



Report to the Secretary of State for Environment, Food and Rural Affairs

by **J I McPherson**

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ate: 06 April 2006

APPLICATION

by

SUTTON AND EAST SURREY WATER plc

for

The Sutton and East Surrey Water plc (Drought) (No.1) Order 2006

Hearing held on 29 March 2006

Sutton and East Surrey Water plc – Non-Essential Use Ban

File Ref: DO/06/02

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Sutton and East Surrey Water plc – Non-Essential Use Ban

- The application is made by Sutton and East Surrey Water plc for an Ordinary Drought Order under Section 74(2)(b) of the Water Resources Act 1991 to authorise the Company to prohibit or limit the use of water for any purpose specified in the Order for a period of up to six months.

Summary of Recommendation: The Order should be made.

The Hearing

1. The hearing was held on 29 March 2006 at the Reigate Manor Hotel, Reigate, Surrey.

The Draft Order

2. The draft Order (Doc 1/3) would cover all uses specified in the Drought Direction 1991, though, in the first purpose in Schedule 2, more detailed categories have been given for the locations where watering by hosepipe, sprinkler or other similar apparatus may be banned.
3. The advertised draft Order included the word ‘similar’ between ‘...sprinkler or other’ and ‘apparatus’ in this first purpose, but it was omitted in error from the submitted draft (Doc 1/3).

Objections (See Annex A)

4. 46 objections were received by Defra during the objection period, together with a further five representations. One additional objection was also received by SESW. Although dated the day before, the letter from IMO withdrawing their objection was not before the Hearing (Doc 3/2, Objection 5.2). I have taken all the objections and representations into account in my report, except the one that has been withdrawn.

Sutton and East Surrey Water’s Supply System

5. Sutton & East Surrey Water (SESW) is the statutory water undertaker for some 834 sq km covering East Surrey and parts of West Sussex, West Kent and South London. It provides water services to about 642,000 customers in 252,000 domestic and 19,000 commercial properties. The largest customer is BAA at Gatwick Airport, which currently takes about 3Mld (Doc 3/8).
6. The Company supplies an average of about 160Mld of water per day, and the highest peak day demand within the last 10 years was about 260Mld in 1995. The area of supply is split into the Sutton and the East Surrey Water Resource Zones, but water can be transferred between the two zones (Doc 1/5, Fig 1.1).
7. About 15% of the Company’s supply comes from Bough Beech Reservoir which is a pumped storage reservoir filled by winter pumping from the River Eden (Doc 1/5, para 4.1).
8. The Company’s main supply of water, amounting to some 85% of the total, comes from 80 boreholes in three separate aquifers (Doc 3/8). There are 38 boreholes in the North Downs Chalk which provide about 55% of the Company’s groundwater, 26 boreholes in the Mole Valley Chalk providing about 28% and 16 boreholes in the Lower Greensand making up the remaining 17% (Doc 3/7). The water levels in the North Downs Chalk are monitored by observation wells at two locations - Well House Inn and the Rose and Crown (Doc 1/5, Fig 1).

The Case for Sutton and East Surrey Water plc

Rainfall

9. As measured within the Company's area of supply at Bough Beech Reservoir and at Redhill, rainfall during the winter of 2004/5 was only 72% and 83% of the Long Term Average (using the rainfall records since 1965 at Bough Beech and since 1910 at Redhill) (Doc 1/5, Figs 2.1 & 2.2). For 2005/6 (up to 26 March 2006) the figures were 69% and 79% respectively (Doc 3/9). The other comparable percentages for the North Downs were 76% and 81%, and for the Environment Agency's Thames Region this winter saw 78% (Doc 3/9).
10. The Environment Agency considers the 14 month period to December 2005 to be the second driest such period since the records began in 1883 (Doc 1/5, para 2.4). In their letter of 23 March 2006 to Defra, the EA also agreed with SESW that there has been an exceptional shortage of rain and that there is now a serious drought situation, with the period since November 2004 being the driest 16 months since 1934 (Doc 3/3).
11. These figures demonstrate that there has been an exceptional shortage of rainfall both locally and regionally over the last two winters; probably approaching a 1 in 100 year event.

Effects of Rainfall Deficit

12. However, it is the 'effective rainfall' that is most important for groundwater recharge which, for the North Downs rain gauge, was only 30% of the long term average in 2004/5, and 64% for this winter (to the end of February 2006) (Doc 1/5 Figs 2.3 & 2.4). The Environment Agency currently estimates the effective rainfall for the whole of the Thames Region as 52% of the long term effective rainfall (Doc 1/5, para 2.4). Whilst the rain over the last few days has more or less removed the soil moisture deficit, there is little prospect of any material recharge now until at least next autumn.
13. The groundwater monitoring boreholes at Well House Inn and the Rose & Crown both show the effects of this exceptional shortage of recharge. They are accepted by the Environment Agency as representative of the groundwater levels in the area. They are currently below the historic minimum levels and, exceptionally, the latter has run completely dry for a considerable period during the winter, only partially recovering due to an abnormal pumping situation (Doc 1/5, Figs 3.1 & 3.2).
14. Whilst Bough Beech Reservoir is currently about 95% full, it is more or less on its control curve. A Drought Permit was granted on 28 March 2006 to allow filling to continue in May, subject to the availability of water in the river but, even so, this water will be required to maintain the usual 15% of the Company's output, and there is a limit to the amount of water that can be treated and transferred from that source.

Supply/Demand Balance

15. The Company's Water Resources Plan of April 2004 has been accepted as "fit for purpose" by the Environment Agency. It sets out the steps required to meet demand up to the year 2029/30 using estimates of the deployable outputs from the Company's sources that may be expected in a 1 in 10 year drought situation. These estimates are based on both operational and test data.

16. A further assessment has been made of the deployable outputs in a 1 in 50 year drought and, although the current situation is worse than that, it is these that have been used to assess the supply for this Drought Order application.
17. The outputs from the boreholes are of course limited by the licence conditions, but even if it were possible to materially increase the output, that could cause sudden large drops in water level in the aquifer, eg a 20m drop was recorded in a week in the chalk on one occasion.
18. The average demand in a dry year is about 5% higher than in a normal year but, unrestricted, it could be well above that; it was something like 40% higher during the critical period in 1995/6. The historic peak period has a duration of between 8 and 12 weeks and it may occur at any time between April and August.
19. Using the actual demand for 2003/4, a dry year, and the Water Available for Use (WAU) in 1 in 10 and 1 in 50 drought years, indicates that the demand is likely to exceed supply during the critical period this summer, unless there are restrictions on water use (Doc 1/5, Figs 5.1-5.3).

Drought Plan

20. The Environment Agency is content with the Company's Drought Plan (Doc 1/5, App C) which calls for certain measures to be implemented as the groundwater levels fall into Zones 1, 2 and 3 (Doc 1/5, App C, Well House Inn Operating Curve). The actions for Zones 1 and 2 have already been carried out, and some of those actions in Zone 3 have also been implemented.

Demand Management

21. In accordance with the Drought Plan, a sprinkler and unattended hosepipe ban was introduced in April 2005, and it may have achieved a saving of about 10%. A full hosepipe ban was introduced on 1 March 2006 which should further reduce demand by about 2%. These savings can only be achieved with the co-operation of the Company's customers through sound publicity measures. No further reduction from any increased publicity has therefore been assumed in the Company's projections of demand.

Long-Term Demand Management Measures

22. The above measures are in addition to the Company's long term demand measurement programme:-

- Leakage Control

23. The Company has made significant investment in water leakage detection. It has a leakage rate of only 15% (as measured in accordance with the Water Industry Standard approach). The rate per property is only 90l/day; one of the best records in the water industry, where the average is more like 150 l/p/d (Doc 3/4). At 24.3 Mld the total actual leakage is below the economic level of leakage of 27.2 Mld, and also below the OFWAT target of 24.5 Mld.
24. This has been achieved through a district metering and detection system that uses a bespoke analysis scheme, all operated through a specialist contractor, together with the replacement of old leaky water mains, and controls on water pressure wherever practicable. Nevertheless, the Company would still increase the manpower available to carry out active leakage control throughout the drought period.

- Water Metering

25. All new properties and changes of occupancy in the Company's area now require the installation of water meters and significant numbers of other people also opt for meters. Some 8,255 new meters are being installed per annum.

- Supply Pipe Replacement

26. Domestic customers have a free supply pipe replacement programme.

Additional Supplies

27. As well as seeking to restrict demand, the Company has sought additional supplies.
28. Arrangements have been made to take a bulk supply of up to 5Mld from Thames Water at Merton from 3 April 2006, but they cannot spare any water at Epsom as had been hoped. They plan to introduce a hosepipe ban next month. SESW has no other bulk supplies available to it.
29. The operating levels of all the borehole pumps have been reassessed and, in six cases, it is considered that, if lowered, some additional water could be obtained without undue consequences to the aquifer. In these few cases, the work has been put in hand. Environmental compensation is already required in some cases, and any increase in outputs might require some of the benefits to be put into more compensation schemes.
30. The purchase of privately owned boreholes and their licences has been considered. Of the five identified, two in the gravels would be likely to have unacceptable water quality, two are in any case in use by food producers and the one used for mineral washing currently returns the used water to the aquatic environment in the vicinity of the plant, which would not be the case if used for public supply. There is therefore little or no scope for additional supplies from these sources.
31. The longer-term measures in the Company's Water Resources Plan mainly involve borehole enhancement work but this could not be undertaken in these conditions and any possible future aquifer recharge scheme is a very long way off.

Customer Awareness Campaign

32. As part of its long-term communications, and also following the required actions in the Drought Plan, the Company has implemented a sustained media campaign to enlist the support of its customers (Doc 1/5, Section 9).
33. This includes:-
- Press releases with TV, radio and newspaper coverage,
 - Letters to all customers and direct contacts with 'opinion formers' in the community,
 - Close contact is maintained with Gatwick Airport who have reduced their take from 5Mld down to 3 Mld,
 - The supply of inexpensive water butts (this had little earlier take-up, but will be re-launched)
 - The promotion of water efficiency through the Company Magazine 'Pipelines',
 - Advice on the Company's website about minimising water use in the home and the garden,

- Support for users with high measured consumption,
- Water efficiency advice as part of water fittings inspections,
- A project with NHS hospitals, and
- Participation in research projects such as that on dual-flush cisterns.

34. Although there can be little doubt that everyone in the area knows about the drought situation, some remain to be convinced to take any action. It is therefore intended to make further efforts and in particular to contact directly such organisations as the Women's Institute and gardening clubs.

Non Essential Use Ban

35. With the continuing drought, the final stage in the Drought Plan, short of an Emergency Drought Order for rota cuts and standpipes, is to apply for a non-essential use ban, which could achieve a further 4% reduction or some 8.6Mld, in the critical period (Doc 1/5, Table 5.1). This would give a potential total saving in demand of some 16% (37.2 Mld) in the critical period (Doc 1/5, Fig 5.1). Assuming a restricted demand of 201 Mld, this would be enough to provide an acceptable headroom of supply over demand of some 15.3 Mld (7.6%) across the Company's area as a whole (Doc 1/5, Table 5.2). Substantial water transfers into the Sutton Water Resource Zone would be required, and there would remain continuing uncertainty over the performance of the sources and the impact of the restrictions. Both would be monitored very carefully by the Company. The Water Resources Plan envisages headrooms of 6.6 and 7.7% for the two Water Resources Zones but, with the increased uncertainties during drought conditions, a higher percentage headroom should really be maintained.

36. Accordingly, the Company now seeks a non-essential use ban in accordance with the Drought Directive 1991.

Regulatory Impact Assessment

37. The Company has prepared a Regulatory Impact Assessment of the Proposal in accordance with Cabinet Office Advice (Doc 1/14). It sets out the water supply situation, the consultation carried out, and the available options, together with an assessment of the likely reduction in water demand that might be achieved by the Non-essential Use ban; estimated at a total of some 8.86 Mld in the critical period – equivalent to the water supply for some 18,660 properties, or 7% of those supplied by the Company (Doc 1/14, Table 2). There would therefore be a considerable benefit in safeguarding the supplies to this number of properties.

Socio-Economic Impact

38. The effect of the ban would be a reduction in recreational amenities, reductions in employment and business opportunities and a reduction in welfare resulting from less attractive environments such as 'brown parks' and dry ornamental ponds. What research there is suggests little willingness to pay for such environmental impacts. There is also little firm evidence on which to quantitatively assess the effects on recreational amenity and businesses though they have been considered qualitatively in the assessment (Doc 1/14, Table 1).

39. There would be a reduction in recreational amenities such as sports grounds, golf courses, race courses and private swimming pools and many users place a high value on these amenities but, in many cases, this high value also reflects a high income, and alternative recreational facilities would still be available (Doc 1/14, Page 11).
40. The ban would result in the curtailment of certain employment and business opportunities which may affect employment in these sectors, though employment opportunities associated with other activities would probably increase. The unemployment rate for Surrey in February 2006 was 3.4% compared with the national average of 5.1% (Doc 1/14, page12), which supports the Company's own experience of having difficulty in filling vacancies.
41. Of prime importance however is to avoid as long as possible the need to resort to rota cuts or standpipes, which would cause much more inconvenience and cost to the Company's customers.

Environmental Impact

42. There are no nationally or internationally designated sites that would be affected by the Company's abstractions, but the borehole stations would continue to operate within their licence conditions, which have been set to protect the environment. Without the ban, any increased abstractions could have to be outside the current licence conditions, with possible harm to watercourses and/or the aquifers.

Environment Agency's Views

43. The Environment Agency has expressed support for this Drought Order (Doc 3/3).

The Order and its Implementation

44. The Order (Doc 1/5, App A-but with the insertion of 'similar' between 'sprinkler or other' and 'apparatus' in the first specified purpose) would follow the general form of the 1991 Directive and it would permit the Company to prohibit or limit any or all of the specified uses of water within its area of supply. These would be enabling powers giving the Company discretion in the light of the developing drought situation. They would not prevent the use of privately sourced or recycled water and the Company would have to publicise what measures it was implementing. They would discuss alternative remedies with those who sought advice and would take into account individual circumstances.
45. No map has been provided with the Order to show where the restrictions would apply because of the difficulties of scaling to identifying any specific parcel of land. As the restrictions would apply to the whole of the Company's supply area, it is considered that no map is required.

Responses to the Objections

46. The Company's detailed responses to each objection have been prepared in tabular form (Doc 3/2). Good records exist for some water uses such as golf courses and swimming pools within the Company's area.
47. There are a few objections to the principle of the Order, on the basis that the Company should provide more water resources, or have managed those it does have more appropriately. However, there is no evidence to support this, and the need to apply for the Order is entirely the result of an exceptional shortage of rainfall.

48. Although he regularly objects to Drought Orders, in this case, Mr Kelly does not object to the Order being made, but instead he seeks consideration of the various possible reasons for the reduction in effective rainfall. He also seeks statements in the Inspector's report to assist in the statistical assessment of future droughts.
49. There are other objections from people and organisations who would not be affected by the Order either because they are outside the area concerned or because they would not fall within the terms of the prohibitions eg garden centres.
50. There are those objectors such as window cleaners, golf and bowling clubs that would fall within the terms of the Order, but for which there may well be alternative sources of potable water from other Water Undertakers outside the South East, which is the area particularly affected by this present drought. Other non-mains water such as roof water or recycled water of one form or another may also be available. Thames Water has indicated that final effluent from its wastewater treatment works could well be provided for tankering to water golf courses etc.
51. The other objections sought some form of exemption from the terms of the Order, but it would be inappropriate to derogate from the Directive in individual Drought Orders. The terms of the Directive were set in 1991 to identify those non-essential uses that may be banned in drought conditions. Changes to those uses should similarly be established in any future revision of the Directive. The safeguards for those affected must lie in the presentation of individual circumstances, and the proper exercise of the Company's discretion. This would accord with the approach taken by other water companies such as Mid Kent Water in both 1992 and also in the present drought, and it would be compatible with the note attached to the Yorkshire Water Drought Order in 1996 as submitted with the IMO Objection (Doc 3/2, objn 5.2 - withdrawn).

Conclusions

52. There has been an exceptional deficit of rainfall over the last two winter recharge periods. As a result, the Company's groundwater reserves, which supply about 85% of their water, are at record low levels. Even after taking all appropriate measures to control demand and to increase supply, a serious deficiency of water supplies to the Company's consumers is threatened. In line with the Company's Drought Plan, it is therefore necessary to implement a non-essential use ban, which would have no significant environmental consequences and also relatively limited socio-economic effects compared with the prospect of rota cuts or supply through standpipes, which would become that much more likely without this Ordinary Drought Order.

The Environment Agency's Observations

53. The Environment Agency wrote to Defra on 23 March 2006 (Doc 3/3) giving their view that there had been an exceptional shortage of rainfall in the region, and that they considered a non-essential use ban to be an appropriate drought management tool in such circumstances. Whilst questioning the Company's suggestion that the drought was approaching a 1 in 100 year event, they did not demur from the use of the 1 in 50 year drought deployable outputs used in the Company's Statement of Reasons. The EA's representative at the hearing confirmed their support for the proposed Order.

The Cases for the Objectors

Window Cleaning Industry

54. There are some 180,000 workers in the window cleaning industry in the UK, with possibly some 300 or so in the Company's area of supply. Following the recent introduction of the Work at Height Regulations 2005 (SI 2005. No 735) (Doc 3/5), many businesses have invested up to £30,000 each in water fed pole systems which include a reverse osmosis water treatment process and tankage and may also include a purpose designed vehicle. These provide a safe method of working from the ground and have greatly reduced the number of people killed in the window cleaning industry from the previous level of some 7 to 12 persons per annum. A full risk assessment is now required for other working methods and insurance would be very hard to find for the old practice of working from ladders.
55. The proposed Order would prevent use of the water fed pole equipment. Therefore, it would effectively put many window cleaners out of business, unlike car dealers who can still sell dirty cars, and golfers who can play on brown golf courses.
56. Ground floor windows may be cleaned using a bucket, but a water fed pole can safely reach up to 18m (60ft) almost anywhere, There may however be considerable access and cost limitations on such systems as the use of hydraulic platforms. In addition, many new buildings are designed to have their windows cleaned by this new system and therefore do not have the required fixing points for ladders.
57. A water fed pole uses only about one litre of water per minute and as such it would take about 7 to 10 litres of water to clean the windows of an average three-bedroom house. This is a minimal use of water in comparison to many industries that would be untouched by the restrictions, eg water based paint, liquid chemical or soft drink producers or breweries. Window cleaners seem to have been singled out, just because of their very visibility. Water fed poles should therefore be exempt from these restrictions.
58. If more water is required, then the water industry should improve leakage reduction and, if necessary, invest in new infrastructure; even if this would affect shareholders' profits.

Golf and Bowling Clubs

59. Woodcote Park Golf Club is a long established non-profit making golf club with some 720 members from the Boroughs of both Sutton and Croydon. The Club would be happy to conserve water in the Club House, but consider water is essential to maintain the greens.
60. The Course Manager at Croham Golf Club is ecologically aware, and he follows strict water management policies that include no watering of the fairways, and only restricted watering of the greens and tees for some 5 months of the year. If the ban is allowed, the course would be unfit to play. The members would go elsewhere and possibly not return. This would have severe financial consequences for the Club, which would have to lay-off staff and possibly close. At least watering greens should continue to be permitted.
61. Purley Downs Golf Club has some 700 members. Its primary source of income is from their subscriptions and the green fees paid by visitors, totalling about £600,000 pa. The Club makes a small surplus each year, but its very existence would be threatened if not permitted to water the greens and tees. It would probably cost in the order of £200,000 to reseed and re-turf damaged greens, tees and fairways, and this could only be done with the aid of water – using more than would be required to keep them in reasonable condition. If

the situation became so bad, the Club might have to be wound up, with the loss of many jobs. If the Order is made, there should at least be a dispensation allowing hand watering of the greens and tees; a matter echoed by North Downs Golf Club.

62. With the 58 golf courses in the Company's area, there are many thousand golfers who would be affected and perhaps 1,200 staff whose jobs could be at risk.
63. Epsom & Ewell Borough Council and Mr McGill of the Monotype Bowls Club at Salfords both sought exemptions for the watering of bowling greens, if only because of the high cost of, and long duration to, re-establishing the playing surfaces.

Turf Growing and Sale of Horticultural Equipment

64. The Turfgrass Growers Association estimates some £50m of their trade to be in the affected area and considers the ban would greatly harm the livelihood of its associated businesses. They therefore propose a 28 day exemption for the laying of new turf, without which they anticipate increased soil erosion, water run-off and dusty conditions because of the drought, together with reduced photosynthesis from increased carbon dioxide levels. In contrast to this, turf retains rainfall thereby giving more opportunity for it to penetrate down to the watertable.
65. Tillers Turf supply and lay turf, which they would not be able to continue doing without watering. This would deprive both them and the turf-layers they supply of their incomes. They now use drought tolerant grass species and they do not advocate watering established lawns, but they do consider watering essential for the first 28 days, for which they seek an exemption.
66. The Outdoor Power Equipment Council (OPEC) is an association of companies who supply products connected with the management of private and amenity turf and other grounds-care activities. Without adequate watering, the grass and plants would not grow, and their approximately £500m per annum turnover would be severely affected.

Supply of Bedding and Pot Plants and Turf

67. The availability and access to water is critical to modern farming and growing businesses and the NFU has promoted efficient water use. The proposed ban would have a particularly severe effect on growers of bedding and pot plants supplied to local authorities for amenity planting eg hanging baskets, flower beds etc. The bedding and pot plant industry has a total value of about £148m in England and Wales, and turf growing another approximately £200m, but a number of Local Authorities are already cancelling their orders for such produce in anticipation of water restrictions. These restrictions would be likely to cause a number of businesses to fail.
68. But, this industry uses relatively little water if the plants are watered by professionals, and some local authorities already have plans to use grey water for this purpose.
69. Many landscaping contracts have heavy penalty clauses if the planting fails to establish; for which water is required.
70. Accordingly, there should be exemptions in the Order for local authority seasonal bedding and hanging baskets, and also for new turf and the maintenance of recently established plantings.

71. It may already be intended, but the washing of vehicles for the purpose of bio-security should be specifically excluded in the wording of the Order.
72. Both B & Q and Homebase sought an exception for their garden centre activities because of the financial impacts on their businesses.

Allotments

73. Mike Pateman considers that the water use on allotments is so small in comparison with that of say a golf course that they should be exempt.

Loss of Valuable Plants

74. Karin Orchard argues that her grass may well re-grow, but like the LB of Croydon she considers her very expensive plants would die without watering during the summer.

Swimming Pools

75. Mr Scott argues that his swimming pool servicing business would be severely affected by the proposed ban. When a pool is serviced there is some loss of water especially from backwashing the filter and it has to be topped up with a small quantity of water which Mr Scott estimated in his objection at about 1.25m³, though Mr Lang considered much less during the hearing; in any case, a miniscule amount.
76. Garden Centres are excluded because of their business status, and swimming pool servicing is a business which should similarly be excluded. If not, Mr Scott's 20 or so employees would be likely to lose their jobs.
77. Surrey County Council sought clarification of, and if necessary an exception for, school swimming pools on the basis that they have a requirement to offer swimming to their students under the National Curriculum.

Removal of Graffiti

78. Both Epsom & Ewell Borough Council and the London Borough of Sutton seek a dispensation for high pressure water jetting to remove graffiti from buildings and street furniture, which is a statutory duty under the Clean Neighbourhoods and Environment Act 2005.

Ornamental Fountains/Cascades

79. The operation of ornamental fountains that recycle water result in virtually no 'use' of water and should therefore be permitted. Furthermore, fountains and cascades can be necessary to oxygenate the water for fish.

Vehicle Washing

80. Mr Mottram and Mr Williams accept that cars should not be cleaned using a hose pipe, but consider the small amount of water that would be used with a bucket should be allowed.
81. LB of Croydon sought an exemption for certain vehicle cleaning activities, as did W H Truelove & Son for the cleaning of hearses.

Emission Controls using Water

82. Reigate and Banstead Borough Council wished to clarify the use of water for the control of emissions to the air eg dust suppression on building/demolition sites and various pollution control processes.

Management of Water Resources in the Area

83. Mike Pateman, Karin Orchard, John Thirkell, Michael Pearce, Yvonne Pearse, Paula Sabine and an anonymous objector between them considered the present water supply situation to be as a result of the Water Company's mismanagement. It is said that they should increase leakage detection and repair and provide more water resources. Having previously amalgamated garden watering charges into the water rate, the Company should now pay a rebate to the water ratepayer, rather than passing the savings on to the shareholders?
84. It is said that climate change has been known about for a long time, yet the Water Industry has done nothing to provide the necessary water supplies in the South East, where there are plans for a huge number of new houses. The Water Companies should commit themselves to the necessary schemes before such drought orders are permitted, otherwise ratepayers are very likely to start withholding part of their payments.

Statistical Assessment of a Drought

85. Mark Kelly pointed out the statutory need to show that there had been an exceptional shortage of rainfall before a Drought Order could be made. He raised concerns about the way rainfall statistics were being manipulated in order to show the worst possible situation. He commends the Sutton & E Surrey approach of taking the winter recharge rainfall periods only – unlike the approach taken by Southern Water and Mid Kent. Using weighted SESW rainfall data he estimates that the last two winters' rainfall was 78.85% of the long term average, and he questions really how exceptional this is. He says that his submission to the Bewl Water Drought Permit Hearing showed an eleven month period with 79.39% of the LTA which, from the Tabony Tables, would be between a 1 in 10 and 1 in 20 year event.
86. Sutton & E Surrey say that the period up to December 2005 was the second driest since records began in 1883, but he has found nine drier periods since 1910 therefore giving a return period of 9.5 years. Even if only periods ending in December are considered, there are three, therefore giving a return period of 31.6 years. The choice of period can markedly affect the outcome, for instance omitting October 2004 which was a very wet month made a considerable difference.
87. Mr Kelly does not dispute that there is an impending shortage of water, but suggests that the reasons may well be more complex than just the rainfall, eg land use and vegetation changes, together with higher temperatures, giving longer growing periods and increased evapotranspiration could reduce groundwater recharge. Leakage rates may also be higher than reported, and the reliable yield of the boreholes may have been over-estimated.
88. Mr Kelly seeks a common statistical base on which future applications should be made, and he invites observations on this matter in the Inspector's report.

Inspector's Conclusions

(In my conclusions, the numbers in brackets [] indicate the above paragraphs where the information can be found)

Main Considerations

89. In determining this application for an Ordinary Drought Order that would authorise Sutton and East Surrey Water plc to prohibit or limit the use of water for the non-essential uses specified in the Drought Direction 1991 for a period of up to six months, it seems to me that the main considerations are:-
- Whether there has been an exceptional shortage of rainfall,
 - If so, whether there is a serious threat to public water supplies in the Sutton & East Surrey supply area, and
 - If that is so, whether the increased security of supply would justify the likely environmental, social and economic consequences of authorising SESW to ban these uses of water.

Rainfall

90. Mr Kelly quite correctly points out the requirement for an 'exceptional shortage of rain' before a drought order can be made (Section 73(2)(a) of the WRA 1991). He also points out that there is little guidance on what constitutes an exceptional shortage of rain which, it seems to me, remains a matter to be judged on the available evidence in each case [85].
91. The rainfall in the Company's area is recorded at Bough Beech Reservoir and at Redhill, together with the Environment Agency's site at North Downs. The rainfall for the last few years has been below average but, of particular relevance for groundwater resources, the last two winters have been well below the long term average (LTA). At Bough Beech and Redhill, rainfall was only 72% and 83% of the LTA for the winter of 2004/5 and 69%, and 79% for the winter of 2005/6 (to 26/02/06). For the North Downs the corresponding figures were 76% and 81%, and for Thames Region of the Environment Agency (EA) it was only 78% for this winter [9].
92. The EA consider the 14 month period to December 2005 to be the second driest since 1883 for the South East, and they say that the 16 months since November 2004 was the driest since 1934 [10]. They therefore strongly support the Company's argument that there is at least a 1 in 50 year drought situation, if not perhaps the 1 in 100 event suggested by the Company [53]. Such an event is well beyond the assumptions on which water resources would normally be planned, eg a 1 in 10 year drought [15].
- 93. I therefore conclude that there has been an exceptional shortage of rain in the relevant area.**

Effect of Recorded Rainfall

94. Bough Beech Reservoir is operating at about its control curve, and a Drought Permit has just been granted to permit continued refilling into May, providing there is sufficient water in the river [14]. Accordingly, this 15% of the Company's supplies seems reasonably assured for the time being [14] but, bearing in mind the relative proportions, I see little scope for Bough Beech to support the Company's groundwater resources this coming summer.

95. The remaining 85% of the Company's water supply comes from a total of 80 boreholes in three separate aquifers, where the groundwater is replenished by the 'effective rainfall' (the proportion that recharges the aquifer) [8, 12].
96. The EA estimates the effective rainfall at its North Downs site to have been only about 30% of the LTA in 2004/5 and about 64% for this last winter - up to February 2006. The rain over the last few days will make little difference because it has come at more or less the end of the winter recharge period, after which the soil moisture deficit is likely to rise throughout the summer [12].
97. Although both of the groundwater monitoring boreholes at Well House Inn and the Rose and Crown are into the North Downs Chalk aquifer, that is the predominant source of the Company's groundwater and these records are accepted by the EA as being representative of the groundwater resources in the area [13]. I see no reason to disagree.
98. Both of these monitoring boreholes show the groundwater to be at historic record low levels. The one at the Rose and Crown ran dry for a period during the winter and only recovered to the extent that it did because of an abnormal pumping situation [13]. Bearing in mind that the Company has operated its sources within the licensed conditions [42], I accept that these historic low water levels are probably as a result of the low effective rainfall.
99. Mr Kelly has postulated a number of possible reasons why the effective rainfall may have been reduced [87] and both the Company and the EA will no doubt consider them when reviewing the Company's Water Resources Plan in the future. I am not however in a position to do so in connection with this drought order application, for which I have already found the essential pre-requisite of an exceptional shortage of rain.

Threat to Public Water Supplies

100. Although the Company suggests the situation is approaching a 1 in 100 year drought event [11], the EA seem to consider it nearer to a 1 in 50 year drought [53]. The Company has anyhow used a 1 in 50 year scenario to estimate the deployable outputs from its sources [16] which, when compared against the water available for use (WAU) for a 'normal' dry year such as 2003/4 shows that during the critical peak period the demand is likely to considerably exceed supply, unless increased supplies are made available, or reductions in demand are achieved [19].

Drought Plan

101. The EA is content with the Company's Drought Plan which calls for certain actions as water levels fall in the monitoring boreholes. The water levels throughout the year are represented by curves which define the upper and lower limits of Zones 1, 2 and 3 [20]. Water levels are now well into Zone 3 and the actions corresponding to Zones 1 and 2 have been carried out, together with some of those for Zone 3 [20]. In particular, there has been considerable publicity about the developing drought situation [32, 33] and a sprinkler and unattended hose ban was introduced in April 2005, followed by a full hosepipe ban on 1 March 2006 [21].
102. I am rather surprised to see no reference in the Drought Plan to attempts to find additional supplies, but the Company has, quite rightly, sought to do so.

Increased Supplies

103. The Company has made arrangements for an additional 5Mld from Thames Water at Merton [28] and has put in hand the repositioning of six borehole pump sets which should achieve a little more water [29]. However, they have had no success in locating additional unused licences [30] and I agree that any possible groundwater recharge scheme for the area is likely to be well outside the timescale of this drought order. In any case, it would require available water in the first place, and that is not likely under drought conditions [31].

Demand Management

104. The Company has been implementing long term measures to control the demand for water in its area for some time. These actions include the metering of all new domestic properties and those which change ownership, together with the free replacement of domestic supply pipes [25, 26].

105. The Company also has a long-term leakage control system which has achieved a total leakage rate below that called for by OFWAT, which itself is lower than the economic level of leakage [23]. This translates into an overall total leakage rate in the order of 15%, with leakage per property at about 90 l/property/day, compared with the industry average of more like 150 l/p/d [23]. Even so, the Company recognises the importance of continuing control over its leakage, and would further increase the manpower available for this purpose if the drought order is made [24].

106. The actions taken so far by the Company are rather difficult to quantify in terms of the water savings achieved, but it is quite possible that they currently amount to about the 12% claimed [21]. The Company computed its overall supply-demand balance to have a headroom of 15.3Mld in the critical week if the Order is made [35]. That calculation assumed a saving of 8.6Mld from the non-essential use ban [35], but did not allow for the 5Mld now available from Thames Water [28]. Without the Order, the headroom would therefore be more like 11.7Mld, which would give only some 5.8% over the assumed restricted demand of 201Mld, and some 4.5% over the previous highest 10 year peak of 260Mld [6]. The Company's Water Resources Plan assumes headrooms of 6.6 and 7.7% in the two Water Resources Zones [35] and, with the uncertainties of a drought situation (including the continuing availability of the Thames supply), I consider the headroom should be more, rather than less.

107. I conclude that without the proposed non essential use ban, there is a substantial threat to public water supplies in the Company's area.

Non Essential Use Ban

108. The Company put the further water savings likely to be achieved from a non essential use ban in the critical period at 8.6Mld, or about 4% [35], though in the Regulatory Impact Assessment the assessment of the individual elements amount to a total of 8.86 Mld – or the water supply for 18,660 properties. [37]. Using the former figure, the Company considered the anticipated 15.3Mld (7.6%) headroom to be acceptable [35], and providing the bulk supply from Thames Water remains this would be further increased to meet the uncertainties of the situation.

109. Bearing in mind the regulated nature of the Water Industry and the requirement for Water Companies to provide long term Water Resources Plans, together with Drought Plans for exceptional circumstances, I place little weight on the objections that seek to argue that the Company should have done more to provide additional resources [83, 84].
110. In the light of the likely water supply-demand situation later this summer, I consider the drought application to be a prudent water management measure by the Water Company, but one that must be considered against its likely environmental and socio-economic consequences.

Consequences of the Drought Order

Regulatory Impact Assessment

111. The Company prepared a Regulatory Impact Assessment for this Proposal [37]. It considers in some detail the benefits to be achieved in the form of the water savings likely to be available from banning each of the non essential uses [37]. It does not however cover the costs in terms of reductions in recreational amenities, loss of employment opportunities and effects on welfare resulting from a less pleasant environment in anywhere near the same detail [38-41].

Environmental Impact

112. With the drought order, abstractions from the Company's boreholes would continue within their licensed conditions and there should therefore be no increased impact on the aquatic environment [42].

Socio - Economic Impacts

- Window Cleaning

113. The window cleaning industry has largely changed its method of operation in the light of the Work at Height Regulations that came into force last year [54]. Many window cleaners now use water fed pole systems which allow them to clean windows safely from the ground but, as these are fed by a hose, they would be banned by the proposed Order [54-56]. Although the window cleaners' representatives accepted that ground floor windows could be cleaned without a water fed pole [56], many of the objectors still envisaged that they would lose their livelihoods [55].
114. The Company pointed out that, at present, supplies of potable water could be brought in from areas not particularly affected by the drought or, with the reverse osmosis process that is included as part of the equipment, some other, perhaps recycled, water might be used [50]. This would undoubtedly increase the cost and general difficulties of operating a window cleaning business, and the water savings may not be that great because the water fed pole system is said to use only one litre of water per minute [57].
115. In the Regulatory Impact Assessment, the Company identified little in the way of water savings from this use, but at the time they had very little on which to base their assumptions (Doc 1/14, Table 1 item (vii)). If only from the objections, they now have more information and could make a more informed assessment of the savings likely to arise from banning water fed poles for comparison with the hardship to the window cleaners.

- Golf Courses and Bowling Greens

116. The Company had information about the likely water useage for golf courses and bowling greens from their own records [46]. They estimated that the 58 golf courses in their area [62] are likely to use about 1.334 Mld in the critical period; the equivalent of 2,809 domestic properties (Doc 1/14, Table 1 item (i)). If the greens and tees were left unwatered, I consider their condition would very likely lead to reduced income for the golf clubs, but there is the possibility that they could be watered by other means, such as the use of waste water treatment works final effluent tankered in for the purpose [50]. Accordingly, I very much doubt if there would be the wholesale loss of employment and other dire consequences predicted by the golf clubs [62].

117. Whilst there are fewer bowling greens in the area, it seems to me that similar considerations apply to those for golf clubs [50, 63].

- Turf, Plants and Allotments

118. I accept the argument that water is very likely to be required to establish new turf, and in the growing of bedding and pot plants, and possibly also for certain specialist plants [64, 65, 67-70, 74]. However, despite the livelihoods dependent upon these activities, I consider them of considerably less importance than the supply of water for the basic needs of the community. The same must be the case for suppliers of equipment [66]. The use of hose pipes on allotments is already covered by the hosepipe ban, though watering by other means is not [73].

- Swimming Pools

119. The Company has records of the number and the water use of the private swimming pools in its area [46] and has estimated a total saving of 4.015 Mld in the critical period (Doc 1/14, Table 1 item (ii)). This is a considerable quantity of water to save and, even if the representatives of the swimming pool industry are right about their claimed smaller quantities, it is still likely to be a significant amount [75].

- Ornamental Fountains/Cascades

120. It is true that the use of ornamental fountains and cascades are not likely to 'use up' much water if they recycle it [79] but nevertheless to see dry fountains would considerably reinforce the need to conserve water and therefore, if only for publicity purposes, would be advantageous. It would be a matter for the Water Company to consider whether any fountain claimed to be necessary to aerate water for fish should be enforced against.

- Graffiti Removal

121. Similarly, it would be a matter for the Company to consider the need to remove graffiti, taking into account any statutory requirements to do so [78].

- Vehicle Washing

122. In general, the prohibition of car washing would also send a strong message to the public to save water [80], though washing vehicles' windows and lights is clearly necessary for safety purposes. Similarly, there may well be health and hygiene requirements to clean farm vehicles [71], some Local Authority vehicles and hearses [81]. These should be considered by the Company at the time.

- Emissions Controls

123. I would find it very surprising if there was any attempt to prevent the use of water for emission controls that are required for health and safety purposes [82].

Employment Opportunities

124. It is clear that the strict enforcement of the Order may result in some job losses [55, 62, 65, 67, 76]. In many cases the people concerned would be best qualified to take on another directly equivalent job, but these other jobs may also be affected by the restrictions in water use. Nevertheless, the unemployment rate is lower in the area than the national average [40] and therefore there is at least some prospect of alternative employment for some people.

Form and Implementation of the Order

125. Although in slightly different words, the draft Order seeks authority to ban all the specified uses in the Drought Direction 1991 [2]. This is a standard list that has been established nationally, and I see no local reason why any of these purposes should be excluded. If the Order is made, it would be a matter for the Company to implement any, or all, of these uses in the light of the developing drought situation, and also for them to carry out the necessary publicity and enforcement.

126. In deciding which uses to ban, I would expect the Company to consider very seriously the amount of water that was likely to be saved against the hardship likely to result.

127. The Order would enable the Company to ban these various non essential uses of water in order to maintain essential supplies to the community. When viewed in these terms, I do not consider the possible consequences to the appearance of the area, or to the effects on the recreational and employment opportunities to be too onerous.

128. No map has been provided to show the area over which the ban would apply, but I see no particular need for that because it would be the whole of the Company's area [45].

Summary

129. I am satisfied that there has been an exceptional shortage of rain in the Company's area and that as a result there is a substantial threat to public water supplies, which could be considerably mitigated by the proposed ban on non essential water uses.

130. Such a non essential use ban would undoubtedly have considerable effects on a number of people, in some cases possibly leading to the loss of their jobs. Even so, I consider it important that the Company has the authority to ban these non essential uses if made necessary by a worsening drought situation.

131. In deciding which uses to ban, I would expect the Company to choose first those that would save the most water and impact on the least people.

Recommendations

132. I recommend that the Order be made in the form drafted, but with the one correction noted in paragraph 2 of this report.



INSPECTOR

**Sutton and East Surrey Water plc
Drought Order for a Non-Essential Use Ban**

List of Objections & Representations received by Defra

No	Person/Organisation	Nature of Objection	Ref in Doc 3/2
1	Andrew Pelling MP	Window Cleaning	1.1
2	Belinda Lovejoy	Window Cleaning	1.5
3	Colin Glenn	Window Cleaning	1.16
4	Craig Mohun	Window Cleaning	1.6
5	Dave Herpe	Window Cleaning	1.3
6	David Lee	Window Cleaning	1.7
7	Dean Powell	Window Cleaning	1.8
8	Friends of Old Wallington Hamlet	Ornamental Fountain	7.5
9	Gary Elford	Window Cleaning	1.9
10	Glyn Howard	Window Cleaning	1.4
11	Ian Giles	Window Cleaning	1.15
12	Jeff Brimble	Window Cleaning	1.18
13	John Garnett	Window Cleaning	1.10
14	John Thirkell	Mismanagement	6.1
15	Justin Ruggles	Window Cleaning	1.12
16	Marc Tancredi	Window Cleaning	1.21
17	Neil Williams	Window Cleaning	1.17
18	Steve Abbott	Window Cleaning	1.13
19	IMO Carwash Group	Car Washing	5.2
20	Tageorgesa	Window Cleaning	1.11
21	Woodcote Park Golf Club	Watering Golf Course	2.3
22	Croham Hurst Golf Club	Watering Greens	2.1
23	Federation of Window Cleaners	Window Cleaning	1.14
24	Karin Orchard	Watering Gradens	4.1
25	Paul Scott	Swimming Pool Servicing	3.1
26	Purley Downs Golf Club	Watering Greens	2.2
27	Turfgrass Growers Association	Turf Laying	4.2
28	Association of Professional Window Cleaners	Window Cleaning	1.19
29	Michael Pearce	Inaction by Water Cos	6.2
30	Mike Pateman	Watering Allotments	7.7
31	National Farmers Union	Potting, Bedding Plants and Turf	7.8

32	Steven Lowe	Window Cleaning	1.2
33	Tillers Turf	Turf Laying	4.3
34	David Hunter	Ornamental Fountains	7.6
35	Epsom & Ewell BC	Graffiti Removal and Watering Bowling Greens	7.4
36	Ian McGill	Watering Bowling Greens	2.4
37	Mark Kelly	Assessment of Rainfall Statistics	7.10
38	North Downs Golf Club	Watering	2.5
39	Outdoor Power Equipment Council	Irrigation	7.9
40	Yvonne Pearse	Leakage	6.3
41	Alan Cottle (Surrey CC)	School Swimming Pools	7.11
42	B&Q	Nursery and Garden Centres	4.5
43	Victoria Joy (Homebase)	Plant Watering	4.4
44	Andrew Mullen	Window Cleaning	1.20
45	Anonymous	Water Resources	6.5
46	Nick Mottram	Car Washing	5.3
Additional Objection Received by SESW			
47	W H Truelove & Son Ltd	Washing Vehicles	7.12
Representations			
48	Dave Williams	Car Washing	5.1
49	LB of Sutton	Graffiti Removal	7.2
50	Reigate & Banstead BC	Control of Emissions using Water	7.1
51	LB of Croydon	Several Aspects of Direction	7.3
52	Paula Sabine	Timing of Order	6.4

APPEARANCES

FOR SUTTON AND EAST SURREY WATER:

Mr R Fookes	of Counsel, instructed by Berwin Leighton Paisner Solicitors Operations Director for Sutton and East Surrey Water
Mr M Hegarty BSc(Hons) MBA CEng, FICE FCIWEM	
Mr R Rap CEnv DipWEM MCIWEM MIIE	Supply Manager for SESW
Mr J Downer BEng(Hons) CEng MCIWEM MIWO	Distribution Manager for SESW
Mr B Arkell BSc PhD MCIWEM	Principal Consultant and Business Manager for SESW
Mr J Reed BSc MSc CEng MICE MCIWEM	Senior Engineer at Atkins Water and Environment

FOR THE OBJECTORS:

Mr C Mawlam	From the Federation of Window Cleaners
Mr N Palmer	From Purley Downs Golf Club
Mr A Brobyn & Mr P Lang	From the Swimming Pools and Allied Trades Association
Mr P Austin	From Epsom & Ewell Borough Council
Mr J Archer	From the National Farmers Union
Mr T Fell	From the Turfgrass Growers Association
Mr M Reeves	From Homepage plc
Mr A Cottle	From Surrey County Council

OTHER INTERESTED PERSONS

Mr J Willis	From Thames Region of the Environment Agency
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DOCUMENTS

- Document A List of persons present at the hearing
- Document 1 Application Documents
- 1/1 Letter of Application
 - 1/2 Cross references to DEFRA's Guidance Notes
 - 1/3 Draft Drought Order
 - 1/4 Executive Technical Brief
 - 1/5 Statement of Reasons
 - 1/6 Location Map
 - 1/7 Plan of Water Resource Zones
 - 1/8 Proforma Notice of Application
 - 1/9 List of Newspaper Advertisements
 - 1/10 Copies of Newspaper Advertisements
 - 1/11 Statutory/Non-statutory bodies and consultees notified
 - 1/12 Notices sent to Statutory/Non-statutory bodies and consultees
 - 1/13 Drought Plan
 - 1/14 Regulatory Impact Assessment
- Document 2 Third Party Documents
- 2/1 Environment Agency's Drought Prospects 2006 Report
 - 2/2 Statement from the EA's website – 24 February 2006
 - 2/3 Minutes of EA MD Regional Drought Co-ordination Group - 31/01/06
 - 2/4 Minutes of EA MD Regional Drought Co-ordination Group - 28/02/06
 - 2/5 email from EA, Southern Region Director
- Document 3 Additional SESW Documents
- 3/1 Note of Appearances
 - 3/2 Copy of All Objections, SESW's letter to objectors notifying them of the hearing with Statement of Reasons and list of Core Documents, together with SESW's Table of Objections giving a summary of both objection and SESW's response.
 - 3/3 EA's letter to Defra dated 23 March 2006
 - 3/4 Estimates of Total Leakage for Water Companies
 - 3/5 Extracts from The Work at Height Regulations 2005 (SI 2005 No 735)
 - 3/5a A Brief Guide to The Work at Height Regulations 2005
 - 3/6 HSE Information Sheet MISC613 on Safety in Window Cleaning using Portable Ladders
 - 3/7 SESW Closing Submissions
 - 3/8 SESW Fact Sheet
 - 3/9 Bundle of Tables Figures etc for to update the Statement of Reasons to 26 March 2006 and a Plan showing the three Aquifers
- Document 4 Other Documents
- 4/1 Survey/Petition by the Association of Professional Window Cleaners
 - 4/2 emails from Mid Kent Water to and from Glyn Howard
 - 4/3 Press cutting on Water Savings in Tokyo
 - 4/4 Press cutting on Wasted Water