Kew Society response to Thames Water Consultation on the proposed TDRA Scheme

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1.0 Introduction

1.1 This is the response of The Kew Society to the Consultation by Thames Water (TW) on their proposed Teddington Direct River Abstraction Scheme (TDRA).

1.2 The Kew Society is an amenity society, founded over 120 years ago and represents approximately 800 paid-up members who live in Kew, or nearby. The Society is dedicated to protecting and enhancing the beauty and character of Kew and its environment, including the Thames Riverside which lies within that stretch known as the Arcadian Thames with its historic legacy of buildings and green spaces. The proposed TDRA scheme would be located within a reach of the Arcadian Thames about 6 miles upstream of Kew Bridge.

1.3 The Kew Society fully acknowledges that water companies must plan to conserve and provide adequate water supplies for their communities in the years ahead and that this will be particularly important for London with its projected population growth to 11.2 million by 2050. We also recognise the need to plan for water provision in East London where population growth has been particularly vigorous in the last two decades (over 36%) and where continued growth is likely to occur. Moreover, this requirement to provide an adequate supply of water for growing populations is within the context of climate change and an increased risk of droughts.

1.4 This provision will require multiple actions by water companies including the building of new reservoirs, the transfer of water from areas of relative abundance to those of relative paucity, the wise use of water by consumers, recycling of waste water by purification plants and the conservation of water resources by companies by timely fixing of leaks in the delivery system. The TDRA scheme proposes to take 75 million litres of clean water per day (Ml/d) in times of drought from the River Thames, about 350m above Teddington Weir. and to transfer it to the Lee Valley Reservoirs in East London via the existing Lee Tunnel. It will replace this volume into the river approximately180m above the weir with cleaned-up recycled water from a new Tertiary Treatment Plant (TPP) at Mogden Sewage Treatment Works (STW) via a new tunnel . During non-drought periods the TPP would run at lower levels continuing to release recycled water into the river every day (maintenance flow). Some estimates claim that three times the volume of water abstracted during drought periods would be released into the river from TPP “maintenance flow” each year.

I.5 The Kew Society is opposed to the TDRA scheme for the reasons described below. We call on Thames Water (TW) to abandon it completely and to consider other plans to provide for East London's future water supply

2.0 The London Water Recycling Scheme (WRS): TDRA vs Beckton WRS

2.1 The WRS aims to provide a reliable supply of water using advanced filtering technologies to clean up used water in Advanced Water Recycling Plants (AWRP) at Beckton STW or in a TPP at Mogden STW . Initially several sub-options were proposed for this, including the TDRA and the Beckton WRS. The sub-options were assessed in several stages ("Gates") to select the best one. TW proposed in the Gate 2 report (November 2022) that the TDRA had the "best regional value" and recommended that it should progress through to Gate 3 with full planning and procurement activities. TW issued a tender invitation to contractors in May 2025 for tunnelling works worth £242 million to carry recycled water from Mogden Sewage Works TPP back to the River.

2.2 SOLAR (Save our Lands and River), a campaign group, submitted written evidence to the House of Commons Environment, Food and Rural Affairs Committee in May 2025 proposing that the TDRA project could potentially reach or exceed £1billion. They stated that TW has refused to publish their "best value" system for TDRA scoring and that they have consistently failed to evaluate better, greener and cheaper alternatives.

2.2 The Beckton WRS would take used water from Beckton STW and, after processing it through AWRPs on site, convey it by a tunnel to Lockwood Pumping Station (LPS). The latter would pump the water via a pipeline/tunnel to the River Lee Diversion, adding to the river water feeding the Lee Valley reservoirs which supply East London. It could deliver up to 300Ml/d, four times the volume delivered by the TDRA or, potentially be scaled down, e.g. to 100Ml/d. TW recommended in their Gate 2 report that The Beckton WRS should advance to Gate 3 for further development. The estimated cost of the Becton WRS was £250 million, including the pipeline.

2.3 TW report in their Gate 2 submission that they appraised two options for transferring recycled water from the Beckton AWRP to the River Lee Diversion – the first for a tunnel from the AWRP to Lockwood and then in another tunnel from Lockwood to the Lee, a scheme which would support 300Ml/d; the second for a direct pipeline from Beckton to the Lee Valley reservoirs which would support 100Ml/d but be cheaper. The pipeline route conflicted with planning policy. Mitigation measures would increase its cost over that of a tunnel. Environmental impacts were also identified which if mitigated would extend construction time, delaying operation of the scheme. Thus, they formally requested in 2022 to withdraw the pipeline option from Gate 2.

2.4 Ofwat published its draft decision for progressing London Water Recycling in the Gate 3 report in April 2025,. This listed the TDRA scheme as the preferred sub-option. Beckton Sewage works WRS was nominated as the best alternative sub-

option (https://www.ofwat.gov.uk/wp-content/uploads/2025/04/LWR-gate-three-draft-decision.pdf).
2.5 Ofwat justified its decision on grounds that they agree with the TW view that the TDRA solution is “aligned with strategic plans for water resources management“ and meets the criteria for accelerated progression and continued support to gate 4 development plans. Progression of the Beckton WRS will require further development plans to be submitted to Ofwat These two options will continue to receive development funding in the period 2025-2030.

2.6 The Kew Society’s view is that TW was wrong to propose the TDRA as the preferred option at the early stage (2022) of developing plans for the London WRS and that Ofwat should have asked for more justification for that decision. The Beckton WRS option would deliver water of a higher quality, in greater quantity, and is more flexible in that it could be expanded from 50Ml/d to 300Ml/d maximum capacity to accommodate increasing population growth over a long period of time.

TW state in their Gate 2 submission that for the Beckton WRS their investigations show

- only negligible environmental impacts to the River Lee Diversion Channel from a 300Ml/d scheme
- no significant environmental effects in the Thames Tideway from a reduced Beckton STW effluent discharge associated with a 300Ml/d recycling scheme
- that limited salinity effects associated with reduced final effluent discharge from a 200Ml/d-300Ml/d Beckton WRS in a 1 in 20 year low flow conditions would not lead to a significant effects
- effects could occur if other schemes, such as the Becton Desalination Plant, were operated simultaneously with the WRS, limiting the size of the latter to 300Ml/d. However, the desalination plant has only been operated 3 times since it opened in 2010!
- there is sufficient space to accommodate multiple AWRP’s for up to 300Ml/d output within the Beckton STW boundary
- the two tunnel option [Beckton to LPS; LPS to River Lee Diversion Channel] to convey purified water to the Lee Valley Reservoirs is the preferred option

  As with any project of this size there will be planning issues, but mitigation should be negotiable with landowners and local authorities. Therefore, in our view the Beckton WRS is a very viable option and of low risk with respect to environmental impact. It is a true recycling scheme, in contrast to the TDRA which abstracts river water to export to East London and replaces it with recycled water of a different quality which may cause environment damage (see below).

  Taking these points as a whole The Kew Society believes that the Beckton WRS is a superior option to the TDRA scheme and should be the preferred option for futher development.

3. Environmental impact of the TDRA - Fish Assessment Report
TW Gate 2 submission, Annex B.2.3

3.1 River Temperature. The annex concludes that the introduction of 75Ml/d of newly-treated effluent from Mogden STW will have only a small effect on the water temperature of the freshwater Thames which is unlikely to affect fish biology. It predicts that a maximum temperature change of 0.98^{O}C may occur within the freshwater Thames, achieving a maximum modelled temperature of 19.73 ^{O}C However, an important confounding factor does not appear to have been considered in the assessment – the ongoing effect of climate change.

3.2 Recent scientific evidence shows that the temperature of rivers in a variety of environments will increase as a result of climate change (https://doi.org/10.1038/s41598-022-12996-7). The warmer water becomes, the less dissolved oxygen it contains. Every 1^{0}C increase in river water temperature reduces dissolved oxygen saturation level by 2.3%. Lower dissolved oxygen levels have an adverse effect on many aspects of fish physiology including growth, swimming, disease susceptibility, respiration, metabolism, and finally, survival (https://doi.org/10.22271/fish.2022.v10.i4b.2693).

3.3 Adding effluent to the river from Mogden STW may only have a small effect on the fish population at the moment but, in future years with further warming of the river due to climate change, the additional temperature change from the Mogden discharge may prove to be a tipping point for more serious effects on fish and other aquatic species in the area.

4.0 Environmental impact of the TDRA - Invasive Non-native Species (INNS) Assessment Report
TW Gate 2 submission, Annex B.2.5

4.1 Annex B2.5 records that "*INNS of flora and fauna are considered the second biggest threat after habitat loss and destruction to biodiversity worldwide and has been identified as one of the most serious and rapidly growing threats to biodiversity, ecosystem services and food, health and livelihood security The annual cost of INNS to Great Britain's economy was estimated in 2015 to be £1.7billion per year, of which around £5 million was attributed to water industry management of INNS".*

4.2 It is noteworthy that the Annex reports that 30 INNS were recorded as already present in the river upstream of Teddington lock during baseline surveys. The most frequently recorded species was Caspian Mud Shrimp, followed by Demon shrimp and Ponto-Caspian Polychaete Worm (*Hypania invalida).*

4.3 Assessing the impact of the TDRA on these INNS, the report states:-

- *"Reductions in flow in the 250m section between the intake and outfall on the River Thames, may increase the potential for INNS propagule settlement particularly for species which possess a planktonic life stage such as the dreissenid mussels. A reduced flow may also aid juvenile migration of Chinese mitten crabs within the 250m sections".*
- *"There is a possibility that temperature increases may potentially improve the fitness of some individual INNS currently present resulting in a competitive advantage over native and other non-native species".*

- *"Changes of pH to more alkaline conditions, with a maximum pH of 8.8 within the freshwater River Thames may result in the freshwater River Thames becoming more preferable for INNS such as dreissenid mussels, and aquatic plants such as Elodea nuttalii. Increases are not major, but a move to more preferential conditions may result in increased populations of these species".*

4.4 Collectively these impact assessments are of concern. Some of the INNS could have a serious impact on the river ecology, displacing native species if their proliferation should get out of control. Some may even have wider environmental effects. For example, polychaete worms (*Hypania invalida*) feed exclusively on diatoms, the microalgae which are present in rivers and oceans (https://doi.org/10.1016/j.gecco.2021.e01623) and which are responsible for 20% of global carbon fixation (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7464044/).

5.0 **Environmental impact of the TDRA – removal of unwanted chemicals in recycled water by Mogdon STW Tertiary Treatment Plant.**

5.1 Recycled water from the TTP will be conveyed in a 4.2 km long tunnel from the Mogdon STW to enter the river 180m upstream of Teddington weir and 180 m south of the abstraction location on the Ham Lands towpath. We acknowledge that techniques used in recycling waste water remove many unwanted substances but we have seen no evidence from TW that the TPP will remove polyfluroalkyl (PFA's) substances or viruses. PFA's are a large group of man-made chemicals and are very long lived in the environment. PFAs exposure has been linked to various health issues, including increased risk of certain cancers, liver damage, thyroid problems, and developmental issues. Failure to remove them from recycled water could impact the health of river users like wild-water swimmers.

5.2 It is noteworthy that local surveys show that the raw river water above Teddington Lock is currently very clean microbiologically. Tests show only 50 e-coli colonies /100 ml, well below the maximum acceptable level for bathing water (500 colonies/100ml).

6.0 Environmental impact of the TDRA – damage to Ham Lands

6.1 Ham Lands is a 72 -hectare Local Nature Reserve and is designated a Site of Metropolitan importance for Nature Conservation. The area consists of grassland, trees and a flood meadow where a number of unusual plants thrive north of the Thames Young Mariners site. The area includes the Ham Playing Fields site where a shaft associated with the tunnel carrying recycled water from Mogden is to be sunk. This and the Thames Lee Tunnel conveying abstracted river water to East London will be constructed by tunnel boring machines. The main area for construction work in Ham Lands will be the riverside open space bordered by Burnell and Dysart Avenues over a period of two years. It seems inevitable to us that these works constructing the river water intake from the river and the outfall, returning recycled water to the river, will cause damage to the local flora and fauna during that period.

6.2 TW has stated in its Statutory Consultation Brochure that it will not publish its full environmental impact report until it applies for a Development Control Order

(planning permission), excluding public examination of this during the present consultation.

7.0 Access to the construction sites on Ham Lands

7.1 Access to Ham Lands is via Petersham Road, a narrow winding route between Richmond and Kingston and, thereafter, through small residential streets. This route is totally unsuited to heavy construction traffic going to and from Ham Lands and even a small increase in the number of HGVs using it is likely to adversely impact on traffic flow. The Petersham Road route is already used by double decker buses with barely room for them to pass each other in places.

8.0 The Kew Society calls for the TDRA scheme to be put on hold immediately for the following reasons:-

(i) The basis for it being the preferred option is unsound. Questions have been asked about the method used to assess it as having "best regional value" and Thames Water have not responded to requests to publish details of the scoring system they used. This raises serious questions about the validity of the process which was used to justify its choice as the preferred London WRS option.

(ii) The London WRS is so important because it must guarantee water provision for an expanding population, particularly in East London, for many decades to come. The TDRA scheme delivers significantly less water than the Beckton option and is not scalable.

(iii) The TDRA takes clean water out of the River Thames above its tidal reach and replaces it down steam of the abstraction point with recycled water from a proposed Tertiary Treatment Plant at Mogden. This is likely to result in harmful ecological changes in the river.

(iv) The abstraction site for the TDRA is at Ham Lands, a nature reserve, and the construction process is likely to cause significant damage to both fauna and flora in the area.

(v) TWs failure to provide assurance that the TTP process will remove PFAs and viruses from recycled water is a concern for the health of future river users.

(vi) Lack of a full Environmental Assessment from TW currently is a major omission.

(vii) **The merits of the Beckton WRS as an alternative to the TDRA should be re-examined by an independent body. Ofwat is to be abolished and will be replaced with a more powerful regulator to be responsible for the entire water system in the UK. (https://www.gov.uk/government/news/ofwat-to-be-abolished-in-biggest-overhaul-of-water-since-privatisation). This body should re-examine the TW proposals and make recommendations about priorities for the future London WRS to the Secretary of State for Environment**.