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SUBMISSION TO SYDNEY WATER PRICE PROPOSAL – [redacted]

1 Introduction

By any standard, the Sydney Water price proposal (https://www.ipart.nsw.gov.au/sydney-waters-price-proposal) represents a major escalation of costs on its customers (18% initial, ramping up to 53.4% real increase over 5 years). It is arguably the most significant price increase for any Australian water utility on record, by some margin. For those of us who have worked in the water industry for decades, it is confronting to the point that begs the question, why? Whilst there are numerous factors that contribute to a true answer, this submission addresses some facets that are highly likely to explain significant portion of escalating costs and proposes corrections or remedies. Specific areas highlighted can be readily and promptly addressed to help ameliorate the pain on customers and indirectly, the citizens of NSW who benefit from the approximately $0.5B to $0.8B annual dividend Sydney Water passes to NSW Treasury.

63% of the spend is capital, of which over 90% is evenly split between renewals and growth, though with growth increasing in proportion into the future. This submission relates to both, in particular about 40% of the capital spend relates to the capacity sizing issues raised.

It is with earnest intentions this submission is made. Sydney Water faces unenviable and major challenges and cannot be expected to deal with every facet flawlessly. There are numerous entities and us individuals who have worked within Sydney Water and later left for various reasons but still remain interested in, have formally consulted to, Sydney Water with intention to contribute to its mission. The somewhat specific matters raised here are of a corrective but hopefully constructive nature for purposes of customer affordability and better community outcomes.

2 Water Demand Assumptions

Is an absence of contemporary peak demand data resulting in overestimated water infrastructure costs?

Water utilities design their systems to meet an assumed peak or maximum demand (typically in hot weather) to meet the particular pressure requirement set by customer expectations and/or regulation. It is the key variable that determines the size, timing and consequently the cost of water network infrastructure. Sydney Water like any utility has standard values for planning purposes which is understood to be “Water System Planning Guidelines” AMQ0562 (Planning Guidelines). The version of this as recently as 2022, possibly to present day, outlays default demand values for different development types, with the peak values expressed as a ratio of average.

2.1 Potable Water Average and Peak Demand

The Planning Guidelines present average demands based on BASIX values as predicted in 2005 and note that the peak ratios were based on an estimate exercise (undertaken by the former Public Works). Since that time many tens of thousands of BASIX compliant new single dwellings across several suburbs have been developed. Although the average demand is known from water meter readings, it would be necessary for Sydney Water to install flowmeters serving only BASIX compliant development for a multi year duration to measure peak demand. This would include analytical prediction techniques to extrapolate measured hot weather performance to derive an estimate of the maximum demand scenario, ie. near record hot weather on a weekend (typically having the greatest demand). This is an activity that requires monitoring of at least several hot weather periods and would cost less than $0.25M that would cover several sites including analysis (accurate clamp on bury-able flowmeters would cost about $20K per location).

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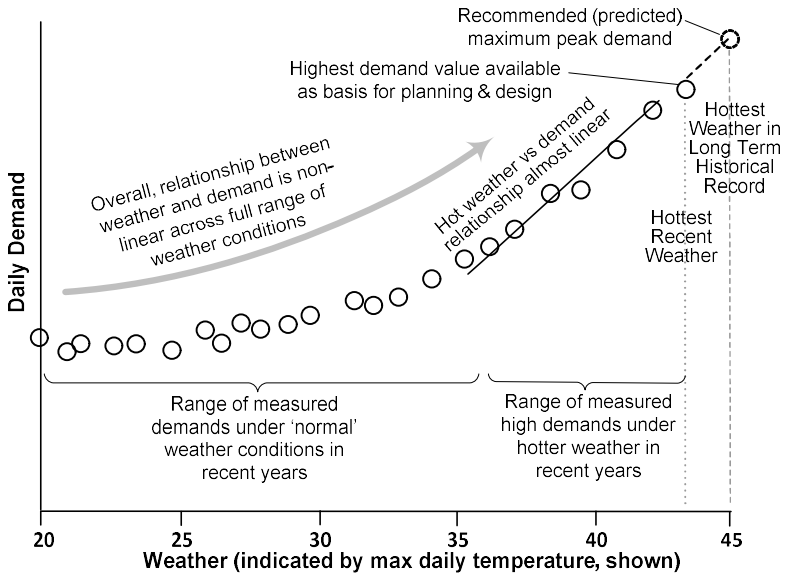
Capital Implications: Approximately $3.7B of the 10 year capital plan is growth related water infrastructure, ie pipes, pumps, reservoirs and treatment assets. The cost for each is either mostly or partly based on peak demand assumptions. When Sydney Water's typical cost estimating curves are taken into account, and were an expedited review as mentioned below to be conducted that likely shows 10% less actual peak demand than what is currently assumed (likely reduction would be more than 10%), that's a 2% to 4% saving (ie. $75M to $150M). Further savings can accrue where the timing of some projects can be deferred and generally reduce the complexity and project intensity Sydney Water faces. Every chance there could be much greater than 5% savings.

A Solution With An Interim: Given the great majority of peak demand for single dwellings comprises outdoor uses, it is possible to derive interim values by interpolating the much smaller garden/lawn areas of contemporary homes from the peak to average ratios that were derived from historical data for much larger lots with commensurate greater outdoor uses, plus a margin until flowmeter data is acquired/analysed post haste. There is an issue with rainwater tanks masking the true end use demands, but data from recycled water areas (mentioned below) can address this. Areas of medium and high density development may require early targeted rollout of the $600M smart meter initiative in the Price Proposal. As for flowmeter data analysis, there was a process developed and tested by a unit in Sydney Water to overcome the challenge, namely, that a planning value must be derived by establishing a relationship between a few years of hot weather demand data and weather, then extrapolate to predict the demand for the heatwave case. The figure below expresses this concept. To measure until a near historical heatwave event occurs on a weekend is too long a wait to access major capital savings that contemporary peak demand values can establish.



Although the Planning Guidelines encourage planners to use their own judgement and adopt locally specific values where possible, this subjectivity and innate conservative choices in the absence of definitive data translates into substantial overbuild. And with the growth areas subject to increasing developer charges, there surely is an onus on Sydney Water and IPART to not burden new home owners with avoidable costs.

Recommendation: *IPART validate as fact whether Sydney Water has yet to monitor peak demands in specifically post-BASIX low & medium density development areas, and if not, direct as a matter of urgency to install flowmeters and immediately implement interim review of Planning Guidelines including steps similar to those mentioned above.*

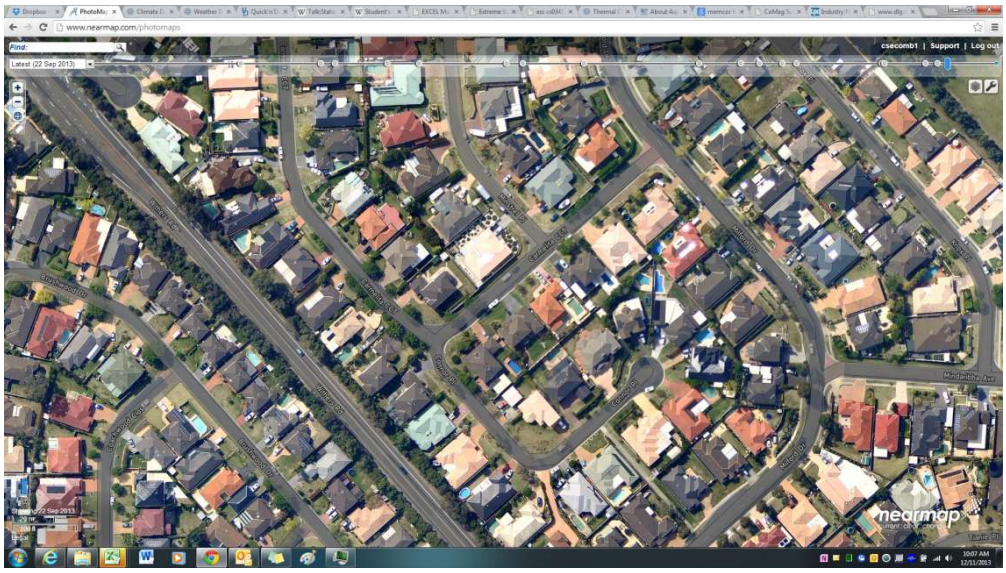
2.2 Recycled Water Demands

Has demand data from the Rouse Hill success story resulted in missed opportunities?

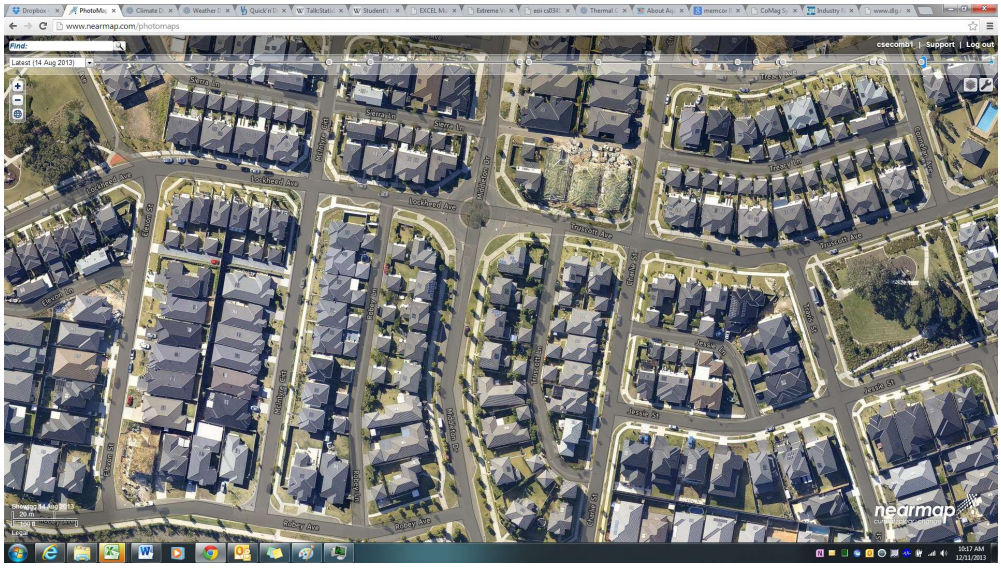
Sydney Water's Rouse Hill Recycled Water Scheme, innovative for its time when developed in the early/mid 1990's and now serving tens of thousands of homes, has been a successful example of

potable water savings. However the data from pre-BASIX areas of that scheme, with high outdoor watering from the large lots and a water price initially set to encourage use (30% of potable price vs the present 90%) gave average demand values of over 0.3 kilolitres/day from meter readings. Planning Guidelines, after BASIX adjustments, set out average recycled demand of 0.25 kilolitres/day for single dwellings (0.35 if 100% connection to laundry cold water). Post BASIX recycled water development areas such as The Ponds and Hoxton Park have shown average demands of 0.11 to 0.125 kilolitres/day from meter readings, 50% to 60% less than Planning Guidelines. The difference is partly explained by more water efficient toilets but a simple comparison of the pre and post BASIX development clearly indicates far less potential for outdoor demand, as shown

below.



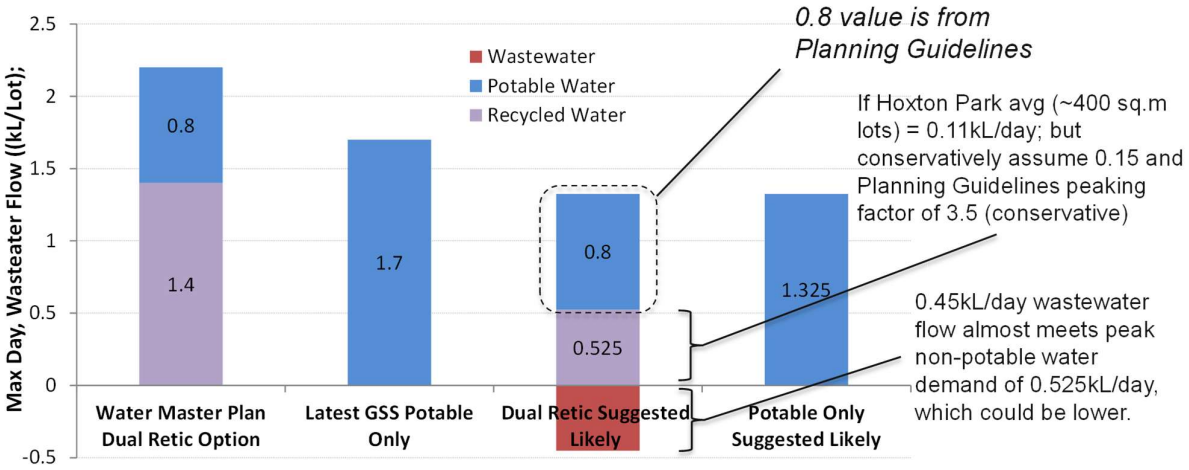
Rouse Hill Dual Retic Areas: Avg 0.25 to 0.28 kL/day/lot Max hr as ratio of avg: ~16 times



Hoxton Park Dual Retic Areas: Avg 0.1 kL/day/lot (metered) Proposed Max hr as ratio of avg: 35 times (3.5kL/day/lot)

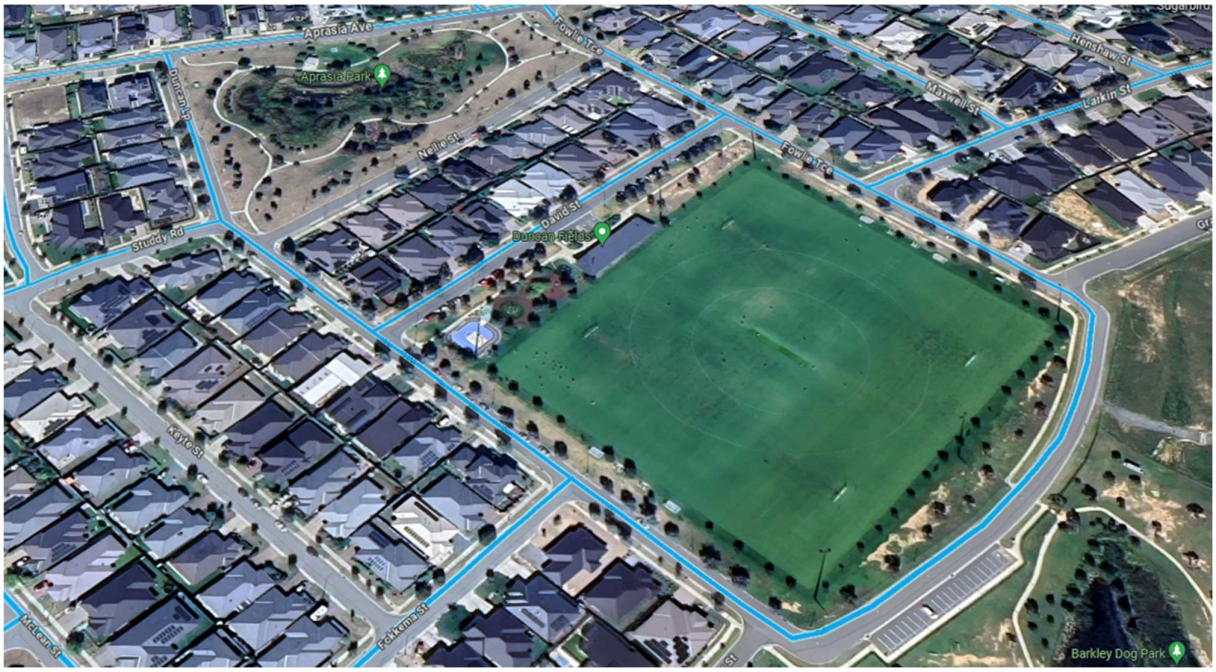
Peak Demands: With smaller lots and net outdoor area very small, logic would dictate that the peak to average ratios in the Planning Guidelines, based on old Rouse Hill data, ought to be lower for post BASIX development. But conservatively applying the Maximum day demand to Average day demand ratio in the Planning Guidelines to the likely average demand of 0.12 kilolitres/day gives less than half the peak demand of the guidelines. A measured value would be even lower, ie. real world maximum demand is very likely to be less than 40% of Planning Guidelines, as per below graph.

Consequence for Configuration and Innovation: Sydney Water has not initiated any new dual reticulation or recycled water networks for new residential subdivisions since the Hoxton Park Recycled Water Scheme in around 2004, although Sydney Water has readily facilitated developer led initiatives. This includes Ropes Crossing and the soon to be developed Sydney Science Park. There is a potentially major opportunity to better service growth customers more affordably that is not accessible to Sydney Water in the absence of contemporary peak demand data. An example which is generically relevant is shown below from planners' demand assumptions (less than Planning Guidelines) for a service area in Western Sydney that shows a recycled network solution requires a combined potable and non-potable peak daily demand of 2.2 kilolitres per single dwelling, and a potable only demand of 1.7 kilolitres. But from the above argument, the peak recycled demand is more likely to be not much more than 0.5 kilolitres, and that can be almost fully met by recycling the wastewater produced from the development. These values reveal a completely alternative servicing configuration where suburb or multi suburb treatment of wastewater close to point of generation can more than halve the peak water demand, avoid rainwater tank costs (typically averaging well over $12K based on how many are placed underground to avoid land take) and greatly reduce the export costs as only surplus recycled water need be transferred, potentially off peak. The advantage of recycled water is that the suburb can be lush, immune to water restrictions with affordable watering of public space and more of the spend only has to be committed to if development proceeds versus the major water transport and trunk wastewater collection servicing strategies Sydney Water currently proposes for Western Sydney. In the event that the demand patterns along with effective technology implemented within the appropriate framework make for a localized reticulated outcome that is preferable to a developer or group thereof, and more affordable to the customer, it would be a poorer community outcome were Sydney Water not positioned or enabled to accommodate such a variation to the uniform service offering.



By way of example, a precinct development could incorporate Hydraloop shower/bath circular recycling, rainwater tanks for hotwater service and recycled wastewater for toilet/garden/ washing machine cold water. And with approaches highlighted in Section 3 below. The net result could be a two thirds reduction in peak potable demand, less than half the wastewater flow in winter, nil in summer, with it coming in highly treated, off peak and with negligible wet weather flows. Furthermore, the recycled water would be not only greening the suburb, but maintaining lushness in the stormwater quality assets during dry times for greater effectiveness during the wet (eg. Googong development below).

Recommendation: *IPART provide mechanism for innovative configurations that can reduce growth capital costs and potentially provide better value for Sydney Water's developer customers. This would include fair pricing for decentralized initiatives where access is needed to trunk sewer infrastructure for off peak surplus recycled water, with fair deductions for reduced potable water demands. Mature application of WICA is strongly recommended*.



Googong development; rainwater tanks and reticulated recycled water which is also used for open space and to maintain growth of the bioretention basins during extended dry weather

3 Sewerage Wet Weather Flows

Is the savings from unchecked plumbing installed to minimum standards a false economy writ large?

By far the largest category of capital spend (35%) is for wastewater growth servicing, at $12B over 10 years. All those assets, both network and treatment types, are sized both on a dry weather and wet weather flow basis. With wastewater networks typically sized at around two to three times the dry weather flow, the amount of wet weather leakage determines the majority of these assets' capacities, albeit the marginal cost being a large majority. It could be a few modest low cost changes to how new customer sanitary drainage (private sewers) is installed that reduces the 2 times dry weather flow down to, say, 1.3 times. That 25% reduction in capacity could result in around 10% cost reduction, which over 10 years would be $1.2B. Furthermore, it facilitates the innovative configurations mentioned in 2.2 above, where wet weather flows are to be avoided.

There is a clear regulatory disconnect on this matter where NSW Fair Trading oversee plumbing standards from a customer assurance perspective without necessarily a hardwired consideration of Sydney Water's regulatory constraints. Formerly every new customer's plumbing was inspected upon connection for a fee. Now a 'risk based approach' has determined around one in twenty standard connections are randomly inspected to free up inspector resources for higher risk and larger premises. This can only lead to capital costs dealing with extra leakage and so the society suffers in having to fund wet weather leakage consequences best avoided by better standards that are rigorously checked at point of implementation. It also goes without saying that the customer is less likely to suffer costly plumbing issues if such rigor was at play.

It is fact that Sydney Water some time ago had progressed this matter by way of changed connection standards and reduced infiltration sewer trials. Many initiatives for private plumbing improvements were identified but remain untried. These were largely simple matters to trial and assess such as use of higher class pipe, 12mth delayed hydrostatic tests, special compaction sponges for inlets to verticals, compulsory use of gravel bedding etc. There is analysis that goes some way to establish the viability and cost effectiveness of these measures, and the case to revisit these opportunities is only strengthened when considering the capital at stake.

Recommendation: *IPART place a near term requirement on Sydney Water and NSW Fair Trading to revisit the relative investment in customer drainage standards, methods, implementation assurance for total minimum cost to the society.*

4 Delivery Methods and Conclusion

Sydney Water has adopted an increasing reliance on delivery partners. Some scope that lends itself to traditional contracting but is included in the geographic remit of a particular partner, for example, simple watermain renewals. I have observed one such project where it was both surprising the large amount of resources allocated to the renewal and the longer than expected duration. Given the major quantum of spend in this Price Proposal, IPART as a minimum ought conduct substantial benchmarking of delivery method as well as mere comparison of cost by asset type in similar jurisdictions to test. The spend is higher, the investigation and questioning therefore ought to be commensurately higher, especially with the major increases at play.

If there are any questions regarding this submission, please do not hesitate to contact me.

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