

WATER FOR THE FUTURE IN KENT

(Published in July 1991 by Binnie and Partners, for
Mid Kent Water, Southern Water and
Folkestone and District Water Companies)



NRA RESPONSE TO THE ISSUES AND OPTIONS REPORT



NRA

*National Rivers Authority
Southern Region*

Guardians of
the Water Environment

WATER FOR THE FUTURE IN KENT

NRA RESPONSE TO THE ISSUES AND OPTIONS REPORT

CONTENTS

Introduction	3
Summary of NRA Response	4
NRA Comments on Issues and Options Report	5
Introduction (p.2)	5
Summary (p.3)	5
Response to Main Recommendations (p.4, 5)	5
Duties and Policies (p.6)	6
Demand for Water (p.7)	6
Yields of Existing Sources (p.11)	6
Leakage Reduction (p.13)	6
Community Relations and Customer Awareness (p.15)	7
Charging Policies (p.15)	7
Environmental and Social Considerations (p.16)	7
Climate Change (p.17)	7
Security of Supplies (p.17)	7
Options - General (p.18)	8
Groundwater Development (p.19)	8
Surface Water Sources (p.20)	8
Reuse of treated Sewage Effluent (p.29)	9
Desalination (p.31)	9
Bulk Transfers (p.33)	9
Domestic Metering (p.35)	9
Combinations of Options (p.38)	10

National Rivers Authority

Guildbourne House
Worthing

Please return this book on or before last date shown below.
Renewals can be obtained by contacting the library.

NATIONAL RIVERS
ENVIRONMENT AGENCY

062075
DATE 7 JAN 1992
GUILDBOURNE HOUSE
WORTHING

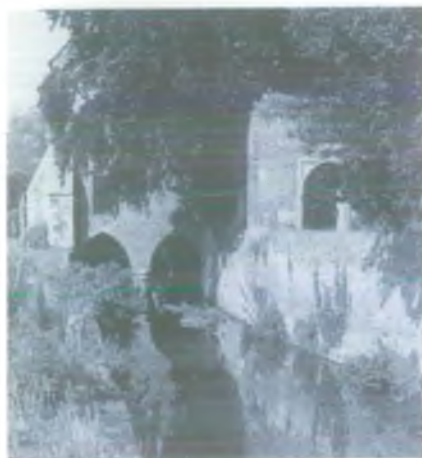
INTRODUCTION

The three water companies, Mid Kent Water Plc, Southern Water Services Limited and Folkestone and District Water Company have commissioned consulting engineers Binnie and Partners to report on future water resources for Kent, with particular reference to the proposed Broad Oak Reservoir.

In a programme of consultation, the project management consultants published in July 1991 a report on the "Issues and Options" and comments were invited by 20th September. The Joint Steering Committee of Water Companies will consider the recommendations of the "Issues and Options" report in October, after receiving the analysis of comments from consultees.



This document summarises the National Rivers Authority's comments, following consultation with appropriate regional advisory groups, including the Regional Rivers Advisory Committee. In due course the Promoters of any of the abstraction options recommended in the Binnie and Partners report, including Broad Oak Water, will have to apply to the NRA for an abstraction and impounding licence. Formal submission of an application must be preceded by public advertisement of proposals in the London Gazette and local newspapers, followed by a period of 28 days when representations may be sent to the Water Resources Manager of the NRA Southern Region. On receipt of the application there is a statutory period of three months within which the application should be determined by the NRA. The Secretary of State for the Department of the Environment may call in either or both of the planning and licence applications for his determination, following a public local inquiry.



The purpose of this NRA response to the "Issues and Options" report is, first, to indicate to the Joint Steering Committee what the NRA's views are on the specific recommendations made. Secondly, the NRA wishes to indicate the way in which it interprets its general statutory duties under S125 of the Water Act 1989, in particular the criteria for preferring specific options. Finally, the NRA indicates a number of areas for investigation which it would like pursued, in some cases on a joint basis between the NRA and Water Companies.

SUMMARY OF NRA RESPONSE

1 Scope The NRA welcomes the wide scope of the study undertaken by the Promoters' consultants, but it must be emphasised that the management of water resources, particularly in the Kent area, goes far beyond the issue of a choice between alternative source options. It must take full account of measures essential for securing the proper use of resources and achieving effective demand management. A balance must also be struck between the needs of consumers and the protection of the water environment.

2 Demand Forecasts It is important that the NRA and the Promoters reach agreement on demand forecasts in all respects including the components of per-capita consumption, population growth and leakage. Climate change should be considered with respect to variations in demand, yields and timing of options.

3 Leakage Reduction Active leakage reduction is welcomed and encouraged. The leakage component of demand forecasts should be agreed with the NRA and explicitly stated as a level which the Promoters will achieve within a given time scale and thereafter maintain, irrespective of the availability of alternative resources.

4 Domestic Metering The Authority agrees that water conservation measures by consumers will not have significant impact until widespread household metering with appropriate tariffs is introduced. The NRA seeks a commitment from the Promoters to a programme of selected metering throughout the supply area, preceded by appropriate trials.

5 It is expected, furthermore, that a substantial part of the programme will need to be put in hand before implementation of any major source development options.

6 Inter-Connections and Re-Allocations The NRA welcomes the recommendation to expand the supply system and takes this to include interconnections and re-allocations between water companies.

7 Environmental Aspects The NRA welcomes proposals which constitute a significant environmental gain. Selection of the downstream Plucks Gutter intake site instead of an alternative in Canterbury is preferred by the NRA as the former imposes roughly half the environmental impact of the latter, and offers greater potential for environmental enhancement.

8 Groundwater The potential for further groundwater development is minimal. In a major surface water licence application such as Broad Oak, the NRA will expect to see proposals for improved aquifer management by reducing related groundwater abstractions that are having an adverse effect on the environment. Priority areas in East Kent include the Nailbourne and Little Stour rivers and the River Dour. The Darent is of particular concern in North Kent.

9 Order of Implementation In considering the scheduling and licensing of major scheme options the NRA will consider the Promoters' proposals in relation to: –

- (i) proper use of water resources – particularly demand management through domestic metering and leakage reduction;
- (ii) environmental enhancement – particularly through selective reduction in groundwater abstraction; and
- (iii) environmental impact – particularly long term effects on rivers and groundwaters.

These criteria for NRA assessment apply to all options being considered, including Broad Oak, Darwell, Yalding.

10 Licence Structure The Authority takes the view that abstraction licences for any of the strategic options should carry conditions which properly reflect the special environmental and resource management problems in Kent. Such conditions will be subject to periodic review by the Authority and provide an opportunity to take account of climate change and other factors which may affect the future balance of resources.



NRA COMMENTS ON ISSUES AND OPTIONS REPORT

NRA comments follow the main headings of the Promoters' report. Only summary comments are given as it is proposed that details be pursued in consultation with the Promoters.

INTRODUCTION (p. 2)

The severity of the present 1988-91 drought is not quoted and needs further investigation. Whilst this has highlighted the need for water resources in Kent, it does not follow that resources should be designed to meet all demands without restriction in such a severe event. Even with significant new resources, hosepipe bans may have been required to accommodate peak demands due to lack of capacity in local distribution systems.

SUMMARY (p. 3)

The NRA is concerned that an appropriate balance should be struck between the needs of water consumers and the protection of the environment. The quoted rates of growth in demand are high and include historic levels of leakage which should be reduced.

The NRA agrees that customer conservation measures will not have significant impact until widespread household metering, with appropriate tariffs, is introduced. This is a matter of particular importance in South East England.

The NRA wishes to see the possible effects of climate change considered in the timing and licensing of major resource options.

The NRA believes the potential for the conventional development of groundwater is extremely limited and wishes to monitor investigations into the Tilmanstone proposal closely.

The NRA is finalising operational rules for the proposed Yalding intake which will optimise use of the existing Bewl Water and protect freshwater flows to the Medway estuary.

The proposed river intake site for Broad Oak at Plucks Gutter is welcomed by the NRA. It is thought to have roughly half the environmental impact of the original Vauxhall intake and to offer potential for environmental enhancement.

The NRA does not accept that there has been an adequate

investigation into the costs and benefits of domestic metering. There are stronger arguments for considering metering in the South East than elsewhere. The NRA believes that more detailed investigation is required, together with local trials.



RESPONSE TO MAIN RECOMMENDATIONS (p. 4, 5)

- The NRA welcomes the recommendation to expand the supply system and understands the expansion to include interconnections and reallocations between water companies. Demand forecasts should take into account household metering savings as well as leakage savings.
- Active leakage reduction is welcomed. In addition the NRA would like to agree firstly, the present day economic level of leakage reduction and secondly, that targets be met and maintained, even after the introduction of new sources. The NRA expects future methods of paying for water, as well as leakage savings, to be taken into account when determining the phasing of resource developments.
- The NRA considers that any additional yields from groundwater are likely to be very small.
- The NRA notes the untried proposal to develop the saline waters of the Tilmanstone aquifers.
- It is agreed that the Yalding scheme is a useful scheme which could be implemented in the short term.
- The NRA welcomes the possible bulk transfer of Darwell water to Kent.
- The NRA considers that the proposed timing for Broad Oak Water cannot be agreed independently from the timing of other resource development and demand management options. NRA criteria for licensing options are based upon:
 - (i) proper use of water resources;
 - (ii) environmental enhancement and
 - (iii) environmental impact.
- The NRA considers a deferred metering programme to be inappropriate for an area where pressures on water resources and the environment are amongst the greatest in the country.

DUTIES AND POLICIES (p. 6)

The report states the duties of water undertakers under the Water Act 1989 are that they must "make supplies available to *all* persons who demand them" (sic). The word "all" has been added and does not appear in the Act. S16 of the Water Act 1945 still permits restrictions to be imposed on the use of hosepipes for watering private gardens, thereby drawing a distinction between normal domestic in house use of water and garden irrigation. It is this latter use that can put a heavy demand on water resources and the environment in times of drought. With increasing affluence and climate change this usage will continue to rise dramatically if unchecked by household metering.

Levels of service at the tap, set by the Director General, affect resource requirements and the environment. The NRA considers that water conservation publicity campaigns should precede hosepipe bans. The level of service recommended by the Director General for standpipes and rota cuts at not more than once in 100 years exceeds the normal once in 50 year risk of failure of the yield of a reservoir or borehole.

In planning to meet levels of service, water companies should provide adequate resources to meet demand without recourse to drought orders which relax licence conditions that protect the environment, except during conditions that are more severe than the design drought.

The NRA will require information on the overall policy for each water company on water metering, for both the domestic and non-domestic sectors, in support of abstraction licence applications.



DEMAND FOR WATER (p. 7)

In general, evidence available to the NRA does not support a number of the statements made regarding water demand. The NRA approach to demand forecasts is based on the Kent County Council (KCC) Structure Plan and OPCS forecasts of population.

It is noted that the "Issues and Options" paper mentions, but does not quantify, any additional increased water demand in the East Thames Corridor, which is not included in the Structure Plan. The inclusion of these proposals in the draft

third alteration of the Structure Plan (winter 1991/92) would have significant implications for water resources in Kent.

The NRA supports the use of demand forecast envelopes but points out that its own detailed forecasts are generally lower. There is a need for further work to discuss the differences between Binnie and Partners' and NRA's forecasts. The effect of selective household metering should be taken into account in the main forecasts presented.

The NRA expects to reach agreement with the promoters on forecast water demands.

There is a need to adopt tighter leakage targets, using the equivalent connections technique as an amendment to Leakage Control Policy Report No. 26, and to establish the economic levels of leakage reduction.

Peak factors are affected by household metering and have a measurable effect on investment in major sources and other parts of the water infrastructure. The proposed peak factors are on the high side and should be reviewed in detail.

Response to recommendation (p.10): The NRA welcomes the recommendation to expand the supply system and understands the expansion to include interconnections and reallocations between water companies. Demand forecasts should take into account metering savings as well as leakage savings.

YIELDS OF EXISTING SOURCES (p. 11)

The NRA reserves the right to audit the yields of existing sources, and would like to agree a methodology to establish the return period of the 1988-91 groundwater drought event.

The NRA assumes that the design criteria for drought outputs should relate to the water sources and not to the supply system. The design condition as expressed would lead to an over provision and should be related to levels of service.

Response to recommendation (p.12): The introduction of capital works for new sources is subject to the issue of abstraction or impounding licences.

LEAKAGE REDUCTION (p. 13)

Household metering reduces both wastage and leakage on the customers' premises and assists reduction of leakage in the water companies' distribution systems.

The graphically presented evidence of leakage reduction in the Thanet supply area is welcomed and the NRA would like to see similar evidence from other areas.

There is a need to clarify the exact definition of the proposed leakage target, stated by the companies as 6 litres per property per hour.

The NRA supports the method of appraisal contained in Leakage Control Policy Report No. 26 and wishes to further consider the equivalent connections analysis.

Response to recommendation (p.14): Active leakage reduction is welcomed. In addition the NRA would like to agree firstly, the present day economic level of leakage reduction and secondly, that targets should be met and maintained, especially after the introduction of new source works.



COMMUNITY RELATIONS AND CUSTOMER AWARENESS (p. 15)

Response to recommendation (p.15): The NRA acknowledges the benefits of raising community awareness and supports the point that maximum impact on demand can only be achieved through household metering and appropriate tariffs.



CHARGING POLICIES (p. 15)

The NRA's response to the OFWAT Consultation on 'Paying for Water' emphasised the need for selective household metering in areas of resource deficit and/or environmental sensitivity. Kent, meets these criteria for household metering more than any other part of England and Wales.

Response to recommendation (p.15): The NRA notes that consultations have generally shown that two thirds of domestic consumers are in favour of domestic metering.



ENVIRONMENTAL AND SOCIAL CONSIDERATIONS (p. 16)

The NRA Southern Region has declared a policy of presumption against further groundwater abstraction from

the Chalk in Kent. The Little Stour and Darent are included in the national list of priority low flow rivers. The NRA looks for improved aquifer management which may include rescheduling use of groundwater abstractions, for example Little Stour, River Dour and Stour Valley sources.

Response to recommendation (p.16): There may be other ways of achieving improved aquifer management in addition to conjunctive use with Broad Oak, but the reservoir could provide a major opportunity for environmental enhancement.

The description of the environmental evaluation is very brief. There is no demonstration of how the negative and positive aspects of scheme proposals have been evaluated, nor is it revealed how the balance of the net environmental and social benefits is arrived at.

If Broad Oak is developed then water will be abstracted from the River Stour and this will impact on the environment. The NRA will need to consider this impact carefully when setting Water Quality Objectives and the minimum acceptable flow regime. In addition it will need to consider licensed and other uses of river water such as fisheries, navigation, marsh feeding and sedimentation.



CLIMATE CHANGE (p. 17)

The NRA has been advised that the widely accepted forecasts of climate change imply more frequent hot, dry summers, but a corresponding small increase in winter rainfall. Existing climate forecasts are not expected to be improved upon for 5-10 years, so water resource decisions have to be influenced by the currently available advice. Consideration should be given to the sensitivity of demand forecasts to the effect of climate change on average and peak demand.

Response to recommendation (p.17): The NRA would like to see climate change taken into account with respect to yields, demands and hence the timing of options.



SECURITY OF SUPPLIES (p. 17)

In Kent there is a potential conflict between the requirement for individual companies to provide an efficient and economical system of supply and a wider requirement to

conserve, redistribute and secure the proper use of water resources in an area under great developmental and environmental pressure.

Response to recommendation (p.17): Local control of sources and the water supply system should not detract from conservation of the environment and the need to redistribute and secure proper use of water resources. Whilst sources (reservoirs and boreholes) may have been designed to meet demands in a once in 50 years drought, it is doubtful that the overall supply and distribution system has been designed to meet that level of service at the tap.



OPTIONS – GENERAL (p. 18)

The NRA questions whether the discounted unit cost method has been used, which is considered to be the most appropriate economic appraisal measure. There is a need for further detailed discussion on the appraisal of options.



GROUNDWATER DEVELOPMENT (p. 19)

The NRA would like to discuss more detailed appraisals of artificial recharge of aquifers from rivers.

Response to recommendation (p.19): The proposal for studies of land drainage soakaways to enhance aquifer recharge is noted, but the option is unlikely to be significantly productive.

In general terms the NRA considers that Kent groundwater is close to full development and in specific areas over-developed. Increased abstractions are likely to have disproportionate impacts upon the environment. The focus should therefore be upon the following:

- opportunities to improve the management of groundwater resources, especially seasonal and conjunctive resource management, without increase in overall abstraction quantities;
- the improvement of environmental conditions in over abstracted catchments by relocation of sources, or reduction in authorised quantities.

Response to recommendation (p.19): The NRA believes that any additional yields from groundwater are likely to be minimal.

SURFACE WATER SOURCES (p. 20)

As a result of environmental stress due to over licenced abstraction, the NRA is considering, amongst other options, the downward variation of some River Darent groundwater licences issued to Mid Kent Water Company Plc, Southern Water Services Ltd, West Kent Water Company and Thames Water Utilities Ltd. Investigations are currently in progress for completion in 1992.

Surplus water from the River Rother, stored in an enlarged Darwell reservoir, could be transferred to the Promoters' area of supply in Kent. A link to an enlarged Darwell reservoir should be more clearly described as an Option.

The NRA acknowledges that the introduction of the Yalding intake would maximise the potential of the existing Bewl Water reservoir and speed refilling after a drought.

The NRA is actively investigating a minimum acceptable flow regime for the Medway estuary and the Yalding intake.

The River Dour is affected by groundwater abstractions and the subject of considerable local concern. The NRA is looking for improvement in flows as a result of improved groundwater management.

The Broad Oak regulating reservoir option should not be discounted at this stage, pending further appraisal of environmental benefits.

The NRA endorses Plucks Gutter as the preferred site for an intake. It has the additional benefit, from the water supply viewpoint, of recovering enhanced flows in the Little Stour resulting from possible groundwater licence variations. Whilst the NRA notes that the figures used for flows and yields are illustrative, there is a need for further discussion to establish a minimum acceptable flow regime and the corresponding reservoir yields.

Response to recommendation (p.27): The NRA will define the appropriate minimum acceptable flow regime for the River Stour at Plucks Gutter which will, inter-alia, take account of enhancing migratory fish runs.

A barrier on the River Stour will become more viable should climate change produce a sea level rise and it will also provide increased yield to meet rising demand. It could be a second stage scheme to optimise water resource development at

Plucks Gutter. However the NRA notes the considerable environmental sensitivity of the barrier proposal and investigations will need to cover all NRA interests.

Response to recommendation (p.28): The NRA will carry out a study of the barrier in the medium term and will look to third parties for contributions.



REUSE OF TREATED SEWAGE EFFLUENT (p. 29)

The NRA welcomes the return of Herne Bay's effluent to the River Stour at Grove Ferry on the understanding that appropriate discharge quality standards will be met.

The NRA confirms that the implementation of the EC Directive on the Discharge of Dangerous Substances to Groundwater will make effluent recharge to aquifers increasingly difficult.



DESALINATION (p. 31)

The NRA would need to be satisfied that:

(i) the ultimate source of the Tilmanstone mine waters had been identified;

and (ii) the abstraction would have no detrimental effect on existing local groundwater resources, prior to issue of a licence to abstract. A further issue that needs to be addressed is the possible risk of subsidence resulting from long term groundwater abstraction.

The NRA agrees the need to investigate the option of developing the contaminated chalk aquifer downstream of the Tilmanstone discharge. Clearly however, a long term pumping test would be necessary prior to issue of a licence to abstract and the NRA would wish to be involved in all stages of investigation of this Option.



BULK TRANSFERS (p. 33)

Bulk transfers between water supply areas are an important aspect of securing the proper use of water resources and the

possibilities in Kent and East Sussex extend beyond the three promoting water companies. The NRA is carrying out a detailed investigation and will continue to guide on appropriate inter company transfers.

Some of the options for bulk transfers seem to be very lightly dismissed and others have not been mentioned.

In considering any application for a major water abstraction the NRA will need to be satisfied that all present and possible future opportunities for bulk transfer have been thoroughly explored.

Transfers between Sussex and Kent Divisions of Southern Water deserve detailed consideration to optimise regional water resources.

With the introduction of new sources for Southern Water Services Ltd and Mid Kent Water Plc it should be possible to transfer Ringwould and Barham sources to Folkestone and District Water Company at an early date and to consider a supply to West Kent Company from an enhanced Medway Scheme.



DOMESTIC METERING (p. 35)

The NRA has a general duty to secure the proper use of water resources and to ensure that they are managed properly, including the conservation of water resources to protect the water environment, while at the same time enabling legitimate demands for water to be met.

As a consequence the NRA supports the metering of household water supplies, especially in areas where water resources are under stress. Kent in general, and North Kent, Thanet and Folkestone in particular, are examples of such areas.

The NRA wishes to discuss a specific study of the costs and benefits of selected household metering in the following water supply areas:

Thanet
Folkestone
Mid Kent (East)
Medway

Economic benefits should include the deferment of capital

expenditure on new sources, transmission and distribution mains.

The NRA believes that the method of economic appraisal used to compare the value of water saved by metering with the cost of water from new sources is inappropriate.



COMBINATION OF OPTIONS (p. 38)

The NRA welcomes the principle of a study of a number of possible options and the selection of several viable options. The NRA will be particularly influenced by the degree to which the options secure proper use of water resources (links, metering and leakage), achieve maximum environmental enhancement and minimise environmental impact.

It is understood from the Options table that the unit cost of water per cubic metre excludes trunk main and system enlargement costs. This may significantly distort the comparisons and discriminate against household metering as a resource option.

The four options of Yalding, Darwell plus link, household metering and Broad Oak are, in the NRA's view, worthy of closer study. Tilmanstone can be included in the list subject to the establishment of its feasibility.

The NRA is disturbed to note that combinations of options appear to have been selected without reference to environmental impact and enhancement.

There is no explanation of the derivation of the environmental and social evaluation tables (p.40, 41). The NRA understands that the Promoters acknowledge that the tables on Impact and Enhancement are only preliminary and incomplete, and requires fuller and more detailed information on the relative environmental enhancement and impact of options. The presence of the tables gives the impression of an authoritative evaluation and assessment of the various options, which may be misleading.

Further to these tables, the NRA would wish to see a full report on environmental enhancement and impact before being able to compare the schemes.

Response to recommendations (p.43): The NRA is in the process of

deriving the proposed conditions for the Yalding intake licence.

Response to recommendations (p.43): The NRA supports the recommendation that the water companies should negotiate a bulk supply of water from Darwell to Kent.

The proposal to introduce Broad Oak in 2005 is earlier than the NRA would expect on the Promoters' own assumption.

Response to recommendations (p.43): The decision to develop Broad Oak cannot be taken independent of decisions to develop other options. The NRA recommends to all involved water companies that they produce comparative environmental impact assessments and statements of environmental enhancements for the relevant options. The NRA will ensure that the rights of the existing abstractors in the lower reaches of the Stour are protected. The NRA supports the improvement of the trunk mains system to maximise bulk transfers and match the introduction of new sources in differing company areas.

Response to recommendation (p.44): The NRA wishes to discuss with the water companies a detailed analysis of the national metering trial data and the monitoring of the effects of their household metering policy on consumption. The NRA seeks early discussion on a programme of metering, including an early pilot metering scheme at several locations in Kent. A thirty year metering programme is effectively an indefinite deferment. A positive approach to household metering, even in selective form, is seen as an essential precursor to major resource development in the South East.







NRA

*National Rivers Authority
Southern Region*

Resources Manager

Headquarters
Guildbourne House Chatsworth Road
Worthing West Sussex BN11 1LD
Tel: (0903) 820692
Fax: 0903 35969
Sept 1991