1 Response to Southern Water's revised draft Water Resources Management Plan – 4 December 2024

1.1 Introduction

In our response to Southern Water's consultation on its previous draft Water Resources Management Plan, dWRMP, (*February 2023*), we highlighted significant concerns relevant to the Solent region. These concerns were further substantiated in our subsequent response to the consultation on the Company's 'Hampshire Water Transfer and Water Recycling Plan - HWTWRP' *(July 2024).*

When the revised draft Water Resources Management Plan (rdWRMP) was published *(September 2024)* it was clear that Solent Protection Society's concerns remained both unanswered and unaddressed.

We have appended the text of the Society's two previous consultation responses to this rdWRMP response *(December 2024)* and refer to relevant and still-valid sections in that earlier content.

1.2 SPS Concerns relating to Southern Water's September 2024 revised draft Water Resources Management Plan

The Society's concerns fall into two groups:

- Concerns carried forward from previous consultation responses
- Further concerns raised by the 'published' and 'restricted' documentation associated with the September 2024 revised draft WRMP

1.2.1 Concerns carried forward from previous consultation responses

1. **Construction risks at the Havant 'Brockhampton West' former landfill site**

   The unacceptable environmental risks pertaining to the construction of an advanced water treatment facility on the former dilute and disperse landfill site near the shore of Langstone Harbour at Harts Farm Way, Havant. These risks were raised in previous consultation responses and still stand. S*ee further detail at Appendix 1, section 2.2 and Appendix 2, section 3.4.*

2. **Environmental impacts on Solent regional water bodies**

The Society has particular concerns about the interactions between the Water Recycling Plants proposed at Havant and Sandown and the local river and shoreline water bodies, given the constant quality control measures required to prevent undue contamination.

These interactions include the interfaces between the final treated output and the destination river / reservoir environmental buffers and with the reject stream interfaces with inshore water bodies surrounding the Eastney and Sandown long sea outfalls.

For the Havant proposal, there would also be a net loss of the expected nitrogen benefit to Langstone Harbour, should Southern Water succeed in its proposal to overturn the content approval for the Havant Thicket Reservoir which is currently approved only for the storage of raw water from the abundant local chalk springs.

The environmental impacts on these water bodies were raised in previous consultation responses by the Society and remain unanswered, *see Appendix 1, sections 2.3 and 2.4 and Appendix 2, section 3.5.* See also our concerns at point 7 below, regarding the Eastern Yar and Western Rother environmental buffer proposals.

The environmental impact on the Solent from the fluctuations in the profile and chemistry of output at the Eastney long sea outfall (LSO). While Southern Water would argue that there would be zero net impact over time, the effect of the fluctuations due to bursts of concentrated brine output and occasional bursts of final but un-mineralised and deionised output, remain an unanswered concern, *see in particular Appendix 2, section 3.6* for comments on the 'Preliminary Environmental Impact Assessment'.

The Society has found no evidence in the current published or restricted rdWRMP documentation which demonstrates that promised further modelling work on the Eastney LSO has been carried out.

While the long sea outfalls from Sandown WWTW and Littlehampton (Ford) WWTW are not specifically in the Solent water body, the same concerns would apply.

3. **The Society has serious concerns with regard to Southern Water's ability to safely contain and manage the environmental risks raised by construction, delivery and ongoing operation of this complex program of work**

Our concerns regarding Southern Water's ability to safely operate and continually manage the proposed advanced recycling of final effluent at the Sandown and Havant sites, in particular the Company's proposal to act as first-of-a-kind innovators for effluent filtration by reverse osmosis technology as a source of indirect drinking water

supply for to the UK water industry.

There is widespread concern over Southern Water's ability to manage, deliver, operate and safely maintain a programme of work as complex as, for example, the HWTWRP. This concern is exacerbated by the lack of trust in the Company given its reluctance to share essential consultation material in an open and transparent manner. (See point 5, below.)

Southern Water's maintenance track record across the Solent region is extremely poor, with the company demonstrating a 'fix on fail' attitude across its networks for supply leakages, pumping station and sewer failures, and combined sewer overflow (CSO) discharges.

The Company's observed standards of maintenance show no recent improvement with two major sewer ruptures occurring during the final week of this current consultation. These ruptures, at Pier Road, Southsea and at Appley Road, Ryde, the latter in the sewer which takes wastewater from Ryde town to the Sandown treatment works, closely follow the 'completion' of long drawn-out and disruptive engineering works at both locations.

Given Southern Water's persistent failures to operate and maintain even basic levels of preventative maintenance over its sewerage network, we have serious doubts that the interfaces between its proposed effluent recycling plants and their related water bodies will be operated with sufficient safeguards to prevent downstream contamination. The risk to the water bodies from inadequate or incomplete levels of treatment is perceived by the Society and its members to be high with the risk to the Havant Thicket Reservoir and to Langstone and Bembridge Harbours in particular dependent on failsafe mechanisms to prevent untreated final effluent or debris from regular membrane maintenance entering the reservoir, rivers and harbours.

1.2.2 Further concerns raised by the 'published' and 'restricted' documentation associated with the September 2024 revised draft WRMP

Following detailed reading of the 33 published rdWRMP documents and having contributed to a 5-hour, 5-person team review at Southern Water's Worthing HQ of the 12 documents restricted from publication, SPS now expresses further concerns:

4. **Southern Water's attitude to public consultation.**

At no time in the history of the Southern Water 'Water for Life' program, including the three consultation activities referred to in this document, has Southern Water taken the opportunity of using its established customer billing process to notify users of its future

plans. Instead, notification of up-coming consultations has been left for the more inquisitive public to find by exploring the Company's website.

At each consultation, when the consultation documentation is published, significant volumes are 'restricted' from public view and this approach has continued with rdWRMP 2024.

The 'WRMP Consultation Statement of Exclusion 2024' cites *"Defra's security guidance"* to *"section 37(B)(8) of the Water Industry Act 1991, or 'the Act' (as amended by the Water Act 2003)"* to justify the Company's placing of confidentiality and security restrictions on 12 of the consultation documents.

During the team's limited, supervised review of the content of these documents, no evidence was found of content prejudicial to *'national security'* or to the *'commercial confidentiality'* of third parties. There was, however, clear evidence of content which questioned the validity, integrity and cost-effectiveness of the Company's option selection and the accuracy of publicly disclosed capital expenditure figures.

The restricted documents could only be reviewed, by appointment, at the Southern Water Worthing HQ premises under constant supervision of two Southern Water staff and subject to a signed non-disclosure agreement. The specific non-disclosure agreement that the review team were mandated to sign had been downloaded from an open internet source rather than a more formal Southern Water corporate legal source.

It was notable that none of the documents reviewed contained any visible markings indicating any level of security classification. One unlisted but significant document was a detailed multi-sheet spreadsheet which probably contained the essential 'risk and costing' cross references otherwise missing from the printed document set. This content was only part visible when presented on screen by a Southern Water staff member in response to specific questions from the review team.

It appears from limited access to the restricted documents that Southern Water's selected primary and backup options of 'final effluent recycling' and 'tankering water from Norway' probably have the highest internal rankings for capital cost, risk profile and environmental impact of the options actually considered. We would note that the proposed fall-back option of importing potable water from Norway by tanker, appears frankly ludicrous, only serving to support the Company's obvious strategic preference for effluent recycling.

The Society believes that **it is incumbent on DEFRA to conduct a detailed audit** of the content of the restricted documents given our perception that the withholding of this documentation, notably the Options Appraisal, the Options Factfiles and the detailed

appendices of the Strategic Environmental Assessment, Southern Water may have deliberately withheld information relevant and pertinent to the public consultation.

5. **The relevance of Southern Water's strategic options look increasingly questionable given their schedule slippage and the evolution of climate science**

   Following Southern Water's change of strategy from desalination to water recycling after its earlier 2021 'Water for Life' consultation, the Company's subsequent preference for reverse osmosis effluent recycling is itself now looking increasingly questionable.

   The Society believes that the delays and consequent changes to Southern Water's strategic delivery schedule, coupled with more recent assessments of the evolving influence of climate change on predictions of summer drought and winter rainfall, now warrant a full reappraisal of the available options and the alternative water supply sources.

6. **SPS is concerned that the HWTWRP project appears to have been misrepresented to the Planning Inspectorate.**

   Analysis of the currently available NSIP project register (November 2024) shows the project recorded under Application Type *'WA01 – Dams and Reservoirs'*. The project itself falls into two components, the first being a new advanced effluent treatment stage at Budds Farm WWTW, the second being a 40+km water transfer pipeline project to move output from the proposed recycling plant to the Otterbourne WTW.

   There are two very clearly defined NSIP Application Types which would more accurately define these sub-projects, *'WW01 – Waste Water treatment works'* and *'WA02 – Transfer of Water Resources'*.

   The only association that HWTWRP has with a 'dam' or a 'reservoir' is in Southern Water's proposed change of use of Portsmouth Water's already approved and under construction Havant Thicket Reservoir, to provide an environmental buffer component. This proposed change of use is disputed by local residents, environmental groups and Havant Borough Council whose planning services team approved the reservoir construction exclusively for the storage of raw water from the local Havant and Bedhampton chalk springs. Solent Protection Society shares these concerns.

   The rdWRMP includes a proposal for an advanced effluent recycling plant at Sandown on the Isle of Wight, discharging into the Eastern Yar for re-abstraction just a short distance downstream. Given the relatively low flow rate in the Eastern Yar, there is no

obvious reason why the proposed Havant effluent recycling plant should not use the nearby Wallington River as its environmental buffer, thereby safeguarding the environmental integrity of the Havant Thicket Reservoir chalk spring content.

7. **The protection of Hampshire, West Sussex and Isle of Wight chalk springs and streams**

Much reference has been made in the rdWRMP documentation to the importance and environmental fragility of Hampshire's chalk streams. The Rivers Test and Itchen in particular have been held up by Southern Water as principle drivers behind the need to adopt advanced effluent recycling at Havant, using Portsmouth Water's Havant Thicket Reservoir as its environmental buffer.

Conveniently forgotten is the fact that the Havant Thicket Reservoir was originally designed and is currently approved only for the storage of raw water from the abundant local chalk fed springs. Since the Rivers Wallington, Eastern Yar and Western Rother are, for a considerable part of their length, each considered to be chalk streams, the Society questions whether any use of these water bodies for environmental buffering should be sanctioned.

It is noted that much of the publicised concern regarding the Test and the Itchen could be allayed by simply moving the current Southern Water points of abstraction further downstream, to be closer to the tidal limit.

8. **The Sandown and Littlehampton Water Recycling proposals**

While our focus in previous responses has been on the Havant / Budds Farm Water Recycling plant proposal, we have similar concerns about the scheme proposed for both the Sandown WWTW on the Isle of Wight and, further field but relevant to our overall concern, the Littlehampton WRP proposal for the Ford WWTW in West Sussex.

The rdWRMP shows that construction of the Sandown advanced water recycling facility is proposed, like its Havant equivalent, on a disused waste landfill site. Furthermore, we note that the Sandown site is within the flood plain, upstream of Bembridge Harbour and the nearby RSPB reserve. Environmental buffering of the final treated output is proposed via discharge into the Eastern Yar upstream of the site, with re-abstraction believed to be a relatively short distance downstream. Local Isle of Wight expertise within the Solent Protection Society council has raised concern that since the flow volume in the Eastern Yar varies markedly across the year, in the event of a summer drought, the river's natural flow could easily be surpassed by the daily output of the essential maintenance 'sweetening' process, considerably altering the chemistry of the Eastern Yar as it flows into the flood plain. Downstream of the site, the flood plain

forms a designated RAMSAR site and is noted in DEFRA sources[1] as an internationally Important Bird Area (IBA).

While the proposed Littlehampton advanced effluent recycling plant lies outside the Solent Protection Society area of interest, we note that the rdWRMP proposes that its environmental buffer be provided by discharge and re-abstraction into the Western Rother. That would require around 20km pipeline to be laid to the north, right across the South Downs National Park.

9. **Earlier consultation responses were reported, but restricted from public view.**

During the limited review of the restricted documents, the team found Southern Water's unpublished replies to points made by previous external reviewers, including the two previous SPS responses at Appendix 1 and 2.

It should be noted that in the case of the Company's replies to Solent Protection Society responses, these unpublished replies are deemed unsatisfactory.

10. **The exclusion of more sustainable, nature based options.**

Review of the restricted SEA appendices demonstrated that there are a variety of available, more sustainable and environmentally sound options for water supply. Used in combination, these sources could provide a portfolio of resilient, nature-based and sustainable sources which could be selectively brought into use in the predicted drought scenarios. Many amongst these have been marked for options appraisal during the WRMP29 cycle. It appears from our review of previous Southern Water 'Water for Life' consultation documentation that these have once again been moved back into a later review cycle which would, of course would be several years after the Company's current selected options could have been approved, effectively 'kicking the alternate options into the long grass' before any detailed appraisal of them has ever been made.

11. Development, construction and operations costs – both cash and carbon

The published estimates for project costs, including construction, delivery, and operation, already indicate that implementing and running the complete Southern Water plan would be extraordinarily expensive. To take just one example, the Havant - Otterbourne HWTWRP component alone is currently costed at between £1.2bn and £1.4bn. Similarly, the carbon footprint of executing the plan, along with the ongoing energy costs for its operation, would be exceptionally high.

[1] Magic Map Application

Brief access to the restricted documents at the Worthing HQ suggested strongly that the published costings have been significantly understated. Given the current financial state of the Company, and the certainty that the costings of such a complex programme costs of work would inevitably rise as it proceeds to a later stage, we believe it is imperative that DEFRA should require that a full and independent appraisal of cost and energy projections be made.

1.3 Conclusion

Solent Protection Society is deeply concerned at the observed shortcomings in Southern Water's approach to public consultation. It appears to the Society that the Company is simply paying 'lip-service' to a regulatory requirement for public consultation, while presenting a restricted set of options which have been consciously biased towards the type of high-end, high-technology investment profile which would maximise benefits to the Company and its financial backers at long term cost to its customers and the environment.

It is of equal concern that the options selected represent the highest in cost, risk and environmental impact of the options which should have been appraised. There are numerous proven, environmentally sound, cost effective, sustainable and locally deployable options for securing future water supply across the region served by Southern Water. While individually, the deployable output from each source might be modest, managed as a portfolio these options would provide a far more flexible, resilient and cost effective future drought supply than the 'all-eggs-in-one-basket' approach of four high-cost, energy-intensive advanced effluent recycling plants.

In the opinion of the Society, on receipt of the public responses to Southern Water's rdWRMP, DEFRA should look closely at the manner in which this programme of consultation has been addressed. **In particular, we urge all appropriate Government agencies and regulatory bodies to conduct a full and thorough audit of the full set of published and restricted consultation documents to ensure that the correct decision(s) are made.**

Pending the outcome of such an audit, the Solent Protection Society remains **strongly opposed** to Southern Water's revised draft Water Resources Management Plan, rdWRMP24.

[drWRP 2024 – Response ends – Appendices follow]

2 Appendix 1 – draft Water Resources Management Plan consultation - February 2023

(Original response by Solent Protection Society addressed to Department for Environment, Food and Rural Affairs, Southern Water and Water Resources South East group and submitted on 20 February 2023.)

The following comments by Solent Protection Society (SPS) on the Southern Water's Water Resources Management Plan question the assumption made by the company that its proposal for a new reverse osmosis water recycling plant at Havant will be approved.

We believe this assumption to be premature and flawed and that this proposal could have a significant impact on the heavily protected coastal habitats of the Solent. We are also concerned that the environmental balance between the contents of the Havant Thicket Reservoir and the water of Langstone Harbour has not been fully assessed. Further consideration is required as part of a comprehensive Habitat Regulations Assessment before approval should be sought from the Secretary of State.

2.1 Lack of confidence in Southern Water's project delivery capability

SPS has concerns about Southern Water's capability to safely and securely deliver and manage a programme of this scale and complexity, the company's track record of excessive and unpermitted sewage discharges has already led to the imposition of significant financial penalties and deficiencies in routine maintenance procedures have been highlighted. Recent statements by the company that 'lessons have been learned' and 'processes improved' have been undermined by subsequent events, most recently in February 2023, the contamination of the water supply within its Otterbourne treatment works, a plant which would form an integral part of the effluent recycling proposal.

2.2 Environmental risks at the selected construction site

The site selected for the new Water Recycling Plant is a former Havant Borough Council landfill site located beside Langstone Harbour, an environmentally sensitive site designated as an SSSI, SAC/SPA, Ramsar site, which forms part of the Solent (European) Marine Site (SEMS). The landfill site was still in regular use into the 1990s and is still actively venting. It is currently unclear how landfill gas is managed on the site – a rigorous Gas Management Plan will need to be developed. Surface water on site will need to be surveyed, modelled, and considered in detail to prevent contaminated leachate from entering the Hermitage Stream and Langstone Harbour.

The overall condition of the coastal defences in this location is deteriorating and we are concerned that an historic landfill with defences at risk of failure is not a suitable site for the type of construction proposed. The recycling plant and high-lift pumping station would require a service shaft to be sunk into the landfill, connecting to three service tunnels bored

into the landfill from three separate directions. One of these tunnels would run below the bed of the Hermitage Stream, carrying waste output from the Budds Farm wastewater treatment works into the new plant. There has been no detail published explaining how maintenance for these pipelines and tunnels will be carried out and the company's poor reputation for maintenance of its distributed infrastructure assets does not give us confidence that the plant and pipelines for the new plant would be kept in good order. The risk of contamination to the harbour waters remains to be fully assessed.

2.3 The environmental impact on the Havant Thicket reservoir and Langstone Harbour water bodies

The environmental impacts of the recycling plant on the contents of the Havant Thicket Reservoir, and the discharge of flow from the reservoir to Langstone Harbour have not been modelled to include all potential impacts on the coastal habitats. Portsmouth Water was granted planning permission for the reservoir on an understanding that it would contain solely spring water from the Havant and Bedhampton springs thus delivering a net gain benefit to the environment. A reduction in nitrate inputs to Langstone Harbour was promised as part of this new reservoir scheme based on the fact that nitrate rich spring water which would have flowed into Langstone Harbour would instead be pumped up to the Havant Thicket Reservoir where the higher level of nitrates would naturally break down. This benefit would be significantly reduced under the new proposal as the proposed daily topping-up of the reservoir with recycled effluent would result in greater volumes of spring water being directly released into Langstone Harbour.

2.4 Concerns regarding reverse osmosis technology at this site

Effluent recycling using reverse osmosis is an energy intensive process which would produce brine as a by-product and the proposal shows such brine being discharged via a long sea outfall into the Solent. The Solent waters into which this brine would circulate are classified by Defra as important bivalve mollusc harvesting and shellfish waters. While the recycling of effluent via reverse osmosis is a process new to the UK, similar brine is also the by-product of desalination and the effects of discharging it into the marine environment have been widely studied. The inherent salinity and temperature of this effluent can have detrimental effects on the marine environment. Estuarine species are often able to adapt to a wide range of salinities, whereas many marine species are limited in their narrow range of physiological tolerance. Salinities at the margins of this tolerance range have the potential to alter species behaviour, limit reproduction, and reduce fitness for survival in their environment. Brine underflows also deplete concentrations of dissolved oxygen in the receiving water, which can cause anoxic condition for benthic organisms, possibly translating into ecological repercussions throughout the food chain. While the brine generated by the water recycling plant would be less intense than that assessed for the 2021 Southern Water desalination plant proposal at Ashlett Creek, the potential impact on the waters of the Solent cannot be ignored.

2.5 The risk to the water bodies from inadequate or incomplete levels of treatment

While we accept that the proposed water recycling plant would include some element of chemical water treatment in addition to filtration, there is a risk that the treated wastewater could do more harm than good, contaminating the reservoir with pathogens or altering the physiochemical properties of the reservoir through accumulation of chemical or biological contaminants (for example pesticides and natural hormones, as well as endocrine disrupting chemicals). Concerns about the effectiveness of nutrient treatment/removal from wastewater raise the risk that, should the treatment of effluent be insufficient, increased nutrient loading will affect the chemical balance of the reservoir water and may cause eutrophic conditions both in the reservoir and in Langstone Harbour.

2.6 Changes to Southern Water strategic delivery schedule warrants the reassessment of alternative sources

SPS appreciates that alternative strategic solutions must be explored in further detail in order to cater for the predicted shortfall in drinking water supplies. We also understand that climate change will bring wetter winters and drier summers. Investing in natural solutions that capture and store winter rain and ensure aquifers are sufficiently supplied during the summer, provide a wealth of ecosystem services, reduce fluvial flooding risk, and create vital wetland habitats to improve biodiversity. Additional winter storage reservoirs would provide a valuable addition to the aquifer recharge problem faced by water companies. Use of water transfer from other regions should once again be reviewed. For example, the transfer of water from Wessex Water and Bristol Water were discounted by Southern Water during their 2021 'Water for Life' consultation, simply due to the relative schedule dates of these regional programmes. With the decision to drop the Ashlett Creek desalination project following the concerns raised during that previous consultation, Southern Water's own strategic schedule dates have now slipped and the availability of water transfer from the west of England reservoir projects should be reassessed.

2.7 In summary

With appropriate research, we believe that there would be other environmentally sound and cost effective natural alternatives to the type of water recycling proposed by Southern Water. Such an approach would safeguard the delicate environmental balance within the Solent, its harbours and its estuaries, and would have the wholehearted support of the Solent Protection Society.

Solent Protection Society **does not** support the Hampshire Water Transfer and Water Recycling Plant component of Southern Water's 'Water Resources Management Plan'.

3 Appendix 2 – 'Hampshire Water Transfer and Water Recycling Plan – HWTWRP' consultation, July 2024

(Original response by Solent Protection Society addressed to Southern Water and Water Resources South East group and submitted on 23 July 2024.)

3.1 Solent Protection Society

Solent Protection Society, 'The Society', is an environmental charity which was founded in 1956. The Society seeks to ensure the ecological and environmental well-being and wise management of the wider Solent area, its natural beauty and amenities, so that these may continue to be enjoyed by present and future generations. The Society's four main areas of focus are Pollution, Climate Change adaptation, Planning and Marine Science, all of which are matters of interest to this consultation.

3.2 Grounds for Objection

Solent Protection Society objects to Southern Water's 'Hampshire Water Transfer and Water Recycling Project' (HWTWRP) on environmental grounds. While the Society recognises the broad range of valid concerns arising from this consultation, this response focuses on the environmental concerns relating to the impact of the proposals on the harbours, estuaries, shoreline and water bodies of the Solent.

The Society also has concerns about the financial viability of this project given the current cost estimate of £1.2 billion, a sum which will doubtless increase as design and construction proceeds. This massive investment to address a future risk of water supply shortfall during summer drought periods provides no relief for the impact of Southern Water's very real and evident shortcomings in waste water management. There is a more urgent need to reduce the scale of the company's ongoing CSO[2] discharges into Solent waters and to address the frequent and disruptive operational failures of the existing water supply and sewerage infrastructure. The pressing need for corrective and preventative maintenance on the existing underground networks will require significant additional financial investment.

3.3 High level observations

The level of environmental assessment carried out to date does not sufficiently identify, quantify and provide mitigation for the risks associated with construction and operation of the proposed engineering plant at the Brockhampton landfill site.

[2] CSO – Combined Sewer Overflow

The Provisional Environmental Information Report (PEIR) notes that *"works are being undertaken on reclaimed land adjacent to the sea which has the potential for leachate to enter the marine environment through impacted groundwater released into surface water discharged into Hermitage Stream"*, further confirming that *"The construction of the proposed WRP and proposed HLPS could lead to impacts on the marine environment."*

The report concludes that the *"effects of pollution events may indirectly result in temporary habitat loss and temporary harm to these marine mammals and fish species therein."* It continues, *"the magnitude of effects is considered negligible and minor adverse effect which is not significant"*. The terms '*indirect*', '*temporary*' '*negligible*', '*not significant*' and suchlike are used extensively across the PEIR, and appear to be assumptions aimed at providing reassurance rather than fully justified and quantified facts.

The Society notes that the PEIR assesses the residual effects of Construction and Decommissioning on the habitats, species and designated sites as *"negligible to minor adverse"* while the residual effects during the Operational phase are assessed as *"Potentially significant"*.

The Society believes that far more detailed assessment should be conducted, documented and peer-reviewed by appropriate independent subject matter experts before any decision can be made on Southern Water's application for a Development Consent Order for this project.

3.4 The environmental risks to Langstone Harbour associated with the proposed construction project at the Brockhampton landfill site ('Site 72')

The alternative site assessment for the Water Recycling Plant and the High Lift Pumping Station and associated local tunnels appears to have been driven by a preference for 'Site 72', underplaying the risks of developing on that landfill site while failing to fully justify the dismissal of other potentially suitable identified sites.

The plant proposed for construction on this site covers the reverse osmosis water recycling plant, the associated tanks for effluent, chemical treatments and final output, together with a 'high lift' pumping station. The high lift pumping station alone would be a significant structure given the energy needed to lift at least 30Ml[3] of fluid per day from sea level to an 85 metre head at Portsdown Hill. In times of drought, that volume would triple to 90Ml/day. With the additional pumping infrastructure needed to move effluent from Budds Farm to the recycling plant and processed water onward to the Havant Thicket Reservoir, there will be a significant site-wide requirement for piling through the landfill to the underlying chalk bed.

[3] 30 Ml/day = 30 million litres per day

This landfill site was in daily use as a 'dilute and disperse' waste dump through the late 1960s to the 1980s with no lining preventing contamination from reaching the underlying harbour muds. The exact content of the landfill was not recorded by Havant Borough Council but it is known that domestic, commercial and industrial waste was tipped there, including incinerator ash. The fill material will contain solvents and hydrocarbons which are easily mobilised in groundwater. There will be a significant risk of leachate and landfill gas being mobilised by piling and tunnelling through the waste into the chalk aquifer below where the groundwater flow is southward towards Langstone Harbour.

We believe that there will be further risks associated with necessary pipeline construction below the Hermitage Stream, with an additional risk of future pipeline leaks requiring maintenance activity in this sensitive area of Langstone Harbour. It is not clear how the pipeline could be sealed to prevent leachate from the landfill migrating along the pipe or the tunnel below the stream.

The Society notes that the assessment of alternative sites excluded the option to develop the WRP[4] at the Peel Common facility near Fareham, away from a sensitive coastline. In that alternative scenario, the initial source of sewage effluent for recycling would be taken from the Peel Common Wastewater Treatment Works, with later construction of a pipeline from Budds Farm WWTW[5] *if a greater volume deemed necessary*. Plant construction would then be unnecessary at Broadmarsh and the environmental risks would be significantly reduced. This scenario would also provide a more sustainable solution with the plant sited closer to the point of need, which is the Southampton and Winchester area.

3.5 The environmental impact of the change of use of the Havant Thicket Reservoir

The Society is concerned about the change of use of the Havant Thicket Reservoir necessitated by this proposal. The Havant Thicket Reservoir, currently under construction, was originally conceived and designed for development as a natural chalk spring-fed reservoir with the additional benefit of providing recreational use by the public.

Planning approval was granted by the local authority on the assurance that the use of the naturally nitrate-rich spring water to fill the reservoir and to top it up after drawdown in a drought, would ensure a reduction in nitrate levels entering Langstone Harbour. The extent to which that welcome improvement would be lost if the operation of the reservoir is altered such that 30Ml/day of spring water would be displaced by recycled water is not yet known. The water quality modelling being undertaken to assess the impacts of effluent recycling is still ongoing.

[4] Water Recycling Plant
[5] Waste Water Treatment Works

3.6 The environmental impact on the Solent from the change of use of the Eastney long sea outfall

The Society is concerned that the proposal shows that the enriched brine waste from the water recycling plant would be pumped out through the Eastney long sea outfall into the middle of the Solent, where the overall tidal flow will result in the content dispersing and settling across the wider water body.

The Southern Water assessment indicates a ***"****likely significant effect"* in the Preliminary Environmental Information Report published with the consultation. At a summary level, the report notes *"… it is unclear how existing chemical compounds within the discharge would be affected by this recycling process. It is possible that it may concentrate chemical compounds above environmental quality standard for estuarine and coastal waters."* It states that *"changes may potentially raise deleterious compounds above thresholds of effect levels or may alter the availability of nutrients or organic matter to existing marine pelagic communities, it is likely that the marine benthic community could be affected."* In conclusion, the report notes that *"Regarding operation, understanding of the potential effects of changes in discharge contents at the Eastney LSO are still limited for assessment at this point and any mitigation required is yet to be considered."*

The reject brine discharge to the Solent is likely to be most concentrated in a drought scenario, when the maximum volume of reject water is being produced (20Ml/day). This would occur at the same time as the direct flow of final effluent from Budds Farm for mixing with the reject water in the long sea outfall would be at its lowest, since 80Ml/day of final effluent would be diverting to the Water Recycling Plant for effluent recycling. This would mean there would be less waste water from the normal Budds Farm treatment process to dilute the reject brine being discharged from the Long Sea Outfall.

Other indications in the text note that regular maintenance work on the reverse-osmosis membranes will result in solid matter being flushed out through the Long Sea Outfall. There is also the potential for the additional solid waste from the Water Recycling Plant to be put back into the Budds Farm works, if this is to be the case the impacts need to be fully considered in the modelling for the revised discharges for the Long Sea Outfall.

3.7 Further environmental concerns

We believe that construction of the proposed plant at a high risk site immediately adjacent to the Hermitage Stream will also have an adverse impact on the 'Chichester and Langstone Harbours' Special Protection Area (UK9011011), with the potential loss of a Brent Goose and Wader Site. The length of the construction period will likely prevent the mitigation of risk by the timing of the works within the SPA.

Langstone Harbour and Chichester Harbour are connected by a tidal channel between Bridge Lake and Swear Deep, just 1.8km to the east of the Hermitage Stream. Both harbours are already adversely affected by CSO discharges as the Society's analysis of the past four years' worth of Environment Agency discharge data[6] demonstrates.

The Society believes that Southern Water should be giving higher priority to investment for the prevention of these discharges, rather than risking further environmental damage to both harbours, particularly when there are other, lower-cost and more sustainable alternative approaches to satisfying future water shortages.

3.8 In summary

Solent Protection Society is opposed to the construction and operation of the Water Recycling Plant, the High Lift Pumping Station and the associated tunnelling and pipework infrastructure at the Brockhampton landfill site ('Site 72'). The Society's objection is primarily driven by environmental concerns and the risks associated with this sensitive site.

We are further persuaded by concerns regarding the economic viability and questionable sustainability of the overall approach, given Southern Water's limited and selective assessment of alternative solutions.

[Appendix 2 - Response ends]

[6] Southern Water CSO discharges – Environment Agency data reinforces worsening trend – Solent Protection Society