GARD Briefing for Councils:

Thames Water revised draft Water-Resources Management Plan

Executive Summary

The consultation on the Thames Water (TW) revised draft Water Resources Management Plan runs until 28 November. Details of how to respond are here:

Recommendation

GARD believes Oxfordshire Stakeholders should call for:

- Refusal of the Thames Water plan to build the Abingdon Reservoir (now brought forward to a start date of 2025) until they have performed the necessary studies to:
    - evaluate the Severn-Thames water transfer as an alternative and submitted them to public (Stakeholder) scrutiny (as mandated by the 2010 public inquiry); evaluate the alternative rules for the Teddington DRA scheme that satisfy Environment Agency requirements , and submitted the analysis to public (Stakeholder) scrutiny.
- The Environment Agency to perform its own independent technical studies to evaluate the contentious issues surrounding the Reservoir proposal, particularly the flooding risk and the level of resilience to long droughts.

Critically, we need a PUBLIC INQUIRY to ensure robust and independent examination of Thames Water plans, The Inquiry should be informed by results from actions itemised above.

Analysis

1. New population forecasts & leakage reduction rates entirely remove Thames Water's original justification of the Abingdon reservoir

Following challenge by stakeholders, Thames Water (TW) has revised its population forecasts downwards by 1.5 million people, reducing the predicted London deficit to about 580 Million litres per day by 2100.

TW has also been forced to commit to halve leakage by 2050. (although this will still leave their leakage rates above the industry mean for the rest of the century.)

Stakeholders should continue to push for agreement that TW will commit to continuing their leakage programme beyond 2050.

The overall reduction in demand from the above changes amounts to 480 Million litres per day by 2100. ***This is more than one and a half times the foreseen water supply from the Abingdon reservoir, and entirely removes the necessity for its construction.***

2. Thames Water is now looking for other reasons to justify the Abingdon reservoir.

a) TW has prematurely dropped the Teddington Direct River Abstraction scheme without an independent analysis, thus losing 270 Million litres per day from the system.

GARD's own analysis, by an expert consultant, indicates that this project could be made to work successfully. We are therefore calling for an independent analysis by the Environment Agency before the agreement is given to drop this scheme from the plan.

b) TW claims the additional water is needed by other companies in the South East.

BUT:

- None of the water is needed for Oxfordshire and Swindon
    - The increase to customer bills in Oxfordshire would, effectively, be a subsidy for London and other areas' customers.
- There is currently only one company in the SE region (Affinity) that has expressed any interest in or need for this supply
- Affinity's demand projections show they would not need the water supply from the reservoir until around 2080, so it would be entirely premature to press ahead with such an expensive and disruptive plan that will add to customers' bills for the next 50 years.
- Affinity's ambition to end abstraction from vulnerable chalk streams is entirely laudable. However, there are a number of smaller-scale projects that would achieve the same result more quickly and at far less cost than the Reservoir.
- Affinity's own revised Water Plan is not out for consultation until early next year, so it is impossible to check the robustness of their requirements at this stage. (The first version of their Plan showed a *surplus* of 50 million litres per day). Stakeholders should reserve the right to comment further on the TW plan once they have seen the connected Affinity plan in January 2019.

3. Only a new Planning Inquiry can provide a robust and independent examination of Thames Water's plans

The problems and dangers of the proposed reservoir are enormous, including flooding risk, impact on the water table, lack of resilience to drought and the negative impacts of construction work. (See section 3.3 of the attached report for further information)

Against this, Thames Water is providing skewed environmental information and a lack of transparency on costs. Some estimates of costs of major projects have changed by as much as 40% over the last six months, without any explanation.

There is also a systematic under-estimation of the water available from all competing sources to the Reservoir (Water transfers, Desalination, Direct River Abstraction, Re-use schemes), whilst every attempt is taken to maximise the figure for the reservoir.

In spite of the 2010 Public Inquiry's view that the Water Transfer option should be properly evaluated, TW have still not performed the necessary studies to properly evaluate the supported Severn-Thames transfer options.

It is now essential that, should Thames Water decide to retain the Abingdon Reservoir within its Plan, it should be subject to full and independent examination through a Planning Inquiry.

Thames Water revised draft Water-Resources Management Plan

1. Introduction: timeline and the 'old' plan

Thames Water issued their first version of their draft Water Resources Management Plan (dWRMP19) on 8th February 2019, and the consultation closed on 29th April. As indicated below, the dWRMP19 had to be revised in several *material* aspects. As such, the *revised* dWRMP19 ('*rdWRMP19* ') was released on 3rd October 2019, and the consultation runs until 28th November.

In both plans, Thames Water issue a plan stretching out to 2100. This is recommended, but not mandatory, according to government guidelines.

In the original dWRMP19, the outline Thames Water (TW) plan can be summarised as:

- TW produced **four** possible plans, but we focus on their **Preferred Plan.**
- In any case, all 'options' had a common plan up to 2030, and ***the Abingdon Reservoir was present in all the plan versions[1].***
- The construction start date varied between around 2030 and 2035. The reservoir being operational in 2045 – 2050. The reservoir was in the 150 Million cubic metres size in *all* plans. This is 50% larger than the plan rejected by the 2010 PI.
- The first main element delaying the construction of the reservoir was TW's adoption of the '***Teddington Direct River Abstraction scheme*'** to be implemented 2027-2032. This is essentially the scheme put forward by GARD in 2008, and dismissed by TW and their consultants at the time. The Teddington DRA would be intended to produce a very similar amount of water ('Deployable Output' or DO) as the Reservoir.

2. Summary of the key points of the revised dWRMP19

There are four main reasons given by TW for the revision of the plan:

- the need to revise the population forecasts out to 2100;
- the need to adhere to Ofwat's requirements to reduce leakage in the TW network more quickly, and to follow the new recommendations from Ofwat and the National Infrastructure Commission to *halve* the leakage rate by 2050;
- the criticism of the Teddington DRA scheme by the Environment Agency, which has led to TW's decision to drop the scheme from its plans;
- the needs of Affinity Water, a neighbouring water company, for a new supply from TW. This supply is claimed to be needed from 2039 (GARD disputes this – see below). The main driver for this is the very laudable aim to reduce Affinity's water abstractions from the Chiltern chalk-streams and rivers.

The main change on the new water resource (as opposed to demand management, ie; Leakage reduction) is ***the advancing of the Abingdon Reservoir to start construction by 2025*** with completion by 2035 and filling by 2037. This now poses a much more immediate threat to the Oxfordshire area.

1 For brevity, we frequently refer to the Abingdon Reservoir as 'the Reservoir' within this document.

Below we deal with each of these change drivers in turn.

2.1 Population Forecasts

Thames' population forecasts, on which their demand for water is based, were heavily criticised in the first consultation, and they have been forced to abandon them post-2045 and re-estimate them based on Office of National Statistics (ONS) data. The back-track was announced to Stakeholders on 21st March[2] – hence the news items in the local press and the OCC statements that they did not believe Thames' figures.

The new figures lead to a drop of about 1.5 million people in 2100 – this has reduced the predicted London deficit to about 580 Million litres per day by 2100 (this is about 25% of the present supply). The Oxford and Swindon zone (SWOX) has a predicted deficit of about 32 Million litres per day by 2100.

The updated ***reduction in predicted population leads to a reduction in demand of about 180 Million litres per day:*** this is about 60% of the water foreseen as supplied by the Reservoir.

It is to be noted that, although the revised population projections are much improved, even the new figures are still above those contained in the ONS 2016 Principal projection for the area.

2.2 Leakage Reduction

TW initially did not meet Ofwat's targets for water company leakage reduction by 2025. They have also been forced to back-track on this. Meeting the Ofwat target saves a further 60 Million litres per day by 2025.

In addition, TW have adopted the recommendations of Ofwat and the National Infrastructure Commission (NIC)[3], to halve their leakage between 2020 and 2050. In the case of the Ofwat recommendation, this was partly done to avoid a bigger fine for TW missing their current Leakage Reduction target for 2018[4].

As the predicted TW leakage for 2020, is still over 600 Million litres per day, ***this commitment by TW amounts to a reduction in demand by over 300 Million litres by mid-century.*** This is just larger than the water foreseen as supplied by the Reservoir.

Whilst this improved targeting of leakage is welcome, it is to be noted that TW include no plans for further reductions beyond 2050, leaving their leakage rates above the industry mean for the rest of the century.

2.3 Dropping the Teddington DRA scheme

The Teddington DRA scheme involves diverting some of the treated effluent of the Mogden Sewage Treatment Works in London, cleaning it further, and transferring it by pipeline to the Thames above Teddington. From here this allows extra water to be extracted from the Thames in dry periods and put into the London storage reservoirs.

The Environment Agency had expressed concerns about this scheme, as the treated effluent

2 i.e in the middle of the first consultation!

3 National Infrastructure Commission: https://www.nic.org.uk/wp-content/uploads/NIC-Preparing-for-a-Drier-Future-26-April-2018.pdf – page 13.

4 Ofwat: https://www.ofwat.gov.uk/wp-content/uploads/2018/08/Notice-of-Ofwats-imposition-of-a-financial-penalty-on-Thames-Water-Utilties-Limited.pdf – page 35.

would be up to about 9°C warmer than river water at times. There would be a significant temperature change in the Thames at Teddington and downstream and this *could* adversely affect salmon, sea trout and smelts and cause a deterioration under the Water Framework Directive (WFD) status.

The important word here is 'could'. TW have tried some mitigation schemes but regard them as too difficult or uneconomic but there has not been time to investigate properly. Therefore, the scheme cannot be considered feasible at present. More studies are planned, but it Is currently out of the plan. This is a loss of water resource of around 270 Million litres per day. Responses should continue to press for TW to continue to develop this option.

2.4 Affinity Water's needs

Affinity Water is a much smaller company than TW, and supplies areas of Hertfordshire, Essex and Kent. Its Hertfordshire supplies are causing particular difficulties as the Environment Agency and DEFRA have insisted that abstraction from the vulnerable Chiltern chalk- streams should end by 2039. Affinity's preferred plan did not meet this (or Ofwat's Leakage Reduction targets), and so it has been asked to produce a revised plan. ***This revised plan will be produced in January 2019 and will then be out for a second consultation.***

Affinity and TW have indicated, and it is part of TW's rdWRMP19, that Affinity wishes to take water from a reservoir at Abingdon. ***TW and Affinity are thus now proposing to be joint promoters of the Abingdon Reservoir.*** Affinity claims to need 100 Million litres per day, but that claim is hard to substantiate (see below). It is the requirement for the water by 2039 which now ostensibly drives the Reservoir timetable in TW's revised plan.

2.5 Overall characteristics of Thames Water's revised dWRMP19

The TW plan has some early small transfer (Oxford Canal to Thames) and re-use (Deephams, London) schemes, which, with the falling leakage, enable a slight surplus to be maintained to about 2030. At that point, TW implement the new DEFRA/EA guideline of having supplies which could withstand a 1 in 200-year drought (currently the aim is 1 in a 100 year). This removes the surplus. The plan shows construction of the reservoir starting in 2025, and completion in 2035, with filling by 2037[5]. In 2039, the Affinity 100 Million litres per day supply is 'required', but there is still a 240 Million litre per day spare capacity. As this is not, at that time required for London, the plan involves the ***explicit ambition to sell the spare water to other companies in the South-east***, although, as pointed out below, there are currently no companies who have expressed either an interest or a need for this water. This helps TW describe the scheme as a 'water-transfer' scheme, and to style the reservoir as the '*South-east Strategic Reservoir Option* '. This appears to be an attempt to make the scheme nominally compliant with the NIC's push toward regional Water Transfers,[6] even though it is clearly not between regions.

Eventually, in the 2080s, in order to meet London demand, and to preserve their commercial surplus, TW have a Water transfer from Severn to Thames (STT) in their plan. At no time up to 2100, is any of the water from the Abingdon reservoir foreseen as needed for Oxfordshire and Swindon (whose water deficits are solved by the Leakage Reduction programme).

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5 Filling of the reservoir is by pumping water up from the Thames. This cannot be done in dry periods. The reservoir, being above ground, has no feeding streams or rivers, and cannot feasibly fill by rainfall (would take about 70 years)

6 NIC: https://www.nic.org.uk/wp-content/uploads/NIC-Preparing-for-a-Drier-Future-26-April-2018.pdf – page 11 and Annex 3.

3. GARD's criticisms of the revised Thames Water plan

3.1 Preamble

GARD supports the new, more ambitious Leakage Reduction scheme, and also supports the aim of ending abstractions from vulnerable chalk-streams. However, on the latter point, we believe that the needs of Affinity have been over-exaggerated, and that implementing an ***Inter-regional Water Transfer*** scheme from the Severn to the Thames (as offered by Severn-Trent water and United Utilities), will bring new water into the region, as well as relieving the chalk-streams more quickly and cheaply.

3.2 Affinity's needs do not justify early construction of the Reservoir

The needs of Affinity are not (according to their draft Water Resources Management Plan) large enough to need the 100 Million litres per day until at least 2050. Figure 1 shows data derived from Affinity's plan.

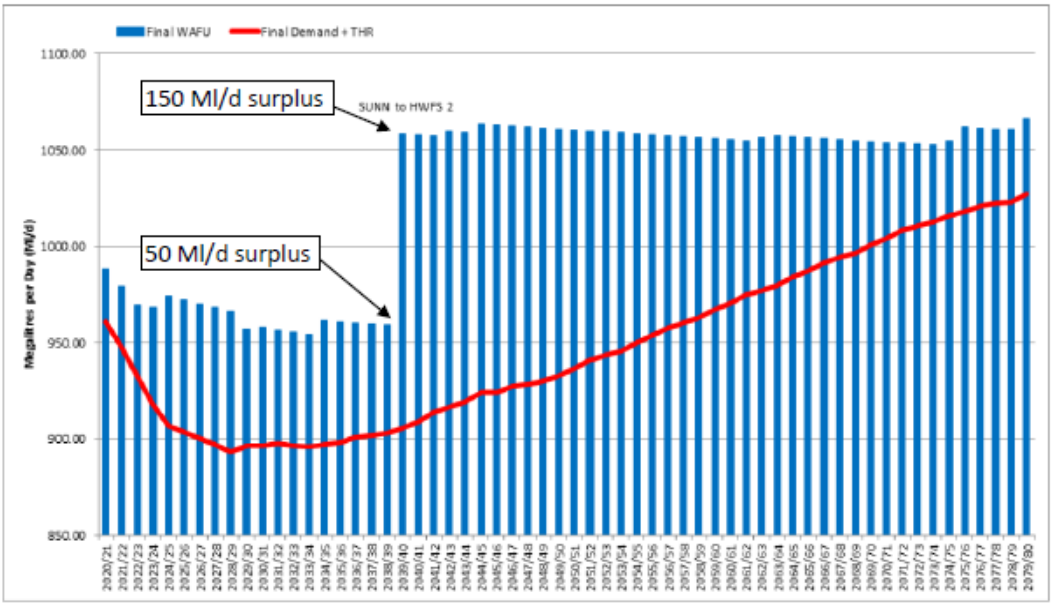

Figure 1: Supply/demand balance for Affinity Water – from 2020 to 2080

In 2039, Affinity still have a surplus of 50 Million litres per day, having taken some streams out of abstraction. To remove the remaining streams could be well within this 50 Million litres per day surplus. At that point demand (red curve) is still predicted to be 40-50 Million litres per day below supply. The reservoir coming on-stream in 2038-9 adds another 100 Million litres per day, this kind of supply is not needed until 2080 and beyond[7]. Implementing such an expensive and disruptive plan so far ahead of requirement, risks the creation of an unused asset that will add to customer bills for the next 50 years. The Reservoir is a massive sledgehammer to crack a nut-sized problem.

This is even more so, when one remembers that 80 million litres per day of the 100 million that Affinity say they need will be returned to the Thames as treated water, (available to existing London reservoirs). ***Effectively Affinity needs not much more than 20 Million litres per day net supply to achieve their aims before 2080.***

7 Affinity only plan out to 2080 – there is no statutory need to plan beyond the 25 years from 2020. It is TW's choice to plan to 2100 in detail.

As indicated, GARD supports the effort to relieve the chalk-streams of their burden to supply water to Affinity, but to do this with the reservoir implies waiting for the longest lead time of any project. If the chalk-streams need to be taken out of supply, it makes more sense to use a shorter-delivery project, such as:

- a modest-size Re-use Plant (20-40 Million litres per day would suffice); or
- the 40 Million litres per day Raw Water supply which RWE are proposing to set up at Didcot Power Station – although in the early stages, there is ample time for this to be implemented in the early 2030s; or
- the first stage of the Severn-Thames Transfer. An Unsupported Transfer[8] could yield around 120 Million litres per day, more than enough for Affinity. Should greater demand materialise, this scheme could be scaled quickly and in a cost effective manner.

To sum up, there is no case for the Reservoir to be advanced to help Affinity or the chalk-streams. Overwhelmingly the water made available (to the tune of more than 240 Million litres per day) would be for selling on to other, currently non-existent customers[9].

3.3 Problems and dangers of the Abingdon Reservoir proposal

In their ' *Statement of Response* ' to the first consultation, Thames Water have more or less completely ignored the adverse comments made against the Reservoir in the first round of consultation.

The most important problems and dangers with the Reservoir are:

- TW have not answered concerns on flooding risk. Their own consultants state there is insufficient flood compensation area within the proposed site for any reservoir above 75 million cubic metres in size (half the present proposal). TW have tried to play down the 'Red' rating given to the larger reservoir designs in this case. They claim everything will be alright, but they simultaneously say that no work on the design has been done since 2008. This is unacceptable, and GARD believes there should be an ***independent flood assessment*** of the project before the Plan is approved. In any case, planning regulations forbid development that adversely affects floodplains.
- Any resident of the area knows how close the water table is to the surface in the villages. The pressure of 150 Million tons of water on this area[10] has not been properly assessed. The recent application to the Vale of White Horse DC to increase the size of the reserved area for the Reservoir ignores recent new-builds and interferes with the new Abingdon flood relief scheme. No reason was given for the increase, but we suspect that it is because TW have realised the site is not large enough for adequate flood alleviation schemes to be implemented.
- TW have chosen 6% emergency water storage in the UTR when all their other reservoirs have about 20%. This will lead to water quality problems in the shallow pool remaining in the reservoir at the end of a long (15 month plus) drought. As TW claim

8 An Unsupported Transfer is a scheme where TW themselves apply for a licence to extract water from the River Severn, and build a pipeline ot bring it to the River Thames at Culham. Such a supply would not need support from Severn-Trent or United Utilities.

9 Not only non-existent, but it is noteworthy that two companies cited as possible customers in the original dWRMP have subsequently explicitly confirmed they have no foreseeable needs (Southern Water and S E Water

10 Equivalent to the weight of around 700,000 average detached houses.

that they are trying to get better drought resilience, this is a cavalier attitude. GARD believes it to be motivated by the fact that TW want the reservoir to appear to be as big a source as possible – for commercial positioning reasons. GARD's view is that emergency storage should be 15-20% of the reservoir volume both for security of supply and to reduce the risk of poor-quality water and algal blooms in droughts. The effects on the local environment of a nearly empty reservoir are, as yet, unquantified.

- The reservoir is being marketed as 'resilient' to droughts, but it is manifestly not, as it does not bring 'new' water into the Thames area, merely stores what is there – in competition with the existing London Reservoirs. The case for the reservoir's drought resilience rests on the prediction that it will always fill up in winter – yet there is already a struggle to fill the existing London reservoirs in dry winters. TW claim that their study of resilience to drought, shows that the Reservoir will withstand future, more severe droughts. GARD's expert consultant's analysis shows that it will not, in particular it will be very susceptible to droughts including more than one dry winter (eg. 1933-34 and 2011-12).
- The Environmental Assessments of TW's plan leave much to be desired. The assessment of the reservoir is particularly skewed, with dis-benefits which ***will*** happen, being 'offset' by benefits which ***might*** happen. In some cases, the benefits consist of restoration of amenities (footpaths, wildlife areas) that the reservoir construction has destroyed in the first place! On the other hand, the negative impacts of the construction – noise, traffic disturbance, transport of huge quantities of material to site by HGV and train movements (4 million tons of rubble alone) – will definitely happen and take years to end. Proposed benefits such as nature areas, walks etc are in any case severely constrained by the fact that by going for the largest design possible, there is little space for anything else.
- In spite of repeated requests, TW have refused requests to reveal any but the barest detail of the costs for the Reservoir (Thames Water + Affinity) or its alternatives. Consumers and local politicians cannot judge whether costs are fair or whether the best option has been chosen. This is unacceptable.

3.4 Dropping the Teddington DRA

GARD's view is that the Teddington DRA scheme has been dropped too quickly by TW, without carrying out enough further study. Our consultants have analysed the schemes and come up with alternative operating rules for when transfers can occur, and the volume of transfers for each allowed period. This analysis shows that the temperature increases in the Thames at Teddington can be avoided under the right operating rules, and as such, the scheme can satisfy the Water Flow Directive rules.

This analysis will be sent to TW and to the EA for consideration. Our view is that an independent analysis should be performed on this scheme by the EA before the agreement is given to drop the Teddington DRA from the plan.

3.5 General Issues

In spite of repeated requests, not only from GARD, but also from the EA[11] and Ofwat[12], TW refuse to give all but the most basic information on costs. This is repeated again in the revised plan, and in refusal to supply more detailed information in response to GARD's email requests (and the requests of others, such as the Cotswold Canal Trust. There have been several unexplained cost movements between the two versions of the plan. Other water companies' offers on Water Transfer are given costs which are not recognised by, eg. United Utilities (GARD can provide email communication on this). TW are continuing to hide behind the excuse of 'commercial confidentiality', in spite of Ofwat's confirmation to us that such an excuse should not be used.[13] Some estimates of major schemes in the TW plan have changed by up to 40% between the March and October consultations. Such a change in such a short time, particularly without explanation, indicates that even those limited figures presented have no credibility.

Furthermore, TW have refused to publish even the most basic costs of the Reservoir proposal in one document, rather than leave them split between the TW + Affinity plans, as at present. This is further evidence of a major attempt by TW not to be transparent on the costs of various plans.

This is coupled by a systematic under-estimation of the water available from all competing sources to the reservoir (Water transfers, Desalination, Direct River Abstraction, Re-use schemes), whilst every attempt is taken to maximise the figure for the reservoir (which includes the already mentioned low level of Emergency Storage, which boosts the reservoir DO by 10-15%). This ripples forward into the metrics used to select the 'preferred plan' via the 'cost per litre delivered' for the various schemes.

In spite of the 2010 Public Inquiry's view that the Water Transfer option should be properly evaluated, TW have still not performed the necessary studies to properly evaluate the *supported* Severn-Thames transfer options. Following continued pressure from Ofwat and the EA for more work on inter-regional transfers (as outlined in refs [10] and [11]), and the NIC's support for such schemes as the main priority for the nation (See ref [5]), TW have warm words in their revised plan and a commitment to do the necessary work for the 2024 plan. GARD's view is that the work should be done now and in advance of any further work on developing the reservoir proposal further.

4. GARD's view of the way forward

In summary:

- There is no case for advancing the Reservoir construction to 2025 – the needs of Affinity Water can be satisfied by alternative schemes more quickly and at more modest cost.
- There are many unresolved problems and potential dangers in the Reservoir project: flooding risk; insufficient emergency storage allowance; disputed and unlikely drought resilience; lack of transparency in the cost estimates, and the dubious Environmental Assessments of 'benefits'.
- On the other hand, the disruption and damage to the life of the residents around the reservoir, and the permanent environmental and agricultural loss is indisputable.

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11 EA response -first consultation: Representation on Thames Water's draft water resources management plan – 27.4.2018

12 Ofwat response – first consultation: https://www.ofwat.gov.uk/wp-content/uploads/2018/06/Thames-Water-draft-WRMP19-consultation-response.pdf

13 Email communication – John Russell (Senior Director, Ofwat) to GARD – 14.3.17

- Problems with the Reservoir are frequently trivialised with the blanket statement that a 'final design is not ready as insufficient work has been done' – this statement, when applied to alternatives to the Reservoir (STT Water transfer or the Teddington DRA) is used as a reason for rejection of the schemes, or their delay out to the 2080s This is not a balanced, scientific approach.
- The Teddington DRA scheme and the STT Water-transfer schemes should be investigated more thoroughly, before being dropped or deferred to the end of the 21st century. A major step forward would be to insist that independent technical analyses be performed on disputed topics by the Environment Agency.

4.1 GARD will be calling for:

- Refusal of the Thames Water plan to build the Abingdon Reservoir until they have performed the necessary studies to:
  - evaluate the Severn-Thames water transfer as an alternative and submitted them to public (Stakeholder) scrutiny;
  - evaluate the alternative rules for the Teddington DRA scheme, as proposed by GARD, and submitted the analysis to public (Stakeholder) scrutiny.
- The Environment Agency to perform its own independent technical studies to evaluate the contentious issues surrounding the Reservoir proposal, particularly the flooding risk and the level of resilience to long droughts.
- A Public Inquiry to examine Thames Water plans, as was done in 2010. The Inquiry should be informed by results from actions itemised above.

D Stork BSc PhD CPhys FinstP

Hon Chairman

Group Against Reservoir Development.

16/11/2018