A WATER RESOURCE STRATEGY FOR THE SOUTH EAST.

SUMMARY OF FORTHCOMING REPORT

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1. Introduction.

1.1 The shared experience of the recent drought, with some restrictions on garden watering and other "non-essential" uses still in place, has highlighted the now urgent need for a long-overdue strategy for the sustainable management of the Region's water resources. Our renewable resources in a year of average rainfall are now barely sufficient to sustain supplies to meet basic domestic, industrial and agricultural needs and it requires only relatively minor drought episodes to create a significant supply deficit and a virtual year-round shortfall in the balance of river and groundwater resources. In recognition of this, much of the South-East has been classified by the EA as having an unsustainable regime for water abstraction under both summer and winter conditions. Furthermore, we now face the prospect of a progressive increase in the stress on resources arising from:

- the planned housing growth for the South East,
- the ongoing impact of climate change, and
- the need for water companies to comply with new and more demanding environmental controls on their abstraction from rivers and groundwater sources, including those arising from the European Water Framework Directive (EWFD) and the Habitats Directive (HD)

CPRE believes that, unless action is taken to address the deficit as a matter of the highest priority, the water companies will be unable to keep pace with the resulting steep increase in demand under drought conditions.

From the CPRE standpoint, the sustainable management of the Region's water resources is also a prerequisite for the protection and enhancement of the quality and diversity of our rural environment. From this perspective it is essential to have water strategies which:

- encourage prudent and efficient use of water
- ensure continuity of supplies for communities throughout the Region.
- represent best value for consumers
- enhance the conservation, amenity and recreational value of river and wetland environments
- are fully compatible with other aspects of water and environmental management
- support and promote the environmental objectives of the EWFD and the HD.
- promote education in the conservation and sustainable use of water supplies in the South East.

1.2 Policy NRM1 of the South East Plan states…

"Water supply, groundwater and river quality will be maintained and enhanced through avoiding adverse effects of development on the water environment. A twin track approach of demand management and water resource development will be pursued, together with development of sewerage and waste-water treatment infrastructure"

The policy also looks to local authorities when preparing Local Development Documents and determining planning applications to:

- ensure compatibility with River Basin Management Plans and EA Regional Water Resource Strategies.
- ensure that local development does not lead to 'unacceptable' deterioration in water quality and is in step with the provision of appropriate infrastructure,
- achieve high levels of water efficiency and reflect best practise including BREEAM "v good" and " excellent" standards.

1.3 A more explicit policy statement is given in NRM2 which recognises "a demonstrable need for new water resource schemes and increased demand management over the period of the plan to cater for water supply needs of current and future development and the protection of the environment". A list of candidate reservoir schemes and reference to bulk transfers, effluent re-use, and desalination is included.

1.4 We fully support the principle of a twin track approach, but while the policies focus, for good reason, on the implications for the future effective management of resources, they overlook the fact that the S.E Region is already in deficit (hence the hose pipe bans and emergency restrictions) under drought conditions that are now of such frequency that they can no longer be regarded as rare or extreme events and indeed are forecast to occur with increasing frequency, duration and severity as the influence of climate change takes hold throughout the south east. There are also areas of special concern, that need particular attention in the formulation of a practical and realistic strategy for the sustainable management of the region's water resources.

1.5 Some of the more fundamental issues have already been raised in the report of the House of Lords Select Committee on Water Management[1]. They question, for example, in the context of the Sustainable Communities Plan, the wisdom of planning and promoting growth in the region with the greatest stress on water resources without prior consideration of the likely scale of the requisite infrastructure. It was also noted that the drought experience had exposed weaknesses in the water companies' resource management plans and there was still reluctance on their part fully to engage in the active promotion of basic demand management and water efficiency measures, as reflected in the slow uptake of domestic supply meters. The Committee also questioned the adoption by the water companies of relatively narrow economic criteria in assessing the success of leakage reduction programmes and there was a continuing emphasis on supply-side solutions as exemplified by the heavy investment in reservoir schemes with comparatively scant attention paid to demand management initiatives; much of this, in the view of the HOL arising from the fact that, as they saw it, responsibility for water management remained "dispersed and unclear" and that at present, neither the water industry nor the regulators have an agreed methodology for including sustainability within the decision-making process.

[1] House Of Lords Science and Technology Committee, 8th report of session 2005-2006: Water Management. HL Paper 191-I; The Stationery Office, June 2006.

1.6 The water companies nonetheless seem confident that they have the solutions and will be able to meet the new challenges. CPRE does not agree. We have attempted to make clear our concerns, drawing what lessons we can from the history of water use and management in the south east in a forecast of the likely trend in the balance of supply and demand over the next 20 years. From what we know of the companies' general intentions for addressing future demand growth, we have had to conclude that few of the options so far included in their business plans are likely to have the makings of a coherent and effective action plan for the region. It is for this reason that we have been prompted to put forward our own, alternative long-term strategy, one which we believe consists of viable engineering solutions and provides a cost-effective and environmentally sustainable way forward for the Region. It requires, however, a fairly radical shift in our approach to the use of our dwindling resources. And time is not on our side if we are to spare ourselves more decades of crisis management.

1.7 CPRE's strategy puts a special emphasis on the conservation, re-use and reallocation of our existing water resources, with correspondingly less reliance on the further development of groundwater and reservoir-based sources of supply. The EA is currently engaged in the preparatory work for a new water resource strategy for England and Wales, and we would commend our proposals for consideration in the assessment of options for the South East.

2. Water Abstraction: Supply and Demand.

2.1 Even under average conditions, PWS demand in the SE is now running close to the total deployable output of all water companies serving the Region; 5,410 against 5500 Ml/d. Under "design drought conditions" (i.e. the 1 in 10 Dry Year) there is now a substantial existing deficit already of between 350 – 400 Ml/d. Hence the current restrictions on water use.

2.2 There is therefore insufficient capacity within the Region to ensure security of supply and the question therefore arises as to the prospects for meeting the forecast growth in demand arising from the planned development in combination with the reductions in supply needed to address the environmental Directives. The challenges of climate change add a further complication. In recognition of this the EA has classified both surface and groundwater resources for much of the Region as unsustainable; leaving very little scope for further development.

3. What's the Problem?

3.1 The SE faces an unprecedented increase in the demand for water over the next 25 years arising from:-

- the planned growth for the South East and inward migration with the consequent increase in public-supply demand, coupled with any concurrent growth in agricultural and industrial use,
- the ongoing impact of climate change, increasing demand while at the same time reducing rates of natural replenishment of river and groundwater resources, and
- the need for a greater proportion of catchment resources to be diverted to the improvement and protection of our rivers, lakes and wetlands via the national programme for the Restoration of Sustainable Abstraction (RSA) under River Basin Management Plans.

3.2 The EA assessment derives from a scenario planning process taking into account different future political and economic regimes and developing a single optimum strategy that would be sufficiently flexible to accommodate the correspondingly wide range of environmental outcomes (no special provision was however made for the impact of climate change)

The forecast out-turn demands for 2025 for PWS range from 8700 to 3600 Ml/d.

3.3 An alternative approach adopted by CPRE is based on an assessment of the collective and cumulative impact of the three principal factors given above:-

[i] Demand Growth.

Based on the agreed housing level of 28,900 new homes per annum, housing growth is forecast at 578,000 for the plan period and assuming occupancy of 2.0 and per capita consumption at 160 l/h/d equates with an increase in demand by 2025 of 185 Ml/d (annual average). This excludes distribution leakage which is taken as constant for the greater part of the period. Any increase in PWS for industry and agriculture is taken as being offset by water efficiency improvements. The corresponding 1 in 10 Dry Year demand is taken as 115% of average. This is 213 Ml/d.

There could be a need to be further allowance for increases in direct abstraction for industry and agriculture but any increase in industrial use is now likely to be balanced by water efficiency, as this is already firmly embedded in most business practice. And for agriculture, similarly larger users are likely to establish their winter storage capacity.

[ii] Climate Change.

This is likely to prove one of the most important single influences on future trends in catchment water balances. On the basis of the recent UKCIP 2002 forecasts we are applying a 3% increase to the total 2025 out-turn demand.

[iii] Restoring Sustainable Abstraction.

The EWFD requires all member states to take measures for the protection, improvement and sustainable use of Europe's rivers, lakes, estuaries, coastal waters and groundwaters. Measures are to be implemented via Catchment Management Abstraction Strategies (CAMS) as part of the national River Basin Management Plans with a timetable aimed at implementation by 2015. It will require that some water companies will need to relinquish a proportion of their total authorised abstraction (surface or groundwater as appropriate) and current forecasts envisage a reduction in deployable output of 260 Ml/d.

No separate allowances have as yet been estimated for Habitats Directive requirements.

[iv] The cumulative effect of additional demand and restriction on supply is an estimated supply/demand deficit of 1010 Ml/d. When Appropriate Assessment has been completed there is likely to be some further restriction on supply availability to comply with the Habitats Directive.

4. What are we doing about it?

4.1 The EA Strategy Review 2004 notes relatively poor progress by the water companies on leakage reduction and their continuing lack of focus on the benefits of demand management and water efficiency initiatives. Water company plans are seen to rest too heavily on resource developments (e.g. large reservoirs) and there seems to be no counter-strategy for climate change. The 2005 Review still sees much unfinished business on promotion of water efficiency and leakage reduction and there is even some slippage on targets, although much of this is due to the ongoing leakage problems in London. On metering, Folkestone and Dover Water Company is held up as an example of what can be achieved in securing recognition of "water scarce" status.

4.2 The House of Lords Select Committee Report on Water Management (June 2006) was in turn very critical of the efforts by the water companies but also has some hard questions for the regulators.

They noted:-

- A need for clearer lines of responsibility and accountability. The boundaries between OFWAT, EA and Drinking Water Inspectorate (DWI) are not clear.
- OFWAT should allow sufficient funding for R and D by the water companies.
- There should be more of a balance between resource development and water efficiency.
- Price-setting should take account of economic, environmental and social sustainability criteria.
- It was unfortunate that growth areas under the Sustainable Communities Plan (SCP) are all located in the driest region of the country and that ODPM did not consider water demand/supply when making its selection. They had also failed to consult the water industry in formulating the SCP.
- They are "completely unconvinced" by the government figures on the relationship between housing growth and water use. The methology was fundamentally flawed and the Minister had also misinterpreted the figures by concluding that they had a very small effect on water demand.
- Housing growth plans have not been factored into Water Company long term plans.
- DEFRA and ODPM/DCLG must take responsibility for the problems caused by their earlier lack of consultation.
- Climate Change has not been adequately factored-in.
- OFWAT's criterion of Economic Level of Leakage (ELL) as the sole indicator of successful leakage control should be reviewed. It should ideally include environmental and social sustainability.
- There was a need to look at the potential of inter-regional raw water transfers.
- The case for large scale re-use of treated waste water suggested by CPRE should be taken up and DEFRA/EA should support schemes on these lines especially in the driest areas.
- The Water Companies have little genuine incentive to promote efficient use unless facing supply difficulties.

Although real dialogue may now be beginning, this catalogue of criticism indicates how far back we are at the start of a better approach.

5. A Way Forward.

5.1 Introduction.

The supply/demand deficit forecast for the south east by 2025 is likely to be of a magnitude that can only be adequately addressed by a broad-based strategy comprising elements of both resource development and demand management. Taken together, they should provide a sufficiently flexible response to demand growth; cost effective but above all environmentally sustainable and equal to whatever challenges climate and economic change may bring. There should be nothing therefore which compromises the declared aim of the Plan for the South East to achieve growth without degrading the unique character of the region's landscape and wild places or diminishing the quality of life of its rural and urban communities. Options and candidate schemes, many of which have been incorporated in the Environment Agency's 2001 strategies for the Southern and Thames regions,, are now being considered as part of the WRSE

programme. In the following brief review, we have set out the main options. In the full report to follow there is a comparison of the listed options considered on the basis of a number of criteria defining economic, environmental and social sustainability, in order to reach some conclusions on the practical components of a long term management strategy.

5.2 Water Efficiency.

5.2.1 Domestic use constitutes nearly half of the total demand for water in south east England. Un-metered consumption averages between 160 and 180 l/h/d with metered rates coming out 10-12% lower at around 150 l/h/d. Higher gains may be possible at times of peak demand, which makes the case for more general metering beyond the current 25%. There are clearly savings to be made in regulating the use of water for discretionary and luxury purposes, and there is an important secondary benefit in encouraging greater awareness of the value of water conservation and the avoidance of wastage in home and garden. For the average household, conversion to a metered supply generally means lower bills for both potable and waste-water services. Usage can be further reduced by water-saving installations such as dual-flush toilets, low head showers, low flow taps and rainwater capture; and it is estimated that an average household so equipped and with a metered supply and tariff which rewards prudent use at times of peak demand could reduce its consumption by up to 20%, and 15% should be achievable year-round.

5.2.2 A forecast saving of 216 Ml/d has been estimated for the region by2025 using a target reduction of 15% for each metered household (Table 5.2). The EA has identified nearly half of the region as unsustainable in terms of both surface and groundwater resources: and if we assume that "water scarcity status" could be secured for up to 80% of the corresponding water supply area, then it would be reasonable to work on the basis of an uptake of at least 75%. Allowance however has to be made for the fact that 25% of households in the region have already been metered. Of the remaining 75% it is estimated that 25% will be unlikely to engage in water metering or water efficiency measures either because this is often impractical for individual households in apartment blocks, or because people prefer not to participate in retrofitting water saving equipment such as low flow taps.

Table 5.2 that follows sets out the assumptions for water efficiency, where it is assumed that households participating in metering will also participate in water saving equipment, leading to an average per household saving of 15% *vs* average current un-metered household consumption.

TABLE 5:2.
POTENTIAL WATER EFFICIENCY SAVINGS.
SOUTHERN + THAMES REGIONS (EXCL. THREE VALLEYS)

	AVE YR. Ml/d
[A] FUTURE SAVINGS ON EXISTING HOUSEHOLDS (25% ALREADY METERED) REF TABLE 4.4.	
1 Current PWS domestic demand = 660 (Southern) + 1930 (Thames) – 420 (Three Valleys); =	**2170**
2 75% of current demand un-metered, =	**1628**
3 Assume 50% falls in an EA "Unsustainable resource" area =	**814**
4 Assume 80% of this is designated as a "water-scarce" area =	**651**
5 Assume 75% is subsequently metered =	**488**
6 Net saving at 15% reduced domestic consumption =	**<u>73.</u>**
[B] FUTURE SAVINGS ON EXISTING HOUSEHOLDS IN NON - "WATER SCARCE" AREAS.	
1 60% falls outside a water scarce area =60% x 1628 =	**977**
2 On average, 2% of these will voluntarily convert to a metered supply each year. Hence by 2025 this gives a saving of 20 x 2% x 15% x 977 =	**<u>59.</u>**
[C] TOTAL SAVINGS FOR ALL EXISTING HOUSEHOLDS [A] + [B] x (AVE YEAR) = 73 + 59 =	**<u>132</u>**
[D] ADD 15% FOR CORRESPONDING SAVING IN A 1 IN 10 DRY YEAR. TOTAL =	**<u>152</u>**
[E] FUTURE SAVINGS ON NEW HOUSEHOLDS	
1 Demand (1 in 10 Dry Year) is forecast to grow from 4971 (current to 5447 by 2025, : increase =	**476**
2 Assuming 90% uptake with a 15% saving =	**<u>64</u>**
[F] TOTAL DRY YEAR WATER EFFICIENCY SAVINGS ON DOMESTIC CONSUMPTION WITHIN PLAN PERIOD = [D] + [E] =	**<u>216</u>**

5.3 Leakage Control.

The likelihood of further major reductions in public supply distribution losses would seem to be constrained by OFWAT's reluctance to impose more challenging targets on any of the companies in the south east, that is, other than Thames where losses are still running in excess of 30% and the company could now be expected to achieve a further reduction by 2010 of at least 100 Ml/d from the current level of around 850 Ml/d. Although much of Thames Water excess leakage is in London, the ongoing impact of this is substantial on the supply/demand situation for the South East Region.

5.4 Resource Developments.

5.4.1 The options being considered by the EA and the Water Companies under the WRSE programme comprise mainly pump-fed off-channel reservoir schemes and raw water transfers together with a few groundwater developments including some fairly speculative aquifer storage/recovery initiatives. Taken at face value, the aggregate design output of the reservoir schemes alone, at nearly 500Ml/d, should (if achievable) cover a fair proportion of the residual out-turn deficit. This would obviate recourse to major transfers until the later years of the plan period. Pumped storage schemes are however expensive in terms of both capital and operating costs and by no means energy efficient. The nominated schemes furthermore have yet to be assessed for reliable yield and environmental sustainability; and faced as we are with increasingly challenging EWFD and HD targets, such undertakings become ever more uncertain. To take the Broadoak proposal as an example; it is envisaged that the reservoir, sited near Canterbury, will be pump-fed from the River Stour, but two previous attempts to promote similar schemes have failed. The more recent of these was in 1990/91, with a design drought output of 40Ml/d, and was abandoned in recognition of the restrictive river flow conditions imposed by the EA in order to protect a range of environmental and water-use criteria. Fifteen years on, and with CAMS/RSA delivering considerably tougher environmental targets, there is even less likelihood of a successful promotion. Any assessment of Broadoak will also need to take account of the increasing weight of historic evidence pointing to a progressive decrease in the average annual flow of the Great Stour, corresponding to a loss of more than 15% over the period 1965-2000. (A recent update using the records for 2001-04 suggests that, millennium floods notwithstanding, the average has continued to decrease.) Other studies involving measurement of late summer "base-flows" between 1965 and 2004 indicate losses of more than 50% in the discharge of the chalk springs which sustain the river above Canterbury. If we project the current trend, the conclusion could be drawn that, by the time Broadoak is due to come into operation, there will be virtually no natural spring flow entering the river between Ashford and Canterbury during the late summer months.

5.4.2 The vulnerability, under winter drought conditions, of large reservoirs with long critical periods has been illustrated by the recent failure of Bewl Water near Tunbridge Wells. With a yield of 75 Ml/d this is the key source for supply areas in north and west Kent but it is almost entirely reliant on winter abstraction from the River Medway. In order to re-fill following the heavy draw-down during the summer of 2005, the operating company had to obtain a 'winter' drought order suspending the control flow which would otherwise have prevented river abstraction. The question therefore arises; if we are already facing difficulties in re-filling the existing reservoir under dry winter conditions (which, although undoubtedly severe, can no longer be regarded as exceptional), what chance is there of maintaining an enlarged unit with a design drought output nearly 20% greater than the current level? Its prospects are not improved by the fact that the company have recently secured a licence from the Environment Agency

authorising the transfer of up to 35 Ml/d from Bewl to a neighbouring water company supply area. As noted in the EA WRSE Sept 2006 report, reservoirs are of little value unless they can be filled from a reliable source of water. We also need to remind ourselves that most schemes in this category are almost certain to be called-in for public inquiry and it could be some years, possibly up to 10 for the more problematic cases, before a final decision can be reached as to whether or not they can be adopted as viable elements of the Regional Strategy. There are for example some unresolved questions concerning the viability of Bewl and Broadoak; and the latter together with Abingdon is, in any event, scheduled too late in the programme to cover the critical mid period deficit which will arise with the loss of source capacity that some companies will have to sustain in compliance with RSA targets. Furthermore the environmental and social impacts of a reservoir on the scale proposed near Abingdon (380Ml/d) would be so large that it is only possible to be precautionary at this stage and say that neither the environmental, nor water supply viability case for such a reservoir is proven. At an entirely practical level an Abingdon scheme on that scale may not be viable without supplementary transfers from other river basins.

Even if the same criticisms did not apply to Clay Hill, Bray or Havant Thicket none of these would qualify as a genuinely regional storage element. Taken together they add less than 60 Ml/d to the total output, and it would certainly be rash to plan on the basis of the reservoir option delivering more than 100Ml/d before 2020. Hence, some provision must be made for alternatives that can be deployed ahead of the 2015 deadline, and there are very few realistic candidates.

5.5 Indirect Effluent Re-use.

5.5.1 It has been estimated that as much as 2000 Ml/d or about 50% of all waste water treated by Southern Water is discharged to sea without making any further contribution to the supply or environmental needs of the region. The Margate/Broadstairs scheme is a recent example, one that has been the subject of much public debate and media interest. It involves the disposal to sea of up to 20 Ml/d of treated wastewater that could be further processed and returned indirectly into supply as a wholly sustainable resource in an area facing an increasingly severe deficit, and the capital and operating expenditure would have been no more than that incurred in its disposal. Indirect effluent re-use is one of few resource categories which could provide the necessary additional volumes for supply before the mid period deadline around 2015; the lead times for implementation of most such schemes averaging from 3 to 5 years. Mainly, for reasons of operational flexibility and public acceptability, most schemes take the form of indirect re-use systems whereby the treated effluent is discharged to a receiving watercourse and a corresponding quantity re-abstracted further downstream for final treatment to the required potable standard. Some schemes also incorporate small storage reservoirs and this can aid treatment by extending the retention time. Indirect effluent water re-use is long established along the Thames, and recent schemes have been successfully adopted in Essex and elsewhere.

5.5.2 Re-use is an inherently sustainable option insofar as the available resource (the effluent) must, by and large, increase with demand: the more you use, the more you get! And, of course, the required output can be phased to match demand-growth. It is also substantially more cost-effective than almost any other major resource development. Not only is it cheaper to use than throw away but, for every Ml/d of out-put, we save an additional sum corresponding to the costs incurred in the construction and operation of the new supply scheme that would otherwise have been necessary.

5.6 Strategic Raw Water Transfers.

5.6.1 This is not the "water grid" of popular imagination (which has few if any supporters amongst either suppliers or regulators) but more a means of making effective use, with some additional engineering, of the natural or artificial links which already exist between the south east and the more water rich areas to the north and north-west. Most schemes in this category are likely to prove less cost-effective than other more orthodox solutions, including pump-storage, but from a purely regional perspective they represent "new water" and a genuine addition to the resource, albeit of a different character (usually more acid) than most indigenous sources; and this inevitably raises a number of difficult questions of environmental sustainability.

5.6.2 Having said this, if the listed reservoir options fail to deliver a reasonable percentage of the total design drought output within the plan period, this may prove to be the next most practicable alternative in those instances where indirect waste-water re-use is not feasible. It would in, any event offer a more resilient and dependable source of supply than reservoir-based systems, bearing in mind their vulnerability to climate-change.

5.6.3 The EA has already completed preliminary assessments of a few candidate schemes covering a range of design yields. Calculations by the Institute of Civil Engineers for a transfer from Mid Wales to London using a Severn-Thames link puts the unit cost at £2.4M per Ml/d but this excludes any assessment of environmental impact, with all that this could imply for the additional capital and operating costs. Most of the schemes examined by the EA fall between £3M and £5M per Ml/d which compares with £1.5M to £2.0M for a typical reservoir scheme. Aside from the more ambitious undertakings, there is however some scope remaining for improving transfers between adjacent supply areas within and bordering the south east region; and this would seem to offer a more profitable area for development in the first instance.

5.7 Summary of Options.

5.7.1 We have seen that the current balance of resources in the South East is, for all practical purposes, in deficit, with no scope for further development of groundwater resources on the scale required to meet the anticipated demand growth. In fact the EA has, since 1993, maintained a general presumption against the grant of licences for any further increase in abstraction for consumptive purposes (including public supply) from the major aquifers. If anything, we must expect, over the next 10 years or so, to see a material reduction in the quantities pumped each year from groundwater as part of the effort to improve the regime of the streams and wetland areas fed by spring flow.

5.7.2 The prospect for the development of new supplies from the Region's rivers is little better, particularly in the light of recent drought experience and accumulating evidence of progressive depletion of baseflows in spring-fed watercourses. For much of the Region, winter rainfall has frequently failed to support the rates of pumping required to replenish the larger off-stream reservoirs and this must raise doubts as to the viability of future pumped storage schemes. It would seem to follow from this that any strategy developed for the Region should have a much greater emphasis than hitherto on making better use, and re-use, of existing supplies. Should these fail to meet demand growth, the best recourse may then be to transfer raw water from neighbouring – or even distant – regions, taking advantage of existing trunk links and interconnected waterways. All this could be managed in conjunction with the output from reservoirs that are part fed from river sources, wherever the required winter replenishment rates can be achieved without detriment to the wider environment.

5.7.3 In order to meet the forecast out-turn deficit of 1010 Ml/d by 2025 the region could plan on the following probable maximum gains :-

- Water efficiency savings 220
- Further leakage reductions 100
- Increased reservoir output 100
- Indirect effluent re-use 200
  (assuming 10% re-use of current
  Total discharge to sea)

This would leave a residual deficit of 390 Ml/d to be met by other developments including bulk transfers between river basin areas and further re-use or water efficiency schemes. Failing this, it is unlikely that the region would have sufficient deployable resources to support the increased public supply demand under drought conditions.

The ambition should be for 'resource neutral' development where very high levels of efficiency in new build homes are combined with offsetting water efficiency retrofits in existing homes in the same water area, to create a situation where development growth is possible without increasing total water demand in the long term. This has been achieved in some places – e.g. Sydney, Australia, but it is not yet practical to include it as a proposal for the SE.

6. **Conclusions and Recommendations.**

6.1 The balance of water resources for much of the South East has been assessed by the Environment Agency as unsustainable and the demand on public supplies has now reached levels such as to create a virtual region-wide deficit under "design drought" conditions.

6.2 The proposed growth levels of the SE Plan together with the forecast impact of climate change and the additional commitments under EC Directives for restoring sustainable abstraction will impose an additional degree of stress that cannot be sustained by further development of the region's indigenous resources.

6.3 Elements of a water supply development strategy have been identified in the Plan but there is a disproportionate emphasis on the creation of additional reservoir capacity which may not, in our view, prove hydrologically or environmentally sustainable. None of the schemes have as yet been fully assessed with respect to engineering feasibility and environmental impact and some are on a scale that could only be sustained by drawing heavily on river sources that are already severely depleted. They cannot therefore be regarded as secure elements of a regional strategy, and certainly not the primary part of the strategy.

6.4 This adds weight to the case for urgent action on demand management; in particular, the promotion of domestic metering and water efficiency measures for new builds and existing households. To be fully effective it requires the appropriate legislation and economic incentives to be put into effect as matters of the highest priority. It will also require the designation of the more heavily stressed supply areas as "Water Scarce".

6.5 There should be an early review of the decision by OFWAT against setting water company leakage targets at levels more challenging than 25% of WIS. The current standard of performance; the Economic Level of Leakage (ELL), should be replaced by a broader based assessment which also includes environmental and social sustainability.

6.6 Demand Management will however only address a relatively small proportion of the forecast deficit within the time frame, and it will therefore need to be supplemented by a more fundamental approach to the conservation of the region's resources. We therefore urge an early review of the potential of indirect re-use of waste-water, particularly in the more heavily-stressed areas of the South East. More than half of the effluent processed in the Southern Region is discharged to sea. This is a unique resource which can be treated and put into supply at relatively low cost; an inherently sustainable drought-proof solution which can be phased to match demand and implemented within a short (3-5 year) time frame. The means to do this via rivers and to be acceptable to the public are well established.

6.7 It is essential that the components of a more sustainable strategy that ensures security of supply under all but the most severe and genuinely exceptional drought conditions, should be put in place as a timely and conditional part of the SE Plan, and Local Authorities should be advised to ensure that a viable integrated water management strategy is in place to support the implementation of their LDF Plans.

GDW
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