the blower motor output shaft will be in the region of $0.016 \text{ kW}/\text{P}$ which, with an assumed motor efficiency of 70%, operating 24 hours per day, equates to a power absorbed of $0.55 \text{ kWh}/\text{d}/\text{P}$.

(2) Continued.....

The idea of the media incorporated in the aeration zone is realistically to increase the O.T.E. With the specially designed diffuser laterals incorporated in the Aerostat the oxygen transfer efficiency should be enhanced to such a degree that provided there are no inhibiting factors, the plant should easily achieve complete nitrification, subject to the qualifications given on temperature and the fixed ammonia which cannot be oxidised.

The plants will be available covering a range from 7 to 110, with two units operating in parallel from 120 up to 220 P.

The cost of manufacturing the Aerostat range, and hence the selling price (including the size 12 P) size-for-size in comparison with Biostat (excluding the units up to 20 P) have cost-saving features incorporated, which should make them as cheap as Biostat, but with a significant increase in operating costs.

Add-on units will also be available to incorporate with existing septic tank, or even Biostat installations if improvement in the standard of effluent is required.

EXTENDED AERATION PLANTS

Bubble type units.

BS6297:1983, page 13, clause 13.4.2, table 3, entitled AIR SUPPLY, gives a recommendation for the amount of free air discharge from the blower in $\text{m}^3/\text{d}/\text{P}$, relative to the size of bubble and depth of immersion below water level. Basically, as the bubble becomes smaller and the depth increases, the amount of free air required substantially reduces. Based on these figures the O.T.E. varies between 2.6% with an 8 mm bubble operating at a depth of 2 m below water level to 9.1% with a 2 - 4 mm bubble operating at a depth of 3.5 m below water level. Irrespective of this factor, the British Standard recommends that the blower should be rated on $17 \text{ m}^3/\text{d}/\text{P} - 0.708 \text{ m}^3/\text{h}/\text{P}$ for rating the blower to be used. Therefore the $\text{FAD}/\text{P} = 0.708 \text{ P} - \text{m}^3/\text{h}$.

If we assume that the pressure at the outlet port of the blower is equivalent to 3 metres, knowing that the FAD is $0.708 \text{ m}^3/\text{h}$, the compression power = $\text{FAD} \times \text{H}$ - head at blower port divided by $367.71 = 0.0058 \text{ kW}/\text{P}$. Small blowers normally have mechanical efficiencies between 30% and 40% unless the Roots type or other expensive type of blower is used. Assuming a generous 30% mechanical efficiency and a 70% efficiency of drive motor, the power demand at the motor shaft would be $0.02 \text{ kW}/\text{P}$ and the power used running 24 hours per day would be $0.66 \text{ kWh}/\text{d}/\text{P}$: about 20% more than that used by a submerged aerated filter unit.

With the generous allocation of air requirement, if the plant is well maintained it should achieve a completely nitrified effluent. The F/M loading is from 0.05 d^{-1} to 0.15 d^{-1} dependent upon the MLSS concentration. The aeration period is in the region of 40 to 20 hours at DWF under S.T.P. conditions. Assuming a O.T.E. of 5% (0.05) the O_2/BOD_5 ratio is in excess of 3.6:1. BS6297 recommends a ratio of 2:1.

The arrangement of these types of plants are normally in rectangular tanks up to a 3 m depth maximum for small populations, say up to about 200 P. For larger populations (say up to 1000 P) the normal arrangement would be to have an outer annulus in which the diffusers operate. The centre would be the FST with sludge return facilities. Population range 100 to 1000 P.

For bubble type extended aeration plants, and in fact mechanical aerator type extended aeration plants, the problem is the disposal of the thin surplus activated sludge. Although some degree of mineralisation of the activated sludge does occur in an extended aeration plant, the production of surplus sludge is in the region of 5 litres/d/P. The solid content is in the region of 0.5% and even with the help of chemical coagulants to accelerate settlement, consolidation in suitable quiescent conditions can normally only be achieved up to a maximum of 3% solid content. Surplus activated sludge flow characteristics are non-Newtonian and hence the thicker it becomes the more difficult it is to convey and consequently dispose of satisfactorily. If a storage tank is not available on the site then the procedure would normally be to let the mixed liquor suspended solids increase up to about 5000 mg/l before tankering mixed liquor away to reduce the operating MLSS in the system.

Mechanical Aerator type plants

These come in three types, namely:

- (1) Ditch type units with horizontal rotors.
- (2) Rectangular tank type units with vertical aerators.
- (3) Ditch type units known as the patented Carousel (as licensed by the Dutch consulting engineers D.H.V.)

BS6297 requires that for every gramme of BOD, applied to the plant then there will be made available 2 grammes of oxygen. The oxygen input efficiency of mechanical aerators as a demand at the motor shaft when operating in mixed liquor would normally be taken as 1.5 kg/kWh with the proviso that to ensure adequate mixing occurs in the tank there must be sufficient power for mixing of at least 15 Watts/m³ of volume. The smallest practical horizontal or vertical aerator would be equipped with a 1.5 kW motor, which will give an oxygen input of 2.25 kg/h which, on the face of it, should be suitable for a population equivalent of 450 P. It is a fact that on a basis of the Watts consumed at the motor shaft per m³ of tank volume that if this figure is below 10 W/m³ not only does sludge deposition occur in the tank (which in itself can cause operational problems) but the efficiency of oxygen transfer in mixed liquor drops significantly. In comparison with other types of plants, therefore, although theoretically the kW/P for oxidation purposes is only 0.00333 kW/P, the power required to ensure adequate mixing is in the region of 0.05 kW/P: about 15 times more than that required for oxidation.

With oxidation ditches using horizontal rotors, 700 mm diameter cage rotors are normally available up to 3 m long, equipped with a 7.5 kW motor. The ditch channel in which the individual rotors operate is limited to about 1.5 m maximum and the horizontal velocity, to ensure there is no sludge deposition, is maintained by the rotor at 0.3 m/s minimum. For applications having motors from 11 kW up to 37 kW the mammoth rotor is used with a diameter of 1000 mm and lengths up to 9 metres. Just a cautionary note: It has been found in practice that rotors having a length of 9 metres have severe fatigue problems with the centre shaft.

Because of the limitation in terms of power available for ditch units (one large horizontal rotor 9 metres in effective length is theoretically suitable for 8000 P) larger sized units are generally adapted from the Carousel concept which is again a ditch but with vertical rotors at the end to convert the centrifugal velocity into linear velocity along the ditch. These normally start at about 45 kW motors per unit and can go up to 300 kW on some of the large installations.

Annular aeration channels with the final settling tank inside, incorporating horizontal rotors, are available for populations up to 10,000, but again would normally start at about 1000 where the bubble type units would finish.

For smaller populations in which you would be mainly interested, extended aeration plants:-

- (1) are expensive in mechanical, electrical and civil engineering works.
- (2) are expensive in running costs.
- (3) are expensive in maintenance costs.
- (4) are expensive in sludge removal costs.
- (5) can be very noisy.
- (6) can be very difficult to operate efficiently because of the specialised skills required in interpreting the optimum method of treatment.

ROTATING BIOLOGICAL CONTACTORS

The total wetted volume within single modular tanks is generally in the region of 0.3 P to a maximum of 0.35 P. Based on the total volume of 0.3 P, the package unit primary settling zone volume is normally 0.18 P to provide at least two hours retention period at a peak flow rate of 6 x DWF and also at least 30 days sludge storage based on a combined sludge (primary and humus) production of 2.5 l/d/P as demanded by most of the Water plc's in the UK. The biozone normally occupies a volume of 0.04 P, assuming a 30% immersion of the discs, and a density of media averaging 150 m²/m³. This is equivalent to a settled sewage BOD₅ applied loading on the discs in the region of 2.5 g/m²/d. The FSZ volume is normally fixed in the region of 0.08 m³/P to ensure at least 2 hours retention period at peak flow and an upward flow velocity maximum of 0.9 m/h.

As explained previously, a BOD₅ loading on the discs of 2.5 g/m²/d is equivalent to an ammoniacal nitrogen loading in the region of 0.4 g/m²/d and given that all other circumstances are correct, the unit should produce a well nitrified final effluent.

The power consumption of RBC rotors is mainly dependent upon the diameter and the speed of rotation. For applications up to, say, 30 P using a 1.6 m diameter, the power consumed at the rotor shaft is in the region of 0.25 W/m² EBA media. The 1.6 m rotor rotates at about 1 rpm. The 2 m rotor has a power demand at the rotor shaft in the region of 0.15 W/m² and also rotates at 1 rpm. The population equivalent normally of this unit is a maximum of 150 P. The 3 m and above rotors rotate at 0.5 rpm approximately and have a power demand at rotor shaft in the region of 0.05 W/m². The effective population range of the 3 m rotor is from about 150 P to 400 P to produce a well nitrified effluent.

If we consider that the average demand is 0.15 W/m² and the EBA/P is 16.8 m³/P, assuming a 96% gearbox efficiency through motor shaft, the power/P = 0.0027 kW/P and the power absorbed per day, assuming a motor efficiency of 70%, = 0.09 kWh/P: substantially lower than any of the other types of plant with electrical powered facilities incorporated.

COMPARISON OF VOLUME OCCUPIED, POWER REQUIREMENTS AND CAPITAL COST OF EQUIPMENT BASED ON A 100 POPULATION PLANT.

Type of Plant	Total Wetted or occupied volume m ³	% of elevated filter volume	Power absorbed kWh/d	% of elevated filter power £	Manufacturing costs	% of manufacturing cost of elevated filter
Septic Tank	22	70	0	0	2,300	29
Small Revolving Distributor	98	310	0.9	8.2	2,100	26 note 1
Elevated Filter	31.5	100	11	100	8,000	100
Submerged Filter	31.5	100	55	500	7,000	88
EAP	32.5	103	66	600	6,000	75 notes 2&3
RBC	30	95	9	82	9,500	120

NOTES:

- (1) Does not include cost of media, roughly £100/m³. 100 P volume media = 69 m³.
- (2) Volume based on an aeration tank volume of 25 m³, giving an aeration period @ DWF of 30 hours.
- (3) EAP arranged in a GRP tank with cover.

SUMMARY

Excluding the septic tank applications, it is my opinion that the submerged aerated filters for small population applications will give the best results at the lowest capital cost investment.

If running costs are a deciding factor then obviously RBCs would be the choice, although the capital cost is higher.

I have assumed in the comments above that the civil engineering costs will be the same.

RBCs are definitely the quietest in operation with sound levels normally not exceeding 60 dBa one metre from the drive units with the covers closed. Submerged aerated filters will produce a noise level even if the blower is under an acoustic cover, of at least 75 - 80 dBa when equipped with motors having ratings in excess of 2.2 kW.

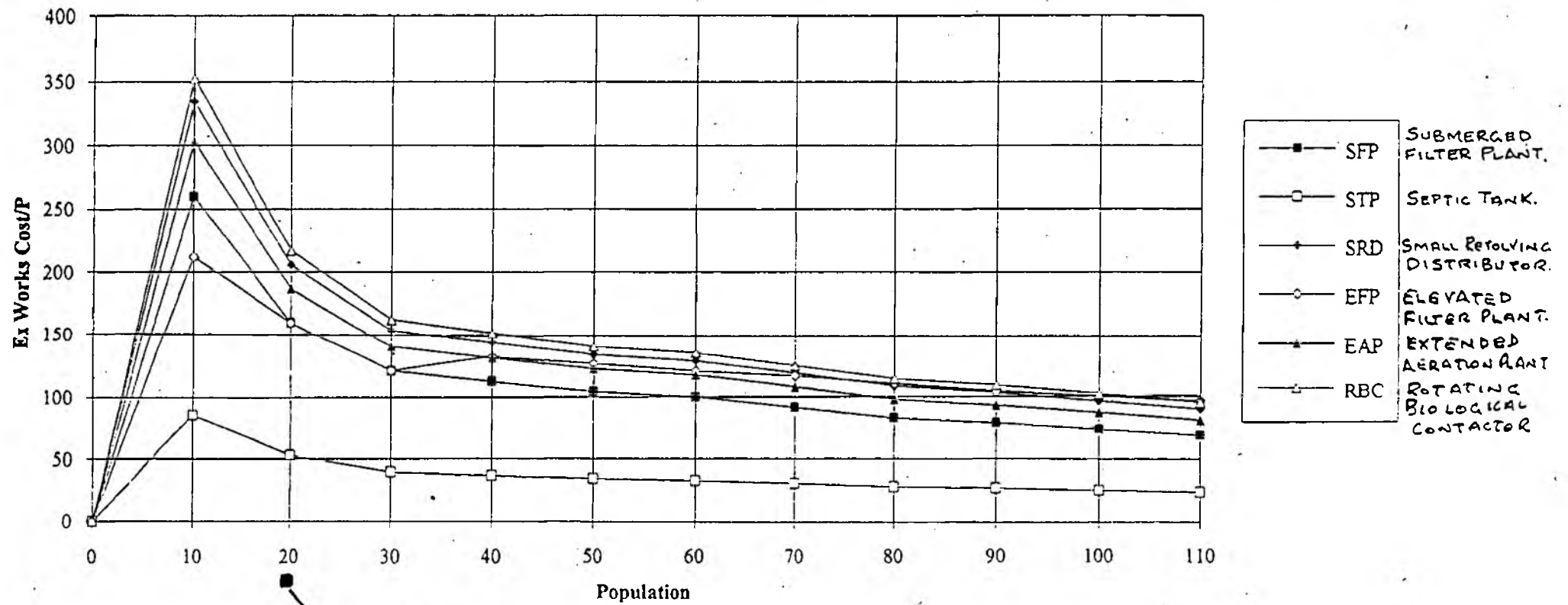
If we consider GRP as the construction material of the tankage then on a size basis the submerged aerated filter has less surface area and hence is cheaper than either the elevated filter or the RBC concept. The actual cost of the blowers and pipework on a population like-for-like basis in a submerged aerated filter would be more than the pumps and pipework required for the elevated filter concept, but much less than the rotor, pump, drive units etc., required in the RBC. The third cost/price element in this comparison is the plastic media and obviously, apart from shaping and supporting, if the media requirement is based on 2.5 g/m³/d, then the amount of media volumetrically and in terms of EBA is the same. However, because of cutting and shaping incorporated in the RBC the media will be much more expensive due to the added labour cost involved in mounting the media on the rotor shaft and the support framework.

Ammonia Levels

There is no plant available on the market that can guarantee by oxidation means alone to maintain the ammonia in the final effluent below 2 mg/l. If the NRA are insisting on a better than 2 mg/l ammonia level it means that most of the BOD and suspended solids will also have to have been removed by some form of tertiary treatment. Consequently the Authority or the architect should be acquainted with this fact and the recommendation made that the provision of root zone treatment should be considered after the oxidation plant.

Chart 1

Ex Works Cost-Population.

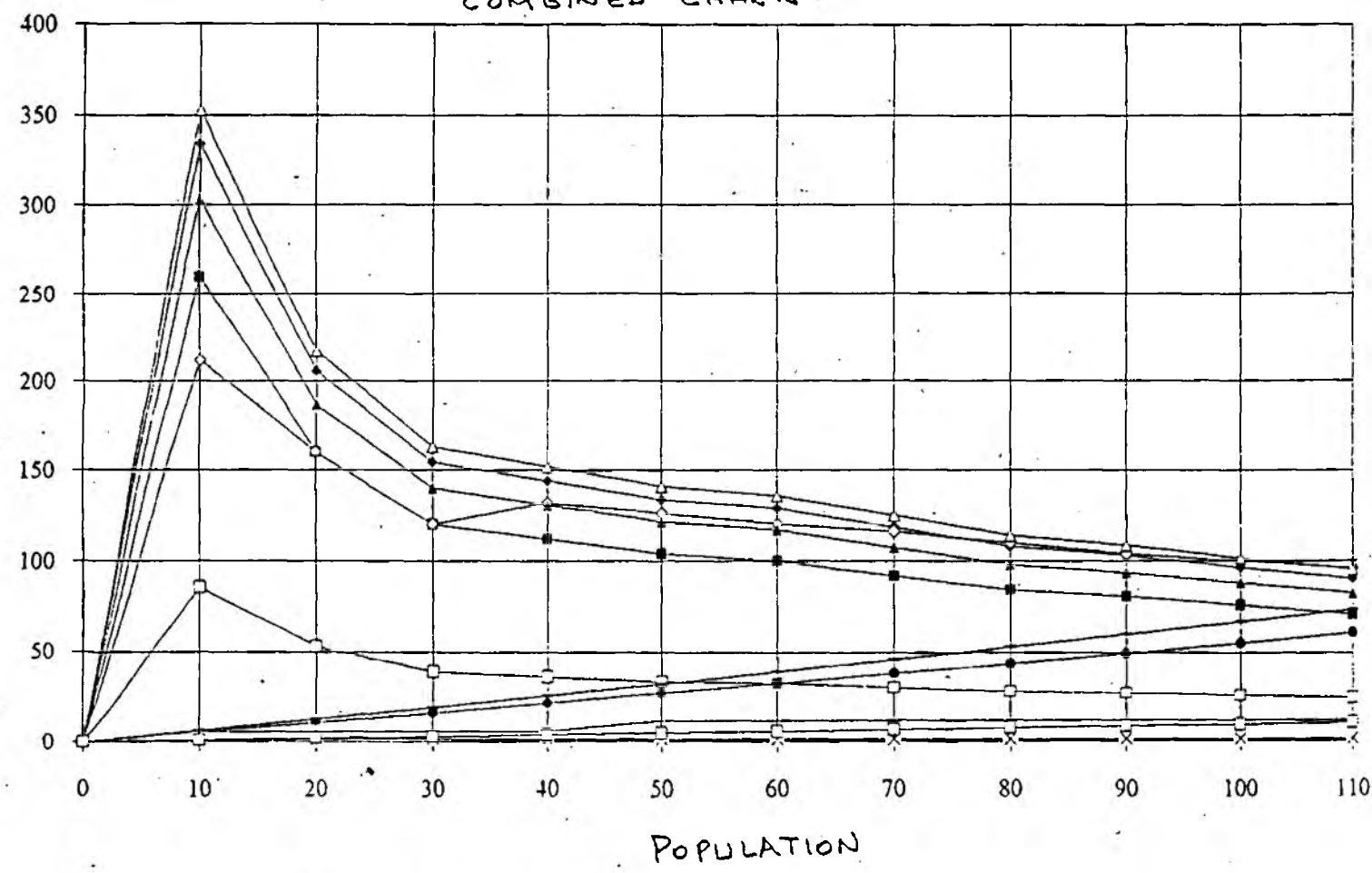


60% Boly
40% N & E
(E : 20%)

COST/P & POWER CONSUMED kWh/d/PLANT POP

Chart 2

CHARTS 1 & 3
COMBINED CHARTS



- SFP
- STP
- SRD
- EFP
- EAP
- RBC
- SFPkWh/d/P
- STPkWh/d/P
- SRDkWh/d/P
- EFPkWh/d/P
- EAPkWh/d/P
- RBCkWh/d/P

Chart3

Power Consumed/day kWh/d - Type of Plant.Title

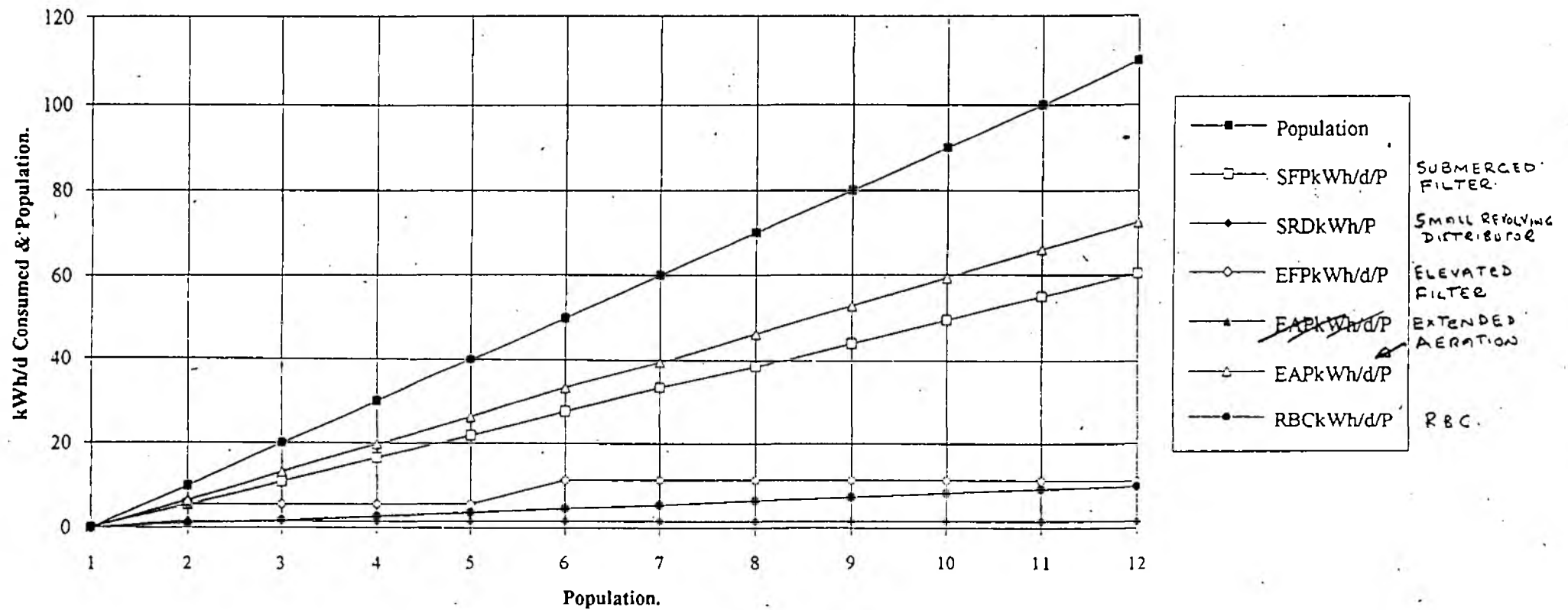
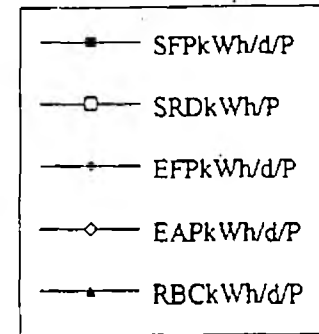
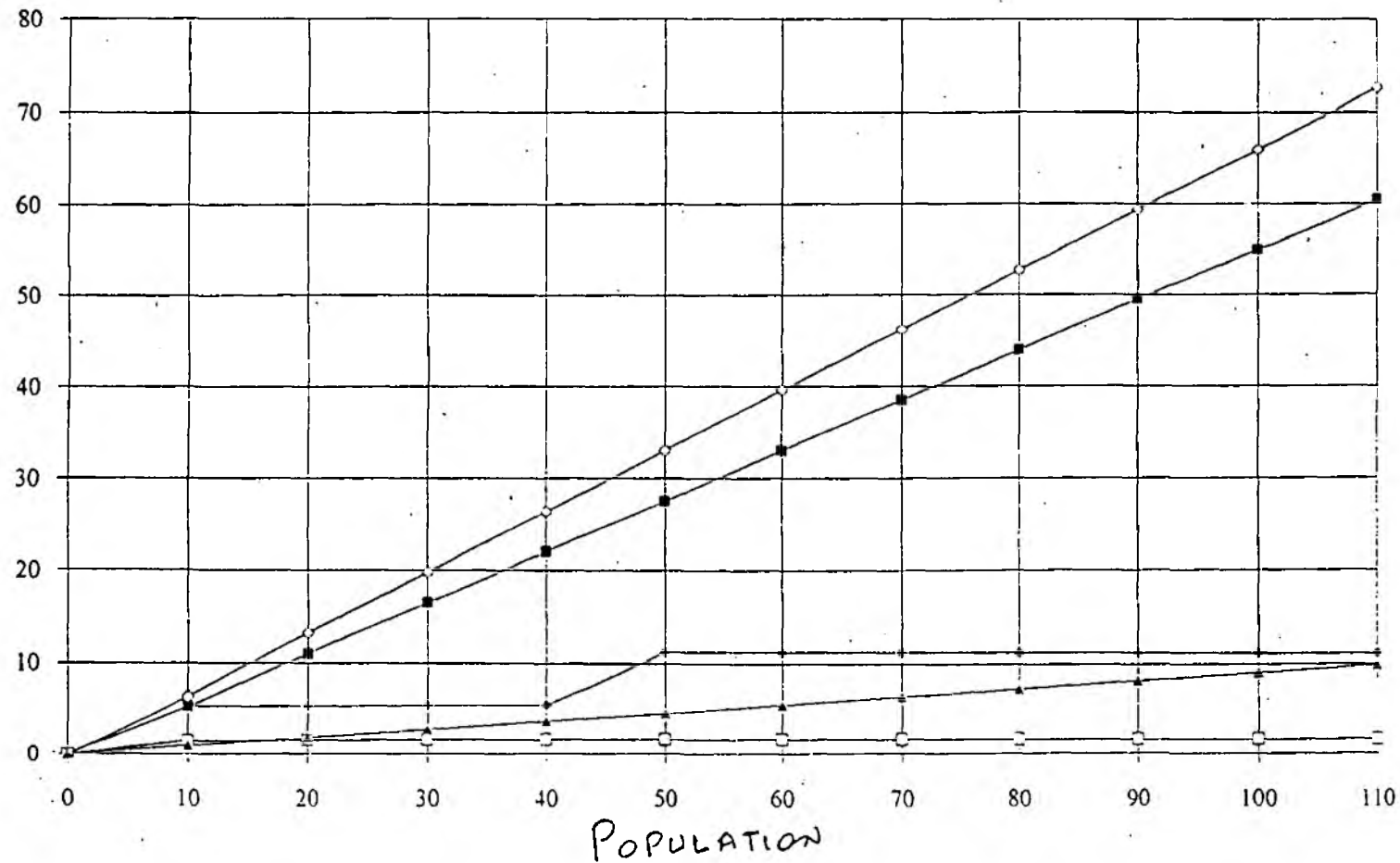


Chart 4

kWh/d / PLANT SIZE



APPENDIX 3

WORMLEY AND DISTRICT DRAINAGE ASSOCIATION (WADDA)

PHASE A (Some principal dates)

1985 WADDA formed.

1986 (Feb). Waverley B.C. decided no action unless scheme could be promoted at little or no cost to Council

1987 (Jul) Waverley B.C. decided against requisition — too expensive and not anyway their responsibility.

PHASE B

1989 Privatisation of water and sewerage.

1989 (June). Government assurances to WADDA on rural sewage quashing:

1989 (May) Lord Heselthorn's statement of 18th May.

PHASE C.1

1990 (June) Formal WADDA complaint to Southern Customer Service C'ttee (Ofwat)

1991 (March) WADDA ask Ofwat — what is happening?

1991 (Sept) DOE say they not Ofwat must handle complaint

1991 (Dec) WADDA withdraw complaint to Ofwat and resubmit to them

PHASE C.2

1992 (April) Ofwat Inspection of Wormley and Inspector's report.

1992 (August) Ofwat issue Information Note No 11

1992 (Oct) Ofwat decision letter on Wormley

[1992 (Dec) DOE decision letter on Fulmer, Slough]

PHASE D

1992 (Autumn-winter). WADDA contest Information Note No 11 and Ofwat decision on Wormley.

1993 (Jan) DOE announce review of financial and legal framework

1993 (May) WADDA informed of the Rural Sewerage Forum

1993 (May) Following April inspection of Wormley by DOE official, WADDA see David Mackean MP, responsible DOE Minister.

1993 (June) DOE official informs WADDA that results of Ministerial review expected in the Autumn.

R.G.
J.E.

WORMLEY AND DISTRICT DRAINAGE ASSOCIATION (WADDA)

Chairman: Robin Gray
Committee John Erde (Engineer)
Members: Pat Long (Parish Councillor)
Mike Weston (Solicitor)
Nick Mawer (Secretary)

Tansy
Brook Road
Wormley
Godalming
Surrey GU8 5UA

0428-682486

Note by the Chairman

Summary

1. Since my circulars to members last summer a lot has happened. For those who just want to know briefly where we stand, here is the latest position. The Government announced in January that there would be a "short but thorough" review of the whole problem of undrained villages. Our MP, Mrs. Virginia Bottomley, then led a WADDA delegation to see the Minister and explain Wormley's difficulties. The results of the review are expected to be announced **in the autumn**. It remains to be seen whether we shall be any clearer about the future, but I am hopeful.

Comment

2. Many of the residents to whom I speak ask - how can our appalling conditions continue with nothing being done? They are not the only ones. Other villages have the same problem: one part of the National Rivers Authority has expressed its concern about the "rising sea of sewage" in villages in the west of England. The main elements are these:
 - (a) Since water was privatised neither the Government nor Ofwat has yet been prepared to require the sewerage undertakers ("water companies" to ordinary people) to carry out the clear duty which we believe was imposed in the Act to **extend** the main drains system. WADDA was given clear written assurances on this by the Government.
 - (b) How can this be? First, there is **muddle**. The Government seems to have accepted EC directives on super-pure water, cleaner beaches, etc., without counting the cost. In the last few days Ofwat have called all this into question and are openly worried about future water bills and rightly believe that bills should be affordable. There also seems to be some friction between Ofwat and the National Rivers Authority (NRA). Indeed, I think the main reason why the Government (and Ofwat) have **evaded** Wormley-type problems is because of the size of other commitments on cleaning up water and sewage. So, secondly, the problem of rural sewage has been put on the **back burner**; the sewerage undertakers have got away for twenty years with no extensions to the main drains system unless somebody else paid most of the cost.
 - (c) The Government review is to be welcomed. WADDA said as much to the Minister. We said that a start should be made immediately on the worst villages: the sewerage undertakers should pay and, if necessary, a small increase in general sewerage charges should be allowed. Main drains, not only water, had to be **affordable to ordinary residents**. We rejected outright the logic of the earlier Ofwat conclusion that residents here should install leak-proof cesspits and have them emptied regularly at today's inflated prices. We think sewerage, like water, should be affordable.

Procedures

3. We are delivering this to most properties, not only members, in the area by hand. My stock of envelopes has dwindled and there are new residents who will not know of WADDA's existence. Extra copies will be available at Hambledon and Wormley post offices and at two pubs: the Dog and Pheasant (Brook) and Pig 'n Whistle (Wormley).

I welcome comments and questions on this circular. The detail below is for those who want to know more.

Detail

4. Ofwat (the Water Industry's watchdog) gave us their conclusions last winter on our complaint. They judged that Southern Water are not in breach of their statutory duties and that, although our area is not "effectually drained", the situation could be remedied by householders and businesses improving their private sewage disposal systems. They referred to their Inspector's opinion that generally our soil conditions are unsuitable for septic tanks and implied that most of us should, therefore, be using leak-proof cesspits and having them emptied more frequently.
5. Your Committee responded strongly to Ofwat's judgement. We complained that Ofwat had mis-interpreted the very simply and directly-worded section in the Water Act that sets out the general sewerage duty, had failed to answer our main arguments and had ignored most of their Inspector's conclusions. We complained of the huge increases in emptying charges (on which Ofwat later secured some reduction).
6. But all this was overtaken when, in January, David Maclean (then Minister in charge of water affairs), in answer to a question in Parliament about provision of main drainage to areas like Wormley, said that he was "considering whether any changes to the legal and financial framework are desirable". We subsequently learnt that the Minister had asked his officials for a nationwide review of the problems of unsewered communities. Good for him.
7. Michael Williams, the civil servant from the Department of the Environment charged with undertaking this review, specifically chose to visit Wormley and was given a tour of our trouble spots by us and helpful Waverley Borough Council officials on 20th April. We were pleased that at long last an official from the DoE has come here, seen the dirty water on our footpaths and in our ditches, and been shown on-the-ground, typical problems for residents.
8. In May, our MP, Mrs. Virginia Bottomley, led a small delegation to see the Minister. It is unusual for a Cabinet Minister to lead such a delegation but it underlines Mrs. Bottomley's strong personal feelings that what is needed urgently is a clear Government position in the face, as she put it, of Wormley's evident problems. We made a number of points to the Minister including:
 - (a) We were outraged by Ofwat's conclusion that there was no case for requiring Southern Water to provide main drains; we think the Act is clear.
 - (b) We were equally outraged by Ofwat's earlier conclusion that, if main drains were provided, pretty well the full cost should fall on residents.

The Minister said in reply:

9.
 - (a) The government needed to assess the scale and cost of the problem; was anxious to keep rises in water and sewerage bills to the minimum - hence the need to see what was involved.
 - (b). The short review by officials would be complete in a few weeks. He could give no undertaking about when Ministers would reach decisions. But the Department have recently said that they hope for an autumn announcement.
10. We said that the scale of the problem was surely already known, that we were not suggesting that main drains were needed everywhere - only that a start should be made on some of the worst areas (pointing out that Southern said that only Wormley in their area was complaining).

Robin Gray
July 1993

APPENDIX 4



Office of Water Services
Centre City Tower
7 Hill Street
Birmingham B5 4UA

Our Ref: FD 6

Charges Control Division

9 May 1990

To all Finance Directors of
Water Companies and Water and Sewerage Companies

Dear Finance Directors

INSET APPOINTMENTS

- 1 The attached paper is being sent to persons who express an interest in inset appointments.
- 2 It comprises a description of the process of making an application for an inset appointment and how the Director General will assess such an application. It also draws attention to the other institutions an applicant may need to consult.
- 3 I enclose a copy for your information.

Yours sincerely,

CW Bolt

C W Bolt



OFFICE OF WATER SERVICES

INSET APPOINTMENTS: PRINCIPLES AND GENERAL APPROACH

Introduction

- 1 Under Section 7 of the Water Act, the Director General has a duty to "facilitate competition". Direct competition in the sense of competing supplies for particular individuals is not likely to occur in the water industry. However, the possibility of new appointments being made to serve green field areas and areas without existing mains water or sewerage (so-called "inset appointments") does provide partial contestability of the market in certain areas. The Director General has already made clear, in his evidence to the MMC on the Three Valleys merger proposal, that he regards it as important to preserve opportunities for such contestability.
- 2 This paper sets out the procedures which have to be followed in considering an application for an inset appointment, and identifies the principles which would be applied to the appraisal of the proposal.

Legislative Provisions

- 3 Under Section 11(5) of the Water Act, only limited companies or statutory water companies may be appointed as water undertakers, and only limited companies as sewerage undertakers.
- 4 Under Section 12 of the Act, an applicant can only seek an appointment (unless the existing appointee agrees to the appointment) in areas not served by existing appointees: this is defined as "premises [which] consist in a building or part of a building which is [not] situated within thirty metres" of a water distribution main or sewer.
- 5 The Act also lays down in Section 13 that, within 14 days of an application for an inset appointment, the applicant must serve notice on the existing appointee and all local authorities in the area concerned.
- 6 The Act lays down that, if the Director General wishes to approve the appointment, notice has to be given, and 28 days allowed for objections, which then have to be considered. Although the Sections on inset appointments do not give any



firm guidance on criteria to be adopted, the general Section 7 duties imply that:

- the Applicant must have appropriate access to financial and technical resources;
- the consumers should be no worse off over time in terms of levels of service and charges that they would have been under the existing appointment.

Whilst the Director General would prefer that the levels of service and charges should be tangibly better, the benefits of his ability to make comparisons between appointees might require him to favour a new appointee where there is equality.

- 7 It would be consistent with the Act for an associated company of an existing appointee to seek an inset appointment within that appointee's own area. This might, for example, be seen as a way of introducing an element of discriminatory pricing if costs varied between the customers or areas currently served. In such circumstances, however, it could be consistent with "no undue discrimination" for the existing appointee to introduce different tariffs for different customers, based on variations in the cost of supply. Given this, there does not seem to be any good reason why an existing appointee should seek an inset appointment in its own area through an associated company: it would seem sensible to discourage such applications.

Engineering: Key Principles

- 8 Section 39 of the Water Act allows existing appointees to approach the Director General if they wish to obtain a bulk supply of water from another appointee, and terms cannot be agreed. The Director General can lay down the terms, subject to them providing an adequate return on capital to the supplying undertakers. Similar provisions do not exist for sewerage but could be inserted in licences by agreement (or after reference to the MMC) under Section 14(1)(a), if this was thought appropriate.
- 9 These arrangements might allow an applicant for an inset appointment to rely entirely on obtaining a water supply, and disposing of sewerage using the facilities of an existing appointee, essentially developing a "common carrier" approach for existing infrastructure. OWS do not see any reasons for wishing to prevent such a development. It would be analogous, for example, to the development of water resources policies in certain areas which already requires a certain amount of planning and coordination of operations between undertakers, now under the aegis of the National Rivers Authority (NRA).



- 10 The NRA has important responsibilities and duties in relation to water resources, in particular for abstraction licences, and in relation to the quality of surface, underground and bathing waters, and discharge consents. This makes it important that any arrangements proposed by potential inset appointees should be consistent with the statutory requirements of the NRA and developed in consultation with them. Early discussion of proposals with OWS and NRA would therefore be essential, probably in advance of formal application.
- 11 New appointees will also need to meet legal requirements as regards drinking water quality, water pressure and other levels of service. Discussions should take place in advance with the Drinking Water Inspectorate.

Procedure

- 12 The Act requires applications to be submitted in "the prescribed manner". The Secretary of State has indicated that he does not propose to make Regulations prescribing the format, as he has powers to do; given that, the Director General proposes that formal applications should be brief (defining the area of the proposed appointment, and whether it is for water or sewerage or both), with detailed information contained in supporting documents. Notice of the formal application must be served on the existing appointee and all local authorities in the area of the proposed appointment, within ten days. It should also be published in the London Gazette and appropriate local newspapers.
- 13 Appendix A sets out a list of the sort of information that may be required by OWS in support of an application. Detailed requirements, and format, would normally be agreed in informal discussion with OWS in advance of the formal application. OWS would normally not make any approach to the existing undertaker in advance of a formal application being received for an inset appointment. (There would, of course, be no reason why the potential applicant should not make an earlier approach; where bulk transfers of water and/or sewage are involved, such discussions would be a prerequisite of providing some of the information set out in Annex A to accompany the application).
- 14 The Act does not lay down any requirement as to the length of time taken to assess an inset application. Although the timescale would depend in part on the complexity of the particular case, the Director General would normally aim to reach a decision within three months of the formal application being received. Once the Director General has reached his initial decision, a further 28 days has to be



or whether there should be a charge to profit and loss accounts for maintenance of assets from year one. However, these issues are unlikely to be crucial in the initial appraisal.

The Licence Documentation

- 19 If an inset appointment is granted to a new company, it is proposed that the Licence should essentially follow the existing model. It is likely that some of the provisions could be simplified. For example, there may be no reason why land provisions need be so full; the presumption might be that the land of any new Appointee would not raise considerations of the national interest in the same way as former Water Authorities and Statutory Water Companies. In other areas, such as monitoring of capital expenditure, there might be advantage in incorporating slightly more detail to reflect arrangements being put in place for all undertakers; and there may be a need to clarify drafting where problems have been identified with the existing model. Generally, the appropriate presumption would seem to be to follow the existing model unless there is a clear reason for an alternative approach.
- 20 If the Inset Appointee is already a water and sewerage undertaker for another area, the question arises whether the inset appointment should be separate, or whether the existing appointment should be modified. The Director General believes it would be sensible to aim for a modified single appointment if the inset area is contiguous to the undertaker's existing area, but for a separate appointment if the area were geographically separate. This balance of presumption might have implications for the corporate structure established for the inset applicant.
- 21 Where an inset appointee has applied for a combined water and sewerage appointment, it would be possible to issue separate appointments for the two services, or at least, to have separate charges levels and K values for the two services within one appointment. However, while the appointee would be required (under the terms of the existing Condition F) to provide separate accounting information for the water and sewerage services, the Director General can see no particular advantages in establishing separate K values or separate appointments.

Point of Contact

- 22 Any queries about the contents of this Note, or any other questions about inset appointments, should be addressed to C W Bolt, Head of Charges Control Division, Office of Water Services, Centre City Tower, BIRMINGHAM, B5 4UA (Tel: 021-625-1307).



APPENDIX A

INFORMATION REQUIRED BY THE DG TO ASSESS SUITABILITY OF APPLICANTS FOR INSET APPOINTMENTS AS WATER UNDERTAKERS

Company

Name of company

Head Office address

Registered Office address

Names of Directors and Senior Management, and their responsibilities (if any) for the inset appointment

Links with other companies

History of company

Relevant experience

Financial structure/liabilities/assets

Latest audited accounts and reports (if available)

Detailed Proposals

Proposed area(s) of appointment

Asset management plans over at least 20 years. Including the capital costs of construction, acquiring, renewing, repairing, maintaining or improving assets, (both underground and overground assets)

Source and cost of funding for development, grants and capital contributions expected

Proposed first year charges

Proposed levels of K over ten years, (or alternative charge control formula)

Any other relevant plans related to charging

Expected number of connections and demand

Other expected revenue for the appointed business



Operating costs projections for 10 year period covering abstraction, treatment and supply of water, the drainage, treatment and disposal of waste water

Projected tax position of the appointed business

Water Supply/Sewerage Service

Source and capacity of water supply and capacity of proposed sewerage service related to projections of future domestic and industrial requirements

Terms of abstraction or discharge: cost projections

Treatment requirements: quality control procedures

Quality of abstracted water

Proposals for emergency supply

Management plans to meet DG requirements

Proposals for providing DG with audited accounts

Procedure for review of above estimates and estimates required for changes to customer charges

Proposed system for and review of procedures for collection of information on condition, capacity and performance of assets

Proposals for dealing with customer complaints

Plans for recreational developments

Proposals regarding recreation, amenity etc

Office of Water Services
21 March 1990

OFFICE OF WATER SERVICES

INCREASING COMPETITION IN THE WATER INDUSTRY

The Director General of Water Services has a statutory duty to use his powers to increase the scope for effective competition between existing water and sewerage companies and also between those seeking to become water or sewerage appointees. This duty is laid down in Section 2 of the Water Industry Act 1991.

The 1989 Water Act allowed companies to apply for "inset appointments". These were appointments which could be granted to another company seeking to provide water/sewerage services on a green field site within the home appointee's area. The scope for these appointments was however limited.

The Competition and Service (Utilities) Act 1992 has recognised some of the shortcomings of previous legislation and allows for the introduction of more competition in the water industry.

The main provisions of the Act are:

New rules on inset appointments and increased powers for the Director General in dispute resolution

Any company will be able to seek an appointment from the Director General to serve a single large customer of another water company. The company seeking the appointment could be either an existing, possibly adjacent, water company or it could be a company entirely new to the supply of water and sewerage services.

A large customer is defined as one using more than 250 megalitres of water a year. The Secretary of State has powers to reduce this threshold.

Inset appointments can be made on any unserved green field site.

If the Director General agrees to an appointment the new entrant will be able to use legal powers of compulsory purchase of land and

entry for construction of pipes etc before the new appointment becomes effective.

If an existing company does not give its consent for the new Appointee to construct a non-trunk water main or sewer in its area, the Director General will have powers to overrule the existing company and give his consent. In all other aspects the new appointee will have the same powers as other companies already providing water/sewerage services.

Increased powers for the Director General to settle disputes about bulk supplies of water and /or sewerage services

The new appointee can ask another appointee either for a bulk supply of water to supply the inset appointment or for the use of its sewage treatment and disposal facilities. If there is disagreement about the terms of supply (financial or otherwise) the Director General has powers to settle the dispute and order a water company to provide a bulk supply of water to another company or a sewerage company to take bulk waste for treatment and disposal.

The Director can also determine disputes between existing water companies about terms of new or existing bulk supply. The Director can end existing agreements if they do not reflect market or operational conditions (subject to payment of compensation).

Ability of all customers to demand a supply from another company

Domestic customers will be able to demand a supply from another water company. In practice, this will probably be limited to those living close to the boundary of two undertakers' areas. The customer will be able to choose on the basis of the cost of connecting and supplying the service who should supply them with their water/sewerage services.



INFORMATION NOTE NO 10 APRIL 1992

OFFICE OF WATER SERVICES

FIRST TIME RURAL SEWERAGE

Within England and Wales, it is estimated that just over four percent of dwellings are not connected to mains sewers. These are mainly in rural areas and the figure varies from under two per cent in the Northumbrian area to 15 per cent in the South West. Issues arise over whether mains systems should be extended to include some of these properties and, if so, who should pay for them?

What is the Role of the Sewerage Company?

Under Section 94 of the Water Industry Act 1991, sewerage undertakers (companies) have a duty to "provide, improve and extend such a system of public sewers...and so to cleanse and maintain those sewers as to ensure the area is and continues to be effectually drained". The companies normally provide extensions to the system by responding to requisitions.

What is Requisitioning?

Where a new public sewer is requisitioned for existing properties, the requisitioner (usually the local authority, but it may be a developer or a group of individuals) agrees to pay part of the cost of providing the sewer. This is the difference between the cost and the income received from sewerage charges and is achieved through either an annual deficit payment over 12 years or by a commuted sum. Grants are also available, from the Department of the Environment under the Rural Water Supplies and Sewerage Act, to lessen the financial impact of such schemes by reducing the capital cost by up to 35%.

The companies also contribute to schemes because the operating costs over the 12 years are not included in the calculations. However infrastructure charges are also levied on each prop-

erty connected. These are charges levied on all new connections to pay for the costs of increasing the capacity of the rest of the system which is required to cope with the load from the new connections.

This requisitioning process is the main method by which companies will extend the current system of public sewers as it ensures that those who most benefit from the improvements pay for the cost. These are the existing occupiers, housing developers and ultimately the purchasers of new dwellings or the community charge-payers of a local authority area.

An alternative method of providing a local sewerage system is through an "inset appointment". This is an arrangement where someone other than the existing sewerage company is appointed by the Director General to provide sewerage services to a defined area. Such an appointee could be a suitable contractor acting on behalf of the local community.

What Constitutes "Effectual Drainage"?

It is not cost-effective or practical to connect all rural properties to public sewers. Properly designed, constructed and maintained septic tanks and cesspools will usually provide effectual drainage.

Public sewers may be essential, however, where circumstances combine to create a public health risk, perhaps due to unsuitable geology and drainage into aquifers used for drinking water.

However, compelling evidence would be needed from the relevant bodies, the National Rivers Authority and the local authority environmental health departments, before septic tanks and cesspools would not be regarded as effectual.

What is the Role of the Local Authority?

Responsibility for ensuring that existing methods of drainage are properly maintained by their respective owners rests with the local authority under its environmental health duties. Planning permissions for new developments must include adequate provision for drainage in accordance with the Building Act 1984 and owners of existing properties can be required to remedy defects in current systems.

In addition, local authorities can initiate schemes to extend the public sewerage system by requisitioning under Section 98 of the Act.

What is the Role of the Director General?

Where individuals or groups of individuals, such as parish or district councils, consider that sewerage companies are not fulfilling their duties to provide effectual drainage, they can apply to the Director General for a determination under Section 94 as to whether an area is effectually drained.

If, after considering all representations and a site inspection, the Director General considers that the locality is not effectually drained and the company ought to have made it so, he would conclude that the company was in breach of its Section 94 duty. He may then make an order requiring the company to do works to correct the situation, unless it offers an acceptable undertaking to that effect. In such circumstances, the Director General will also 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.

Where public sewers are requested by communities, it is important to consider fully what are the costs and benefits of alternative systems and how best the costs of any preferred scheme can be allocated between the various parties. 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.

Changes to the System

The Director General proposes to review the requisitioning system to ensure that it is correctly implemented. This will lead to a set of guidelines for the companies on the requisitioning process.



