LCSC/TW038

Department of State Growth

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Tasmanian Government

Hon Rosemary Armitage MLC
Legislative Council Select Committee TasWater Ownership
Parliament House
HOBART TAS 7000

Dear Rosemary

I am writing in relation to the report titled *Accelerated infrastructure investment delivery in Tasmania's water and sewerage* sector, issued July 2017, a copy of which is enclosed for the Committee's information. For the benefit of the Committee I enclose an update to the report.

You would be aware that there has been some public commentary regarding the acceleration of some of the projects in TasWater's 10 Year Financial Plan (Financial Years 2016-17 to 2025-26), which was issued in January 2017 and formed the basis of Infrastructure Tasmania's report. In addition, it is apparent that TasWater has altered its 10 year profile as well as the timing of some projects in its draft Price and Service Plan 3 (PSP3) submission to the Economic Regulator at the end of June 2017.

It should be noted that while the January 2017 version of TasWater's 10 year financial plan has now been superseded by the draft PSP3 submission, the broad quantum of investment proposed by TasWater over the next 10 years of around $1.5 billion remains and therefore the findings in our report stand.

Our update ensures alignment and comparability of the report with the January 2017 version of TasWater's 10 year financial plan, specifically the data presented in Tables 1 and 2 on page 8. As pointed out in the report we have not attempted to align our report with TasWater's recent draft PSP3 submission, as the level of detail with respect to projects and their timing over years four to 10 is not available. Rather, we continue to rely on the now superseded January 2017 version of the 10 year financial plan, noting that the quantum of investment over the period is broadly the same.

The data used by Infrastructure Tasmania to prepare the report included some assumptions with respect to capitalised interest and program expenditure that were not fully explained, which did not allow for a direct comparison to be made. An updated version of the tables is presented overleaf with accompanying notes regarding the treatment of the two items mentioned above.

With respect to capitalised interest, it should be noted that Infrastructure Tasmania has not sought to estimate or quantify what this might amount to as part of re-profiling TasWater's capital plan, given the variables at play. To the extent that borrowings are used to fund all or part of the accelerated plan there will be an associated amount of capitalised interest. The amount, however, will be dependent on elements such as the level and timing of borrowings and borrowing rates. In this regard, while it has been included for comparability in the replication of TasWater's numbers, it has been excluded from the re-profiled/accelerated plan.

It is also worth reconfirming the commentary in the report regarding the differences between the 10 year capital expenditure set out in TasWater's January 2017 version of the 10 year financial plan compared to the draft PSP3 submission. Notwithstanding there is very little detail on the make-up of either the three year or 10 year capital program in the draft PSP3, there is evidence of some significant changes to project values (and therefore scope presumably) as well as project inclusions and omissions. In addition, the total level of expenditure over both the short and longer time horizons varies. This appears to be consistent with TasWater's own statement from its 10 year financial plan that:

> *The Plan will be reviewed annual and updated to reflect changing internal and external circumstances. The sequence of projects is subject to change due to a range of factors, not simply financial factors, and it is highly likely that the list of projects will be re-prioritised more than once prior to implementation.*

In this regard, whether the total expenditure is $1.55 billion (as per the 10 year financial plan) or $1.49 billion (estimated from the draft PSP3) is immaterial to the question of whether acceleration of the plan is achievable.

Overall, it is important to note that the clarification of these issues has no material effect on Infrastructure Tasmania's overall findings presented in its report on acceleration, nor does it impact on the independent assessment of the accelerated investment plan undertaken by Pitt & Sherry.

I trust this information is useful for the proceedings of the Committee.

Yours sincerely

Allan Garcia
CHIEF EXECUTIVE OFFICER

8 September 2017

Encl.

Table 1: Capital plan under TasWater's 10 year financial plan ($'000)

	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	10 year total
Projects[1]	76,079	92,875	103,044	116,638	133,003	128,128	126,545	106,709	104,953	75,322	**1,063,296**
Programs[2]	42,054	33,870	40,990	36,560	38,400	42,430	42,930	47,630	45,710	46,330	**416,904**
STPs	5,530	1,890	4,530	4,430	4,390	4,380	4,140	4,540	6,010	6,030	**45,870**
WTPs	3,310	940	2,270	2,220	2,200	2,630	2,480	2,720	2,570	2,580	**23,920**
Total	**126,973**	**129,575**	**150,834**	**159,848**	**177,993**	**177,568**	**176,095**	**161,599**	**159,243**	**130,262**	**1,549,990**

Notes:

1. *Project expenditure includes $58.2 million of capitalised interest, consistent with TasWater's 10 year financial plan.*
2. *Program expenditure has been adjusted down to separately show the expenditure on sewerage treatment plants and water treatment plants over the period.*

Table 2: Capital plan as re-profiled by Infrastructure Tasmania ($'000)

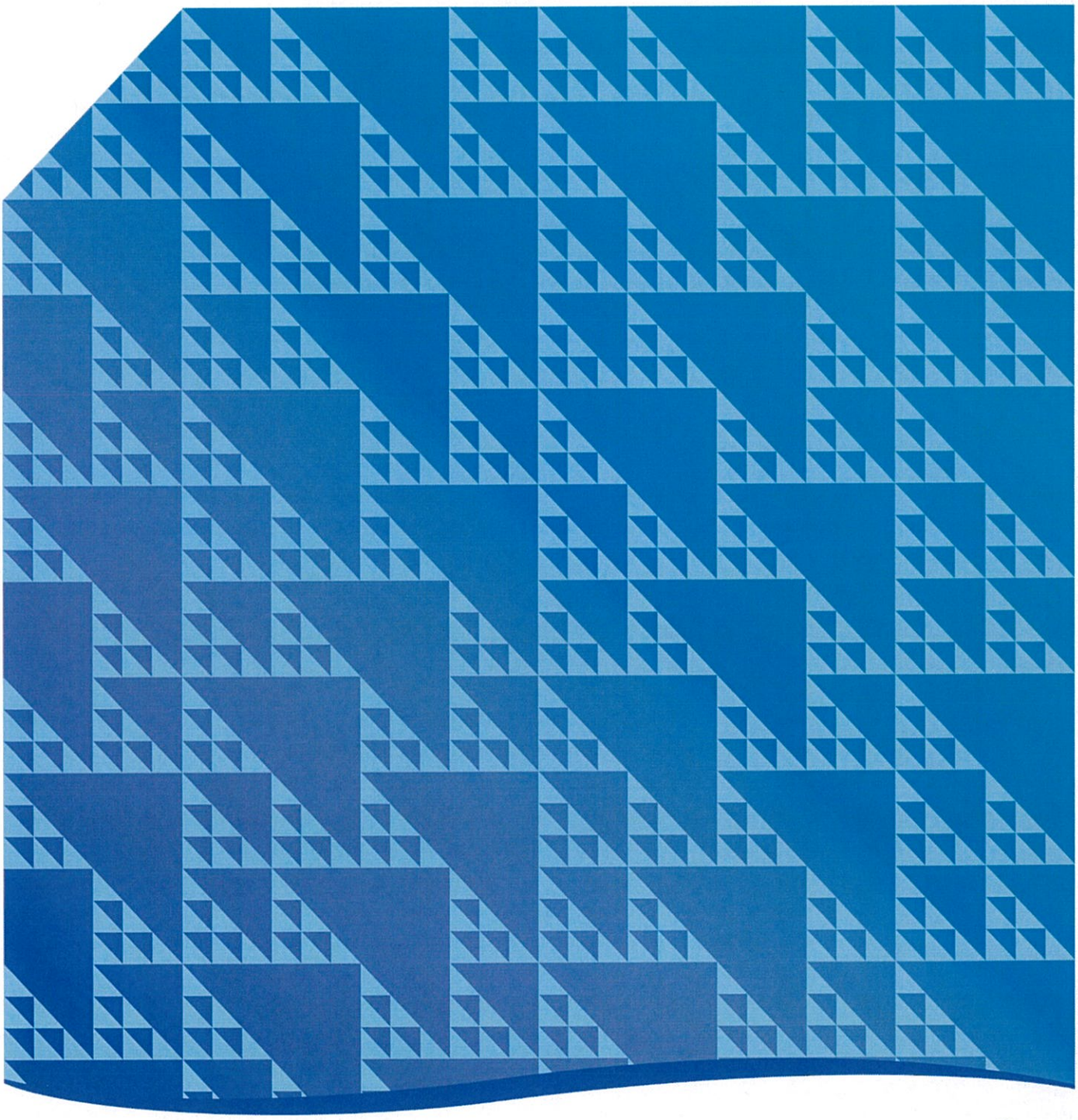
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24[1]	2024-25[1]	2025-26[1]	Revised 10 year total
Projects[2]	75,631	91,147	113,465	167,272	199,835	179,222	178,490				1,005,062
Programs[3]	47,928	46,560	62,634	65,544	75,600	88,152	88,721				475,138
STPs	5,530	2,719	6,188	6,917	7,706	8,525	8,285				45,870
WTPs	3,310	1,334	3,057	3,401	3,774	4,598	4,448				23,920
Total	**132,399**	**141,760**	**185,344**	**243,133**	**286,915**	**280,496**	**279,944**	**100,000**	**100,000**	**100,000**	**1,849,990**

Notes:

1. *Allocation of the ongoing investment is not possible at this time without further detail on priorities, projects and programs. This could be allocated to projects not included in TasWater's current 10 year plan or to address the renewals backlog earlier, for example.*
2. *Project expenditure has been adjusted to remove capitalised interest on the basis that under the accelerated plan capitalised interest will be dependent on the level and timing of borrowings related to capital projects and borrowing rates for example, which may be different than what underpins the forecasts in TasWater's 10 year financial plan.*
3. *Program expenditure includes an additional $58.2 million of additional expenditure (which could be a bring forward of renewals work) in order to offset the removal of capitalised interest and to provide comparability to the total value of TasWater's 10 year financial plan.*

July 2017

Accelerated infrastructure investment delivery in Tasmania's water and sewerage sector



Infrastructure Tasmania

Tasmanian Government

Contents

Introduction

The Government has requested that Infrastructure Tasmania provide a report regarding an accelerated infrastructure investment plan for Tasmania's water and sewerage sector. Specifically, Infrastructure Tasmania has been tasked to:

- Prepare a re-profiled capital investment plan, to deliver TasWater's 10 year plan within five years of the Government's proposed acquisition of TasWater (ie by 2022-23); and
- Identify any potential risks and/or constraints to achieving the accelerated investment plan.

The re-profiled capital investment plan has been prepared based on TasWater's current 10 year financial plan 2016-17 to 2025-26 (issued 17 January 2017)[1], being the most current information available at the time of preparing this report.

Infrastructure Tasmania has been advised to assume there are no financial constraints to delivery of the projects and programs within the nominated timeframe.

In preparing this report, Infrastructure Tasmania has engaged with a number of local and national water industry stakeholders and experts. These include representatives of consulting and contracting firms and peak bodies. Input and feedback has been sought from other relevant stakeholders, particularly those with experience in delivering or managing large capital programs. Infrastructure Tasmania has also consulted with agencies across Government, including Tasmanian Irrigation, Entura and regulatory bodies.

Prior to finalising its report, Infrastructure Tasmania engaged an independent expert to undertake a high-level review of both the re-profiled capital expenditure plan, and the risks and constraints to achievement of the accelerated infrastructure plan as identified by Infrastructure Tasmania.

Infrastructure Tasmania's report, supported by Pitt & Sherry, confirms that the accelerated investment plan is deliverable and identifies, at a high level, the critical success factors or preconditions that should be considered in preparing for and the delivery of the accelerated plan.

[1] All references to TasWater's 10 year financial plan in this report should be read as meaning the 10 year financial plan 2016-17 to 2025-26 (issued 17 January 2017).

Summary of Findings

Infrastructure Tasmania is of the view that an accelerated capital program is deliverable, provided that the necessary funds and resources are available and an overarching "program delivery model" appropriate for the Tasmanian context is put in place. This view is supported by Pitt & Sherry which has undertaken an independent review of Infrastructure Tasmania's assumptions and approach to accelerating the capital program.

There are numerous precedents for the delivery of a program of such size over a similar timeframe in other water utilities and in other capital intensive businesses in Tasmania, across Australia and internationally.

Program objectives will need to be set and will assist with decision making at a program and project level. A strong governance framework, involving the right resources, with the right allocation of roles and responsibilities and with a mandate to deliver the capital program and provide clear direction will be a critical part of facilitating project and the overall program delivery within the proposed timeframe.

With respect to industry resources, Infrastructure Tasmania is of the view that a combination of local and national skills and expertise (across both the consulting and contracting sectors) will be required to fulfil the workload associated with an accelerated water and sewerage capital program, particularly noting the level of activity already underway and planned across other sectors in the State.

Development of a new, fit-for-purpose procurement strategy will also be a critical part of effective engagement with industry and the overall timely delivery of the program. In addition, providing industry with visibility of the program of work will also be an important part of ensuring the necessary resources are available to deliver the program.

The injection of resources from outside the State will be an opportunity to build capacity and transfer skills and knowledge that will strengthen the local industry. Going forward this would mean that not only is there increased capacity and capability in the sector locally, but there is a reduced likelihood of requiring the same level of 'external' expertise and support in the future.

Capacity and capability also exists within other Government agencies, including Entura and Tasmanian Irrigation, to assist with development and delivery of an accelerated infrastructure program. This assistance exists in the form of skills, experience and physical resources.

Importantly, there is a significant resource base and capability within TasWater's own workforce. Early engagement with the business will be important to not only provide clarity for employees, many of whom have been through past phases of reform in the sector, but also to ensure all of the above preconditions for success can be appropriately designed and developed.

In this regard, and overall, early engagement with TasWater and a detailed piece of work to identify and design the program delivery model, governance arrangements, and procurement strategy are the critical next steps that need to be undertaken to underpin successful delivery of an accelerated capital program for Tasmania's water and sewerage sector.

Re-profiling TasWater's 10 year capital plan

Infrastructure Tasmania has been asked to re-profile TasWater's 10 year capital plan[2] into a delivery period of seven years (five years post the State Government's planned takeover of TasWater on 1 July 2018).

The re-profiling and underpinning assumptions and principles, which are described in this section, have been based on TasWater's 10 year financial plan, which includes very limited detail on capital projects and programs aside from forecast expenditure over the period and some high level descriptions of large projects (ie those greater than $20 million in value).

Given the amount of detail in TasWater's 10 year financial plan, the re-profiling must be considered in the context of the feedback received through stakeholder discussions held for the purpose of this review and subsequent observations and findings in this report.

It is also important to note that TasWater submitted its draft Price and Service Plan for the three year period commencing 1 July 2018 (PSP3) to the Tasmanian Economic Regulator on 30 June 2017. TasWater's draft PSP3 does not include a full detailed update of the projects and programs included in the 10 year capital plan, however, it does provide an update for the three years of PSP3 together with an updated aggregated expenditure profile for the period 2017-18 through to 2036-37.

The draft PSP3 includes some significant changes to the estimated cost and timing of some major projects valued at greater than $20 million. For example, the Bryn Estyn Water Treatment Plant Upgrade was included in the 10 year capital plan with an estimated project budget of $35 million and not completed within the period (ie by 2025-26). In the draft PSP3, however, it has an estimated value of over $164 million and expected completion in 2021-22. An explanation of this variation (and others) is not included in the draft PSP3.

Importantly, and for comparison, the total level of expenditure over the initial 10 year period appears to be similar in both the draft PSP3 and the 10 year financial plan at around $1.5 billion.

The principles used to guide the re-profiling include:

- A smoothed ramp up in capital spending to allow the business time to prudently accelerate its pace – this is considered necessary based on feedback suggesting it is difficult to have a significant step change due to acceleration programs typically being a bit "clunky" in their first year.
- Any apparent sequencing of projects is to be maintained, albeit the timeframe for project works may be condensed.
- Projects that are presented in TasWater's 10 year plan with planning/approvals in one financial year and works in the next financial year (ie a year of small spend followed by a larger spend) will continue to be separated to ensure ample planning time, though the timeline of project works will be condensed if sensible.

[2] Refer TasWater 10 year financial plan Appendix B.

- Project works in FY17 and FY18 were left untouched on the basis that the State Government takeover would only apply from 1 July 2018 and the earliest it may be able to engage formally with TasWater would be late in 2017 (assuming the successful passage of legislation).
- Capital spend on programs and the renewal works on water and wastewater treatment plants either require less planning or are smaller in nature and therefore are areas where initial acceleration could be commenced, including in the period between the passage of legislation and formal takeover.
- For major projects (eg the Hobart and Pardoe Sewerage Improvement Plans), no assumption was made about bringing these works forward into FY18 as there will likely need to be time for the State Government to decide on a new capital program delivery model, governance and procurement strategy/s to be applied to these major undertakings.
- Works in FY18 that continue on over future years will be condensed if sensible.
- No priority was given to one asset class over another (eg making faster progress on wastewater treatment compliance), with the spread of projects by class to be maintained, just over a shorter time frame.

It should be noted that Infrastructure Tasmania has not sought to include the updated project information from TasWater's draft PSP3. This approach was taken as the draft PSP3 only covers three years and does not give any indication of how the changes affect the back end of the 10 year plan in terms of the possible displacement of other projects. However, as noted, the total ten year spend is still similar and given the apparent uncertainty over individual projects (based on the changes in TasWater's planning in a six month period), it is likely the quantum of the total plan spend that is of most importance.

Projects over $1 million ($1.005 billion in total)

TasWater's 10 year financial plan includes a list of 95 projects with a value of $1 million or greater, with project works set out by financial year for each of the ten years between FY17 and FY26. For the purpose of re-profiling, each of these projects has been considered in the context of the above principles to determine whether the project commencement or timeframe could be varied. Any changes and reasoning have been documented and independently reviewed[3].

Post completion of this project by project assessment, an analysis of works by local government area has also been undertaken to determine if there are any locations where project overlap may occur and whether such overlaps would cause difficulties in delivery, either by the sheer quantum of works occurring in, for example, the same suburb or the flow on impacts to traffic flows and the inconvenience this may cause.

Launceston is the only location where it appears that significant project overlap will see works occurring all over the greater city area, particularly in the last three years of the re-profiled plan (FY21 to FY23).

While not impacting on timing of, or spend on, individual projects, it was also noted where there may be regional opportunities to package works for efficiency and in order to attract larger companies to the process.

[3] The outcomes of the independent review are discussed later in this section.

Wastewater and Water Treatment Plant Works ($70 million in total)

TasWater's 10 year financial plan includes estimates of minor water and wastewater treatment plant works (valued at less than $1 million) required during the period but does not profile these in any individual financial years. Instead the total value of the individual works are simply listed by plant[4].

In the absence of an existing expenditure profile, it has been assumed that there is the flexibility in this small scale, largely renewal based work, and that they would be delivered reasonably evenly across the 10 year plan period (eg around $7 million combined of works per year). Consequently, it has also been assumed the works could equally be delivered evenly over a seven year period ($10 million per annum) should existing financial constraints be removed.

Consistent with the principles outlined above and the nature of these works, to the extent that existing resourcing and financial constraints are relaxed, Infrastructure Tasmania is of the view that there is scope for such capital to be delivered sooner, including in the last six months of FY18 potentially.

These projects also lend themselves to being packaged, either regionally or by plant type, as this would likely lead to efficiencies for consultants and contractors in delivering a number of smaller works in an area that would otherwise be let individually, or possible efficiencies based on having to deal with the same plant technology. On this basis, Infrastructure Tasmania has assumed a profile over the seven years of these projects being delivered at:

- $6,980,000 in FY17 (10% of total spend– Infrastructure Tasmania has assumed this is what TasWater would have spent yearly even though it did not provide a yearly profile for these works);
- $10,469,000 in FY18 (15%);
- $17,449,000 in FY19 (25%);
- $10,469,000 in FY20 (15%);
- $10,469,000 in FY21 (15%);
- $6,980,000 in FY22 (10%); and
- $6,980,000 in FY 23 (10%).

Bringing these works forward enables early acceleration of the overall program without compromising the planning that needs to occur on some of the bigger projects.

TasWater Capital Programs ($487 million in total)

TasWater's 10 year financial plan includes a number of programs which cover (among others) the renewal of water and sewer mains, sewer pump stations, dam safety, electrical, metering and SCADA. Over the period the total of all programs is $486.7 million.

The program works categories have dedicated yearly budgets and by their nature (eg water main renewals or plant and equipment purchases) require less planning than projects. Infrastructure

[4] Refer TasWater 10 year financial plan pages 42-48 (inclusive).

Tasmania is of the view that these are areas where initial acceleration could also occur if financial constraints are removed. The TasWater plan also shows an already significant level of spend in each program in FY17 which is maintained reasonably evenly for each program across the entire planning period. This suggests that there is a good base level of work to be delivered in each program, particularly given what is known about the renewals backlog for the business.

TasWater's 10 year financial plan includes an expenditure profile for each program over the period and as such needed review only to redistribute the final three years of spending (some $164 million). However, in doing this, sensitivity was given to the profile of the total capital spend and as such an even allocation of this program spend across the post takeover years was not applied. Instead consistent with maintaining a smoothed ramp up in the overall capital program the final three years have been re-profiled in the following manner:

- An additional $8,206,000 in FY18 (5%)
- $16,412,000 in FY19 (10%)
- $24,618,000 in FY20 (15%)
- $32,824,000 in FY21 (20%)
- $41,030,000 in FY22 (25%)
- $41,030,000 in FY23 (25%)

An unchanged spend for each program was maintained in FY17, but a small increase in FY18 was assumed possible if engagement with the business occurs as soon as legislation passes and direction can be provided from a new administration to this effect.

Financial Year 2024 – Financial Year 2026

Consistent with the State Government's policy position, it is assumed that investment will continue at around $100 million per annum in the financial years freed up as a result of accelerating the total plan (ie FY24 to FY26). This equates to a total infrastructure investment of $1.8 billion over the 10 year period, compared to the $1.5 billion provided for in TasWater's current 10 year financial plan.

The acceleration of the total plan spend by three years provides the opportunity to bring forward projects and works not previously included in TasWater's 10 year capital plan. For example, TasWater's renewals backlog[5] could begin to be addressed on a larger scale and earlier than previously planned.

TasWater's 10 year financial plan shows that at the end of its $1.5 billion spend, there will still be a renewals backlog of around $400 million. Assuming there are no financial constraints and there is continuing investment in the order of $100 million per annum, a concerted effort may be possible in the years freed up to take significant steps to eliminating or substantially reducing the backlog.

Alternatively, projects such as the combined stormwater and sewerage system in Launceston and the removal of the Macquarie Point wastewater treatment plant to allow full development of the old railyards site, neither of which are currently included in TasWater's 10 year capital plan, may be made possible as a result of accelerating TasWater's plan.

[5] TasWater describes the renewals backlog as the amount that theoretically should have been spent if all assets had been replaced when due for renewal according to its most recent data.

The possibility of bringing forward such works is subject to successful delivery of the accelerated program and may be affected by any changes to priorities that may occur during the intervening years.

Independent Review of Re-profiled Capital Plan

Infrastructure Tasmania engaged local engineering firm Pitt & Sherry to undertake an independent assessment of its re-profiled capital plan, including underpinning assumptions and principles.

A copy of Pitt & Sherry's advice is provided at Appendix 2. In summary, however, Pitt & Sherry conclude that:

- the assumptions used by Infrastructure Tasmania to re-profile the capital plan are sound;
- the accelerated program as re-profiled by Infrastructure Tasmania is feasible;
- the accelerated plan does come with some risk that will need to be managed; with the risks relating to local industry capacity and capability, statutory approvals and stakeholder management, TasWater's approach to program delivery, and reform fatigue within TasWater;
- local industry will play a significant role in delivery of the program, and in doing so will need to upskill and gear up; and
- delivery of the accelerated program will require TasWater to provide visibility and certainty on the proposed plan, together with a consistent means of planning, procurement, delivery and implementation.

Overall results of re-profiling

Table 1 provides a summary of the forward water and sewerage capital plan as set out in TasWater's 10 year financial plan. It shows that capital expenditure would peak in 2020-21 at $179 million, and would average $156 million per year.

Table 1: Capital plan under TasWater's 10 year financial plan ($'000)

	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	10 year total
Projects	75,631	91,147	99,291	111,409	127,245	120,946	116,751	100,646	96,053	65,943	1,005,062
Programs	50,894	36,700	47,790	43,210	44,990	49,440	49,550	54,890	54,290	54,940	486,694
STPs	4,587	4,587	4,587	4,587	4,587	4,587	4,587	4,587	4,587	4,587	45,870
WTPs	2,393	2,393	2,393	2,393	2,393	2,393	2,393	2,393	2,393	2,393	23,925
Total	**133,505**	**134,827**	**154,061**	**161,599**	**179,215**	**177,366**	**173,281**	**162,516**	**157,323**	**127,863**	**1,561,551**

On the basis of Infrastructure Tasmania's re-profiled plan, which did not require amendment as a result of the independent review undertaken by Pitt & Sherry, the accelerated plan would peak at around $288 million in 2020-21 and would average $256 million per year over the period 1 July 2018 to 30 June 2023. This is shown in further detail in Table 2.

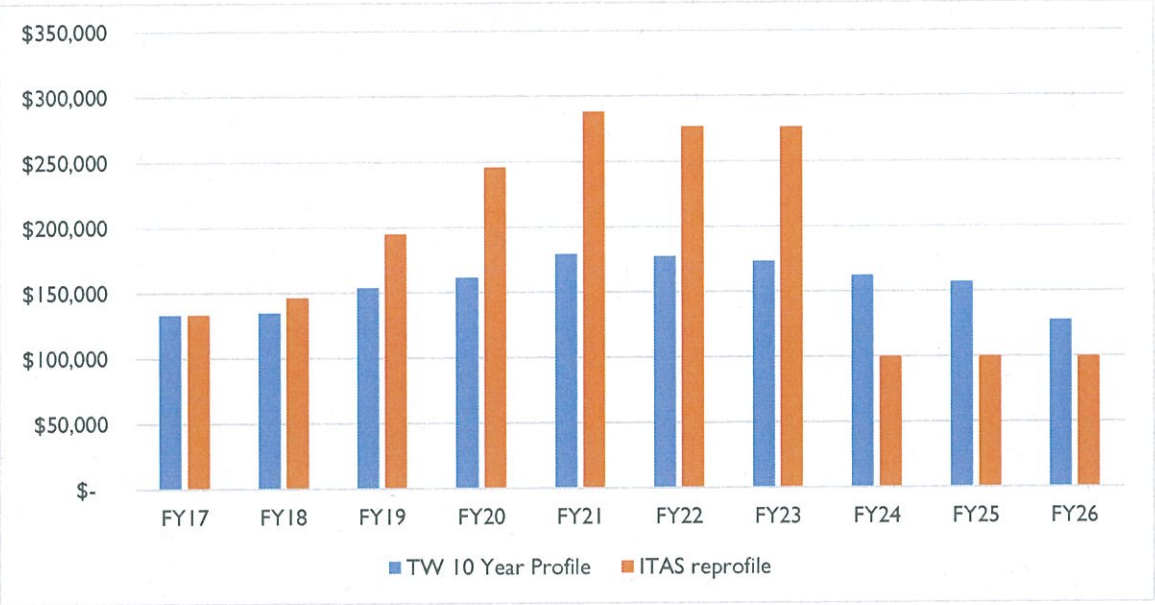
Table 2: Capital plan as re-profiled by Infrastructure Tasmania ($'000)

	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24[1]	2024-25[1]	2025-26[1]	Revised 10 year total
Projects	75,631	91,147	113,465	167,272	199,835	179,222	178,490				1,005,062
Programs	50,894	44,906	64,202	67,828	77,814	90,470	90,580				486,694
STPs	4,587	6,881	11,468	6,881	6,881	4,587	4,587				45,870
WTPs	2,393	3,589	5,981	3,589	3,589	2,393	2,393				23,925
Total	**133,505**	**146,522**	**195,116**	**245,569**	**288,118**	**276,672**	**276,050**	**100,000**	**100,000**	**100,000**	**1,861,551**

Note 1: Allocation of the ongoing investment is not possible at this time without further detail on priorities, projects and programs. As described in the previous section, it could be allocated to projects not included in TasWater's current 10 year plan or to address the renewals backlog earlier, for example.

A comparison of TasWater's capital plan, as set out in its 10 year financial plan, with Infrastructure Tasmania's re-profiled capital plan is shown graphically in Figure 1.

Figure 1: Comparison of TasWater capital plan and Infrastructure Tasmania re-profiled plan



Capital Program Delivery

In order to appropriately consider the risks and constraints to the delivery of an accelerated water and sewerage infrastructure plan in Tasmania, it is important to consider the critical success factors for capital delivery in a general sense. It is also relevant to consider the quantum of the challenge/task at hand and factors such as business and industry capacity and capability, and precedent (both successful and unsuccessful) elsewhere.

All of these elements provide context and a frame of reference against which TasWater's current performance, including perception thereof, and ability to deliver can be compared and improvements identified.

Program magnitude and precedent

Within the Australian water sector, and across the world, there are many precedents for the delivery of capital programs both larger and of similar size to TasWater's. In a relative sense, TasWater's forward capital program (accelerated or not) is not large, notwithstanding it would be the biggest delivered by the business.

By comparison, Sydney Water, which is one of Australia's largest water companies, has annual capital expenditure of over $500 million each year. This level of expenditure is currently, and has been for the past five years, focussed on core investment such as renewals and to provide for growth[6]. SA Water, another relatively large water company, delivered capital expenditure of $319.5 million in 2015-16, which is down from over $600 million in 2011-12.

Barwon Water in Victoria, which is the State's largest regional provider (and possibly TasWater's closest comparative organisation in terms of population served, with 300,000 residents, swelling to around 500,000 in the summer peak), delivered capital expenditure of $79.9 million in 2015-16 down from over $223 million in 2011-12.

In 2003, Gold Coast Water went from delivering a capital program of some $50-60 million annually at a completion rate of 50 per cent to delivering a capital program of $150 million by 2005 and over $300 million by 2008 (at completion rates of near 90 per cent), after a redesign of its procurement strategy.

Similarly, prior to 2009 Hunter Water was experiencing significant problems with getting its wastewater treatment projects through engineering studies, permitting and to project completion within its regulatory timeframes. After a procurement strategy review, a package of 13 wastewater treatment plant projects with an estimated cost of over $200 million were bundled into a single contract package and successfully delivered over the 2009-2014 five year regulatory period.

While the context and details of these specific examples may be different to those presented in Tasmania, at a high level it does demonstrate that acceleration is possible and has been achieved elsewhere when necessary.

TasWater itself has demonstrated a capacity to vary and increase its own capital program (albeit off a small base) and was aiming to deliver $130 million of capital in 2016-17, up from $74 million in

[6] Sydney Water 2015-16 Annual Report, page 29.

2013-14 (the first year of the combined new business TasWater). While the peak years of the re-profiled capital spend would be more than a doubling of TasWater's current output, it occurs in a stepped fashion with the largest annual increase being around 30 per cent of the previous year's spend.

These figures demonstrate there is both variability in capital expenditure requirements for water businesses over time, which are not dependent on their size and scale. It also suggests that a number of other Australian water companies are in a different phase with respect to asset condition and compliance, notwithstanding they have likely dealt with similar issues in the past.

Large capital program delivery also occurs regularly across a number of other sectors. For example, Tasmania's own State Roads division manages the delivery of an annual roads program, including maintenance and renewal, ranging between $160 and $200 million. This expands and contracts with large, one-off projects such as the Midland Highway and a future new Bridgewater Bridge and in 2017-18 is $294 million. The business as usual level of expenditure is in the order of $180 million.

These few comparisons suggest that delivering a capital program of $1.5 billion in the timeframe proposed is achievable, subject to consideration of resourcing and the "settings" and supporting arrangements in place.

It should also be noted that the value of public and private engineering construction work in Tasmania in the year to March 2017 (ABS Cat. 8762.0) shows that around $1.2 billion of works were completed. Of this, over $1.0 billion relates to economic infrastructure like roads, highways and subdivisions, bridges, railways and harbours, electricity, water storage, supply, sewers and drains and telecommunications. In this context, an additional $100 million in water and sewerage spend per year at the peak of the accelerated program represents around a 9.4 per cent increase. Of the total construction work completed in the State on an annual basis (around $2.5 billion) this represents only a 4.0 per cent increase. While this is material, it is not unachievable.

The Department of Treasury and Finance has separately undertaken some high level analysis of the economic impact of accelerated infrastructure and provided this to Infrastructure Tasmania for consideration. Treasury observes that the re-profiling of TasWater's capital program is expected to have a significant impact on the Tasmanian economy over the five years to 2022-23 but that, based on past experience, it is expected that the economy can absorb this additional economic activity without major disruption of other private investment in the State. Further detail is provided at Appendix 3.

Critical success factors

Successful program delivery (for any business, in any sector) is underpinned by a number of key elements:

- Clear objectives and expectations

  What the overall program is aiming to achieve will help to guide decision making at both a program and project level.

- Well-defined governance arrangements

  Appropriate allocation of roles, responsibilities and risk thresholds can significantly enhance the ability of a business to deliver its capital program, eg too tight control from the Board

impedes the business to be nimble, while too much delegation of authority with the aim of getting money spent may risk a lack of coordination and achieving value for money.

- Ensuring the right resourcing is allocated to the task

  The capacity (quantum of resources) and capability (mix of resources) can either enable or constrain delivery.

- Agreed behaviours, systems and processes are in place at all levels

  An expertly resourced project management office (PMO) function (led internally or externally) which has the ability to coordinate scope, design and manage all aspects of the delivery of a large number of projects using fit-for-purpose procurement models is central to the successful delivery of capital programs.

Each of these elements inform the choice of delivery model for a capital program, which must be fit-for-purpose and appropriate to the local context.

With respect to governance structure, if well designed and implemented, it will underpin the appropriate allocation of roles and responsibilities which will in turn enable timely and effective decision making. It will also ensure there are appropriate program controls and reporting obligations in place for oversight of the capital program delivery, including with respect to time and cost.

In relation to systems and processes, the approach to procurement is critical. Successful procurement strategies are typically flexible in that they provide for different contracting methods to be used for different projects and programs of work within the broad program. They also appropriately manage project and program risk between the business/client and its contractors.

Feedback received from stakeholders consulted for this review separately and consistently raised these factors as being essential elements for the successful delivery of any capital program, including an accelerated water and sewerage program in Tasmania. Stakeholder feedback from local and national consulting and construction firms engaged in the sector also consistently described the last success factor listed above as currently lacking in Tasmania and requiring change in order to deliver an accelerated program.

A number of studies, including specific project case studies, on the issue of large capital project and program delivery have been undertaken in recent times. In 2011, the Business Council of Australia published a research study titled *"Delivering Large Scale Capital Projects in the Infrastructure Sector – A Baseline of Performance in Australia"*. This study found that resources, pre-planning and quality of design were all key factors that are likely to lead to a successfully delivered project.

COAG has also commissioned studies through the federal Department of Infrastructure and Transport on tender strategies to improve design and construct infrastructure delivery outcomes and Infrastructure Australia has published best practice guidelines for issues such as public private partnerships. The Victorian Department of Treasury and Finance has published guidelines on Alliance Contracting as well as guidance on procurement within the framework of the Investment Lifecycle Guidelines.

Another element important to capital project and program delivery is approvals frameworks that facilitate timely outcomes. While the business and its broader resource base (ie consultants) require the knowledge and expertise to navigate approvals frameworks, it is equally important that approving authorities, including regulators, are sufficiently equipped to appropriately manage the level of activity associated with delivery of an accelerated capital program.

Risks and constraints

Consideration of the critical success factors described above, together with feedback obtained during stakeholder engagement, has resulted in identification of a number of key non-financial risks to successfully delivering an accelerated water and sewerage infrastructure plan. These include:

- TasWater "settings" such as ownership, role of the Board, internal structure, systems and processes;
- Choice and establishment of overarching capital program delivery model;
- Industry capacity and capability, including local industry and ability to attract larger national industry participants which have demonstrated increased capability;
- Environmental approvals process, including approach of the environmental regulator; and
- Stakeholder engagement and management.

Each of these risks is described in further detail throughout this section, with reference to feedback received from stakeholders engaged for the purpose of this review.

TasWater

Feedback from stakeholders suggests that the "settings" in TasWater are inhibiting delivery of the capital projects and would need to be modified to enable the effective delivery of a larger investment program, should additional funding be available now or in the near future. Some of TasWater's most important processes to facilitate the rollout of capital, ie procurement, have been described by stakeholders and participants as problematic, difficult to navigate effectively, inconsistent and lengthy. These issues appear to be impeding the delivery of TasWater's current plan let alone an accelerated plan.

With respect to the project lifecycle[7], which is critical to the effective delivery of individual projects and programs of work, TasWater has a gating process which sets out the various steps for project development and realisation. Internally the business has a division responsible for asset portfolio planning and delivery (ie the front-end of the project lifecycle/gating process), including options assessment and the development of project business cases. These are approved by TasWater's Board and transferred to the Works Delivery division which is responsible for delivery of the capital program. While this might be sensible in theory, feedback indicates that the business struggles to move through the various project lifecycle gates in an efficient and timely way. For example, it is understood that multiple 'approved' business cases have been redone or reworked once received by the Works Delivery division, adding time and duplication into the process. While the specifics and rationale are unknown, such outcomes suggest a current breakdown in process which will hinder the delivery of capital projects over time if unaddressed.

Infrastructure Tasmania understands that TasWater's Board currently has a role in approving the business case for many individual capital projects. Feedback suggests that the current approach, and the Board's level of involvement, is highly risk averse and does not lend itself to enabling the timely development of projects. The governance structure for both the business and program management

[7] Project lifecycle involves the following steps in the development of a project: identification, evaluation, business case, tender, contractual commitment and construction.

has the potential to either facilitate the timely and efficient delivery of a capital program or lead to a slow, inconsistent and inefficient program roll out.

Feedback from a number of consultants and contractors who have worked with and for TasWater suggests that TasWater's engagement with industry is inconsistent, with limited meaningful opportunities to provide feedback and little demonstration of feedback being reflected in changes to processes and systems. The absence of meaningful and constructive relationships with industry participants has the potential to negatively impact the delivery of the capital program.

As previously stated, delivery of TasWater's capital program and continuing to provide business as usual (BAU) services and operations will require appropriate resources. An important component of the resource requirements is TasWater's employee base. As at 30 June 2016 the number of permanent employees totalled 817, with an additional 116 contract, fixed term and labour hire staff[8]. Many of these employees have been through the previous iterations of reform in the sector over the past decade. There is a risk that a further round of reform, which changes ownership and may or may not impact on organisational structure and the capital program delivery model, will challenge some employees (reform fatigue). It is also possible that there is a level of frustration internally about structure and processes, meaning that reform may be seen as positive and an opportunity by at least part of the workforce. The longer it takes to engage with TasWater about reform, the longer the extent of this potential risk/opportunity, and consequent impact on delivery of the accelerated capital program, remains uncertain.

It should be noted that a number of these observations and risks associated with TasWater's "settings" are not uncommon, and many utilities, particularly with a maturity level similar to TasWater, have faced these issues, or a subset thereof, at some stage in their journeys. Rarely does any utility begin as an expert in project and program management, nor do they know all the questions to which they require answers. That said, this set of issues does present a degree of risk and challenge to the successful delivery of a capital program.

Industry

An accelerated capital program would, at its peak, see additional expenditure of around $100 million annually ($275 million total) in the water and sewerage sector. The capacity of the industry to deliver this amount of work, including the availability of local contractors and consultants, will be dependent on the timing of the ramp up as well as other activity across the Government sector as well as in the private market.

With respect to the Government sector, at this time it is known that State Roads and Tasmanian Irrigation will both have significant programs of work to be delivered in the coming years. Other Government businesses and entities will also be delivering capital programs of varying sizes. When combined, it is anticipated there will be in the order of $1 billion being spent annually. While this level of activity in the State is positive, it brings with it two key risks which may materialise and will need to be managed:

1. the capacity in the local industry to deliver the water and sewerage capital program within the timeframes proposed; and
2. consultants and contractors bid for work in such a way that the cost of capital projects/program for all parties is higher.

[8] TasWater Annual Report 2015-16, page 17.

These are important risks to manage in the planning for an accelerated water and sewerage capital program, particularly when feedback suggests that the local construction industry is already in a growth phase.

Feedback received during the review also suggests that TasWater, and Tasmania generally, lacks some key expertise and capability required to deliver the capital program. Further, there is limited to no visibility of the forward program of work (beyond the coming 12 months), meaning that some local firms have chosen not to 'gear up' for an increased workload. It is understood that industry has been seeking detail of the forward pipeline from TasWater for some time without success. To the extent there are deficiencies in local industry capacity and capability, there is a need to look to the national water industry to supplement and participate in delivery of the water and sewerage capital program.

Since 2009, however, when the three regional corporations assumed responsibility for providing water and sewerage services in the State, there has been little interest and involvement in Tasmanian projects from highly experienced Tier 1 businesses operating in the sector nationally. This has continued since the establishment of TasWater, with the exception of the Kingborough Sewerage Upgrade project which was awarded to a joint venture between BMD Constructions and Acciona Agua; two businesses that are well established in the Australian and international water industry respectively. More recently, TasWater has also engaged an interstate firm as the lead party to deliver its Small Towns Water Supply Program.

Under an accelerated plan, and with visibility of the pipeline of works over a medium term period, the Tasmanian sector will likely be a more attractive proposition for major industry participants and local firms may also be motivated to expand their operations to gear up for the approaching work. Noting that resourcing, capacity and capability have been identified as critical success factors, not drawing on the industry nationally, or through interstate recruitment by local firms, presents a risk which may impact on the deliverability of the accelerated capital program.

Environmental Approvals

A key element of delivering a capital plan such as TasWater's is obtaining the requisite approvals. Feedback suggests that obtaining approval from the Environment Protection Authority (EPA) currently contributes significantly to the time required to plan and deliver a project.

Infrastructure Tasmania understands that the EPA and TasWater have entered into a Memorandum of Understanding (MoU), the aim of which is to build a more collaborative relationship and progress matters of high strategic importance.

It will be important that this relationship is maintained and fully developed to ensure that environment approvals are delivered in appropriate timeframes and that projects meet all necessary environmental conditions.

That said, it presents a risk to delivery of the capital program within the proposed timeframes at this time given a significant proportion of the capital program is focussed on environmental performance and wastewater treatment plant upgrades.

Stakeholder engagement and management

Part of the success of delivering an accelerated water and sewerage capital program will be meeting the needs and managing the expectations of key stakeholders including regulators, industry, customers and the Tasmanian community.

The importance of meaningful and constructive engagement with industry has already been touched on, as has the relationship with the EPA and the approach to environmental approvals. In a similar way, and given the amount of activity that will likely be occurring at any point during an accelerated capital program, it will also be important that TasWater's delivery model provides for the necessary skills and resources to manage and engage with all relevant stakeholders.

Role of other Government agencies

Consistent with the Government's stated intention to utilise existing resources within other Government agencies, Infrastructure Tasmania has engaged with Entura and Tasmanian Irrigation (TI) regarding an accelerated water and sewerage capital plan.

Entura

As a business unit of Hydro Tasmania, Entura's key strengths and expertise arise from its intrinsic association with Hydro Tasmania's asset creation, operation and renewal activity supplemented by nearly 30 years of consulting to external asset owners nationally and internationally. Entura's core areas of expertise have developed around design and asset management in the disciplines of: civil, mechanical and electrical engineering, power systems, geotechnical and hydrological assessment, survey, GIS, planning and environmental science. These technical skills are supported with systems and experience in project, contract and program management. Entura has core skills and knowledge in dam safety and electrical installation and currently performs work for TasWater in asset assessments and upgrades in this space.

Entura plays a key role in the development of Hydro Tasmania's capital program management and asset management planning and played a key role in its acceleration, which included a risk based methodology, attention to program delivery and successfully doubling the size of Hydro Tasmania's capital program over a relatively short period of time.

Entura has well established relationships with many local contracting firms and interstate specialised consultants and contractors in the water industry. In addition, it has undertaken work for most water utilities across Australia and has experience in various roles, for example as a designer, owners engineer and advisor.

Through its engagements with other water utilities Entura has had exposure to and been involved in a number of delivery models for major capital programs. In the case of SA Water this includes outsourcing of the PMO function to an external third party provider. This, combined with the project management capability within the business, means Entura is well placed to understand the key elements of successful capital program delivery models and provide input relevant to the Tasmanian context.

Overall, Entura has both relevant expertise and knowledge and existing capacity within its business, and within the broader Hydro Tasmania group, that the Government could draw on for the purpose of an accelerated capital program.

Tasmanian Irrigation

TI is a somewhat different business in that it has, over a relatively short period of time, designed and constructed a number of new irrigation schemes across the State. It was created out of three smaller businesses, which were largely responsible for operating relatively small existing irrigation schemes, and quickly grew in both size and (more importantly) capability in order to deliver a priority infrastructure program for the Government. It has successfully navigated environmental (and

other) approvals processes and has operated schemes in parallel to program delivery, including through a period where there was a ramp up in capital.

TI and TasWater have some overlapping areas of interest as a result of reuse irrigation schemes that TasWater currently operates but are not within its core business functions. The two businesses have a productive senior-level working group where these issues are discussed as well as the potential for resource sharing.

Both Entura and TI have relevant skills, resources and the ability to contribute to the planning for and delivery of an accelerated capital program for Tasmania's water and sewerage industry. Further and more detailed consideration of the specific contribution/s of each business is required once the direction of reform is clear and will be dependent upon the format and structure for transition and implementation of the Government's proposed reforms.

Appendix 1: Re-profiled water and sewerage capital program

Table 3 and Table 4 set out the detailed listing of projects and programs contained in TasWater's 10 year financial plan with the expenditure as re-profiled by Infrastructure Tasmania. The total spending aligns with the summary tables provided in the body of the report.

Profiled expenditure for individual water treatment plants and sewerage treatment plants is not included as this has been undertaken at a summary level. Refer Table 2.

Table 3: TasWater 10 year plan capital projects as re-profiled by Infrastructure Tasmania

Project Title	Asset Class	Region	Driver	Project Budget	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	10 Year
Launceston Sewer Improvement Program	Sewage	North	Compliance	270,000	-	1,000	15,000	60,600	60,600	62,800	70,000				270,000
Hobart Sewer Improvement Plan	Sewage Treatment	South	Improvement	435,650	-		1,650	6,000	18,000	33,000	40,000				98,650
Northern Midlands Sewerage Improvement Plan	Sewage Treatment	North	Compliance	56,000	345	1,500	3,000	9,000	13,000	14,000	15,000			-	55,845
Pardoe Sewer Improvement Plan	Sewage Treatment	North-West	Growth	25,000	-		500	8,800	13,000	9,000	4,563				35,863
Greater Launceston Water Improvements	Water Treatment	North	Growth	45,000	-	-	-	-	10,000	14,000	9,000				33,000
Kingborough Sewerage Strategy - Treatment	Sewage Treatment	South	Growth	30,000	3686	7,900	14,000	4,000	-	-	-	-	-	-	29,586
Bryn Estyn Plant Upgrade Strategy	Water Treatment	South	Growth	35,000	-	-	-	300	3,000	11,000	11,000				25,300
Small Town Water Supply Strategy	Water Treatment	State Wide	Compliance	25,000	1500	18,000	5,500	-	-	-	-	-	-	-	25,000
Ridgeway Dam - Upgrade Post Tensioned Anchors	Catchment	South	Compliance	22,000	147	-		6,000	14,000	-	-	-	-	-	20,147
Distillery Creek - Trunk Main replacement	Water Treatment	North	Renewal	20,000	-	-	-	-		10,000	10,000	-			20,000
Wynyard Sewer Treatment Plant Upgrades	Sewage Treatment	North-West	Compliance	15,000	-	-	1,000	7,500	6,500	-	-	-	-	-	15,000
Kingborough Sewerage Strategy - Network	Sewage Collection	South	Growth	14,000	2000	4,000	4,600	3,000	-	-	-	-	-	-	13,600
Tolosa Dam Replacement Infrastructure	Catchment	South	Compliance	18,550	8900	600	1,000	3,000	-	-	-	-	-	-	13,500
King Island Treated Water Supply	Water Treatment	North-West	Compliance	15,805	5225	7,200	1,000	-	-	-	-	-	-	-	13,425
Ulverstone Sewer Treatment Plant Upgrade	Sewage Treatment	North-West	Improvement	10,150	-	300	-	503	3,650	5,697				-	10,150
System optimisation - Sewer	Sewage Collection	State Wide	Improvement	10,000	500	5,000	4,500	-	-	-	-	-	-	-	10,000
System optimisation - Water	Distribution	State Wide	Improvement	10,000	500	5,000	4,500	-	-	-	-	-	-	-	10,000

Project Title	Asset Class	Region	Driver	Project Budget	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	10 Year
Sorell, Midway Point Strategy	Sewage Collection	South	Improvement	10,550	-	100	150	4,300	5,000		-	-	-	-	9,550
Brighton Sewer Treatment Plant Upgrade	Sewage Treatment	South	Compliance	8,870	35	100	500	2,460	5,510	-	-	-	-	-	8,605
Ti Tree Bend Sewer Treatment Plant Biosolids Dewatering Facility	Sewage Treatment	North	Compliance	8,385	-	-	200	3,835	4,350		-	-	-	-	8,385
Pet Dam Safety Upgrade	Catchment	North-West	Compliance	7,710	-	600	6,664		-	-	-	-	-	-	7,264
Lake Mikany Dam Safety Upgrade	Catchment	North-West	Compliance	7,120	330	6,660	-	-	-	-	-	-	-	-	6,990
Rosny Sewer Pump Station Strategy - Project	Sewage Collection	South	Compliance	6,380	-	-	-	1,000	3,000	2,380			-		6,380
Port Sorell Reservoir & Network Upgrades	Distribution	North-West	Growth	6,000	-	300	3,700	2,000	-	-	-	-	-	-	6,000
Asset Management Information System (AMIS) - Stage 2	Business Systems	State Wide	Improvement	13,300	5908	-	-	-	-	-	-	-	-	-	5,908
Old Beach No 1 (Green Point Strategy)	Sewage Collection	South	Compliance	5,799	-	-	200	2,599	2,900		-	-	-	-	5,699
Flagstaff Gully - Dam Safety Upgrade	Catchment	South	Compliance	5,200	100	200	4,900	-	-	-	-	-	-	-	5,200
Tankered waste recieval station strategy and	Sewage Treatment	South	Compliance	10,200	-	-	-	-	-	-	5,000	-	-		5,000
Forth Water Treatment Plant Upgrade	Water Treatment	North-West	Compliance	4,595	-	100	737	3,758			-	-	-	-	4,595
Queenstown Sewer Treatment Plant Major Plant Upgrade	Sewage Treatment	North-West	Compliance	4,500	-	300	2,100	2,100		-	-	-	-	-	4,500
Tullah Water Treatment Plant Upgrade/ Replace	Water Treatment	North-West	Compliance	4,300	-	300	2,500	1,500			-	-	-	-	4,300
Cambridge Wet Weather Emergency Storage & Plant Process Improvements	Sewage Treatment	South	Compliance	4,570	10	3,250	1,000	-	-	-	-	-	-	-	4,260
Orford Sewage Pump Stations & Network Upgrade	Sewage Collection	South	Compliance	4,563	-	-	2,086	2,135		-	-	-	-	-	4,221
Longford Water Supply System (Railway Bridge - Mountford Farm) Trunk Main	Distribution	North	Growth	4,057	3658	20	519	-	-	-	-		-	-	4,197
Rosebery Water Treatment Plant - Construction	Water Treatment	North-West	Compliance	6,010	4032	153	-	-	-	-	-	-	-	-	4,185
Westbury Sewer Treatment Plant Upgrade and Reuse	Disposal/Reuse	North	Compliance	3,795	-	250	3,545	-	-		-	-	-	-	3,795
Smithton Sewer Treatment Plant Upgrade	Disposal/Reuse	North-West	Compliance	3,707	-	-	-	1,200	2,507		-	-	-	-	3,707
Ti Tree Bend - Digester	Sewage Treatment	North	Compliance	3,989	1255	1,450	1,000	-	-	-	-	-	-		3,705
Conglomerate Dam Upgrade	Catchment	North-West	Compliance	4,188	2549	500	-	-	-	-	-	-	-		3,049
Ringarooma Valley Treated Water Supply	Water Treatment	North	Compliance	13,989	2851	120	-	-	-	-	-	-	-		2,971
Flinders Island Water Supply	Water Treatment	North	Compliance	10,979	2447	620	-	-	-	-	-	-	-		3,067
Winnaleah Treated Water Supply	Water Treatment	North	Compliance	3,800	3035	-	-	-	-	-	-	-	-		3,035
Gawler Water Supply - 10 ML Reservoir	Distribution	North-West	Growth	3,000	-	-	-	100	2,900			-	-		3,000
Gretna / Bushy Park / Glenora Water Supply Upgrade	Water Treatment	South	Compliance	3,337	1500	1,500	-	-	-	-	-	-	-		3,000

Project Title	Asset Class	Region	Driver	Project Budget	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	10 Year
Swansea (Meredith) Dam – Rectification and Improvement	Catchment	South	Compliance	3,000	-	3,000	-	-	-	-	-	-	-		3,000
Huonville Main Road Sewer Pump Station Replacement	Sewage Collection	South	Compliance	2,928	-	-	-	2,728			-	-	-		2,728
Prince of Wales Primary Digester Roof Replacement	Sewage Treatment	South	Renewal	3,500	223	2,500	-	-	-	-	-	-	-		2,723
Kingston Sewer Pump Station E Rising Main	Sewage Collection	South	Renewal	2,700	1698	1,000	-	-	-	-	-	-	-		2,698
Margate Water Main Upgrade Stage 2	Distribution	South	Growth	4,662	2641	-	-	-	-	-	-	-	-		2,641
Sheffield Sewer Treatment Plant Upgrade	Sewage Treatment	North-West	Improvement	2,500	-	-	-	-	1,250	1,250			-		2,500
Sorell Reservoir Upgrade	Distribution	South	Improvement	2,500	-	-	-	500	2,000			-	-		2,500
Triabunna Water Supply Reticulation Reservoir Project	Distribution	South	Growth	2,500	-	100	2,300		-	-	-	-	-		2,400
Scottsdale to Bridport Pipeline	Distribution	North	Growth	3,400	-	100	-	1,500	1,800			-	-		3,400
Avoca Full Treated Water Supply	Water Treatment	North	Compliance	4,790	2728	-	-	-	-	-	-	-	-		2,728
Lightning Protection for Critical Assets	Other	State Wide	Improvement	2,500	-	-	-	800	1,500						2,300
Wynyard Sewer Treatment Plant - Dedicated By Pass Line	Sewage Collection	North-West	Improvement	2,300	300	2,000	-	-	-	-	-	-	-		2,300
Bicheno Water Supply Upgrade	Distribution	South	Improvement	2,300	-	-	-	2,283			-	-	-		2,283
Geeveston Outfall	Disposal/Reuse	South	Compliance	2,250	-	-	-	250	2,000			-	-		2,250
St Marys Reuse Upgrade	Disposal/Reuse	North	Compliance	2,240	-	-	1,200	1,040		-	-	-	-		2,240
Burnie Cam Pipeline Construction	Distribution	North-West	Improvement	2,820	-	-	2,220		-	-	-	-	-		2,220
Low Head Common Rising Main	Sewage Collection	North	Improvement	2,207	-	-	-	-	1,150	1,057			-		2,207
Snug Reservoir	Distribution	South	Growth	2,200	-	-	-	-	-	2,200	-	-	-		2,200
Maydena Sewer Treatment Plant upgrade	Sewage Treatment	South	Compliance	2,190	-	100	2,090		-	-	-	-	-		2,190
Lower Prosser Dam Safety Upgrade	Catchment	South	Compliance	2,140	-	-	-	2,140			-	-	-		2,140
Orford Lower Prosser Dam Storage Works	Catchment	South	Improvement	2,000	-	100	150	1,750	-	-	-	-	-		2,000
Parattah Water Supply	Water Treatment	South	Improvement	2,000	-	-	500	1,000		-	-	-	-		1,500
Bicheno Sewer Treatment Plant Upgrade	Sewage Treatment	South	Compliance	2,000	-	-	-	-	2,000			-	-		2,000
Franklin, Eldercare Reservoir Replacement	Catchment	South	Renewal	10,000	-	-	-	-	2,000	-		-	-		2,000
Girdlestone Reservoir Rectification	Distribution	North-West	Renewal	3,082	2000	-	-	-	-	-	-	-	-		2,000
Rocky Creek Reservoir	Distribution	South	Improvement	2,000	-	-	-	-	-	-	2,000	-	-		2,000
Upper Reservoir Outlet Conduit & Bypass Channel Repairs	Catchment	South	Compliance	3,400	-	-	400	1,500	-	-	-	-	-		1,900

Project Title	Asset Class	Region	Driver	Project Budget	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	10 Year
Rocherlea Redevelopment	Other	North	Improvement	1,900	55	-	500	1,200	-	-	-	-	-		1,755
Lodge Hill Reservoir Duplication	Distribution	South	Growth	2,100	-	100	100	1,700		-	-	-	-		1,900
Burnie Sewer Treatment Plant Upgrade	Sewage Treatment	North-West	Growth	3,360	1041	840	-	-	-	-	-	-	-		1,881
Dover Sewer Treatment Plant Upgrade	Sewage Treatment	South	Compliance	1,800	-	-	-	250	1,550			-	-		1,800
Coles Bay - Full height filter buttress	Catchment	South	Compliance	1,800	-	-	-	150	1,650	-	-	-	-		1,800
Shark Point Road Trunk Renewal	Distribution	South	Renewal	1,800	-	-	-	200	1,600			-	-		1,800
Stanley Sewer Treatment Plant Upgrade	Sewage Treatment	North-West	Compliance	1,704	-	-	-	-	1704	-		-	-	-	1,704
Smithton retic Odour Control	Sewage Collection	North-West	Compliance	1,650	-	50	1600			-	-	-	-	-	1,650
Mole Creek Water Supply	Water Treatment	North	Compliance	4,104	1,395	120	-	-	-	-	-	-	-	-	1,515
Chlorination Upgrade (Various Sites)	Water Treatment	South	Compliance	1,500	-	-	750	750		-	-	-	-	-	1,500
Strahan Water Supply and Raw Water Gravity Main	Catchment	North-West	Improvement	1,500	-	-	-	150	1350			-	-	-	1,500
St Helens Sewer Treatment Plant Inlet Works & Esplanade Sewer Pump Station	Sewage Collection	North	Compliance	1,698	593	1605	-	-	-	-	-	-	-	-	2,198
Wynyard Sewer Improvement Plan	Sewage Treatment	North-West	Compliance	1,470	-	-	1470		-	-	-	-	-	-	1,470
Digester Vacuum-Pressure Relief Valve Upgrade	Sewage Treatment	State Wide	Improvement	1,500	300	350	800	-	-	-	-	-	-	-	1,450
Davis St, Smithton Sewer Pump Station Upgrade	Sewage Collection	South	Compliance	1,701	210	1,200	-	-	-	-	-	-	-	-	1,410
Waratah Dam Safety Upgrade	Catchment	North-West	Compliance	1,350	-	-	-	-	-	1350	-		-	-	1,350
Ph Correction Pet River	Water Treatment	North-West	Compliance	1,300	-	-	-	-	1300	-		-	-	-	1,300
Prince of Wales Belt Press replacement	Sewage Treatment	South	Renewal	1,172	1,172	-	-	-	-	-	-	-	-	-	1,172
Dasher Pipeline (Sheffield)	Disposal/Reuse	North-West	Compliance	1,167	-	-	-	1167	-		-	-	-	-	1,167
Torren St, Richmond Sewer Pump Station Renewal	Sewage Collection	South	Compliance	1,534	1,216	-	-	-	-	-	-	-	-	-	1,216
Lake Isandula - Increase spillway capacity	Catchment	North-West	Compliance	1,900	-	100	-	1000		-	-	-	-	-	1,100
Legana Sewer Treatment Plant Upgrade	Sewage Treatment	North	Compliance	8,686	-	1,002	-	-	-	-	-	-	-	-	1,002
Rocky Creek Water Supply	Water Treatment	South	Compliance	1,000	-	-	-	-	-	-	1000	-		-	1,000
Minor Projects	Various	Various	Various	73,740	9,546	9,857	13,334	9,524	9,064	11,488	10,927				73,740
Sub-total					**75,631**	**91,147**	**113,465**	**167,272**	**199,835**	**179,222**	**178,490**	**-**	**-**	**-**	**1,005,062**

Table 4: TasWater 10 year plan capital programs as re-profiled by Infrastructure Tasmania

Programs	Asset Class	Region	Driver	FY17 ($'000)	FY18 ($'000)	FY19 ($'000)	FY20 ($'000)	FY21 ($'000)	FY22 ($'000)	FY23 ($'000)	FY24 ($'000)	FY25 ($'000)	FY26 ($'000)	10 Year Cashflow ($'000)
Water Main Renewals Program	Distribution	State Wide	Renewal	4,200	4,821	6,631	7,582	8,592	10,503	11,043				53,370
Sewer Treatment Plant Renewal Program	Sewage Treatment	State Wide	Renewal	5,530	2,719	6,188	6,917	7,706	8,525	8,285				45,870
Metering Program	Distribution	State Wide	Improvement	4,300	7,690	7,840	4,650	5,200	6,250	6,250				42,180
Sewer Main Renewals Program	Sewage Collection	State Wide	Renewal	4,525	4,559	5,657	6,356	7,104	8,323	8,913				45,435
Non-network other	Other	State Wide	Renewal	4,300	4,850	7,000	7,250	8,000	8,750	8,750				48,900
Sewer Pump Station Renewals Program	Sewage Collection	State Wide	Renewal	5,301	2,002	2,723	4,435	5,006	6,458	6,678				32,601
SCADA Program	Business Systems	State Wide	Improvement	5,000	394	3,957	3,841	4,214	4,598	4,448				26,450
Water Treatment Plant Renewal Program	Water Treatment	State Wide	Renewal	3,310	1,334	3,057	3,401	3,774	4,598	4,448				23,920
Non-network IT	Business Systems	State Wide	Improvement	2,000	2,450	3,400	4,350	4,800	5,250	5,250				27,500
Electrical Program	Other	State Wide	Compliance	2,000	3,290	3,639	3,149	4,478	5,358	5,198				27,110
Dam Safety Program of Works - Compliance Reports	Catchment	State Wide	Compliance	2,400	2,576	2,811	3,077	3,372	3,678	3,568				21,480
Reservoir Renewal/Upgrade Program	Distribution	State Wide	Renewal	1,388	1,213	1,685	2,178	3,330	5,143	4,993				19,928
Asset Safety Rectification Program - Unplanned	Other	State Wide	Improvement	1,000	1,203	1,886	2,119	2,372	3,065	2,975				14,620
Dam Safety Program of Improvement Works	Catchment	State Wide	Compliance	1,600	1,720	1,870	2,050	2,250	2,450	2,370				14,310
Combined System Program	Combined System	North	Renewal	1,140	1,230	1,330	1,460	1,600	1,750	1,690				10,200
CCTV Inspection Program	Sewage Collection	State Wide	Renewal	1,300	882	1,173	1,285	1,406	1,538	1,488				9,070
Inflow and Infiltration Rectification Program	Sewage Collection	State Wide	Improvement	500	613	1,225	1,338	1,450	1,313	1,313				7,750
Environmental Management and Sustainability Program	Sewage Treatment	State Wide	Compliance	600	690	780	870	960	1,050	1,050				6,000
Fireplug condition assessment	Distribution	State Wide	Compliance	300	375	650	725	800	875	875				4,600
Ambient Monitoring	Sewage Treatment	State Wide	Compliance	200	300	700	800	1,400	1,000	1,000				5,400
Sub-total				**50,894**	**44,906**	**64,202**	**67,828**	**77,814**	**90,470**	**90,580**				**486,694**

Appendix 2: Pitt & Sherry review

17 July 2017

Alison Turner
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Dear Alison

Review of Proposed Condensed TasWater Ten Year Delivery Plan

Infrastructure Tasmania has engaged **pitt&sherry** to provide comment on their assessment of TasWater's 10 Year capital works programme and the desk top assessment as to how this can be condensed into seven years.

The following documents were provided to **pitt&sherry** to undertake this review:

- TasWater's 10 Year Financial Plan, Financial Years 2016/17 to 2025/26, Version 2.0 dated 17 January 2017
- A draft Copy of Infrastructure Tasmania's advice regarding an accelerated infrastructure investment plan for Tasmania's water and sewerage sector
- Infrastructure Tasmania's spreadsheet calculations used to develop the accelerated infrastructure plan

TasWater's 10 Year Financial Plan is a high-level document that lists the proposed project by name, municipal region, asset class, state region, project driver and projected cashflow. There are no details on project scope, risk or any breakdown of how the budget was derived. This lack of information makes it difficult to undertake any rigorous assessment of the Plan.

From the information provided, the TasWater 10 Year Financial Plan proposes $1,550 Million of capital expenditure over ten years, with the annual expenditure varying between $130 Million and $180 Million. The works can be split up as follows for the purposes of further assessment:

Capital Expenditure Sector	Expenditure ($'000)
Programs	$486,694
Capital Works	
Minor Projects	$73,740
Sewage Treatment Plants	$299,441
Water Treatment Plants	$151,421
Other Projects	$474,552
Financing/Business Costs	$64,142
	$1,549,990

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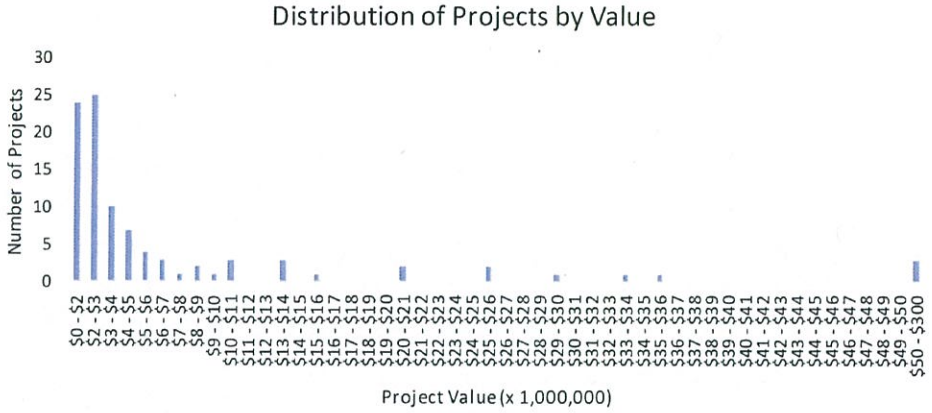
Please note that a review of the Financing and Business Costs is outside the scope of this assessment. The distribution of Project Values for the Capital Works (excluding Other Projects) can be presented in the following chart.



In summary, over half the Major Projects are values at under $3,000,000, with 70% less than $5,000,000. Three projects are greater than $50 Million in value, and these are:

- Launceston Sewer Improvement Program ($270 Million)
- Hobart Sewer Improvement Plan ($98 Million)
- Northern Midlands Sewerage Improvement Plan ($56 Million)

These major projects amount to just over 40% of TasWater's 10 Year Financial Plan capital works spend.

From this it can be concluded that TasWater will require considerable support from the local water industry consultants, contractors and service providers to deliver the programme and, unless works can be grouped together, there is little scope to make use of larger interstate Tier 1 Consultants and Contractors. Even if a Tier 1 Consultant or Contractor is engaged to deliver a group of projects, they will rely on local subcontractors to undertake most of the actual design / construction work.

It is **pitt&sherry's** opinion that the success of capital delivery is determined by the upfront planning, approvals and scoping. This takes significant effort and resource prior to delivering the works. To deliver effective capital and outcomes for the community, each project requires a business case that would incorporate items such as, but not limited to the following:

- Options
- Net present values and cost estimates
- Impacts including social, environment and financial
- Risks and opportunities
- Approvals
- Program
- Stakeholder requirements including regulatory and community.

TasWater will require a significant investment in the upfront scoping – either through internal resources and/or external consultants. This is typically the approach taken by authorities such as SA Water, Sydney Water and Melbourne Water.

For a program of works with this number of projects, it is essential to have robust project management systems and reporting. The discipline and governance required for a small project is similar to a large project. To reduce the program to 7 years more project management resources will be necessary.

Due to the volume of projects to be developed, it will be essential that the approvals from the regulatory authorities such as the EPA and local Government, will also need to be adequately resources to enable the TasWater program to be met. This demonstrates the importance during the planning phase and potential involvement of external expertise to assist with the early engagement and processes for authority approvals.

For the nominated capital spend, the Tasmanian based consultants and contractors have the capacity and capability to deliver the TasWater condensed program, especially considering the infrastructure demand in Victoria and New South Wales.

Infrastructure Tasmania proposes to condense TasWater's ten year plan by bringing forward select projects from beyond year four. The condensed plan has been prepared on the following basis:

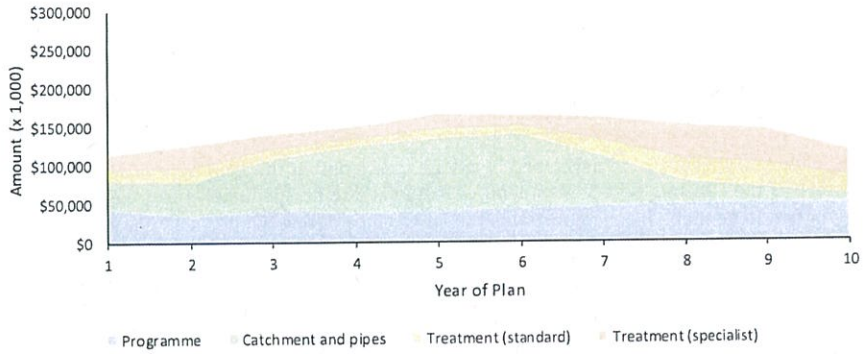
- There is no substantial change in the first two years, while the proposed new ownership structure is implemented and TasWater's own skills, processes and systems are geared up to meet the increased expenditure Works in FY18 that continue over future years will be condensed if sensible
- The overall apparent sequencing of projects has been maintained, albeit with possible condensing of the individual project schedule
- The amount of expenditure on the latter years (financial years 2021, 2022 and 2023) are the highest, giving the business time to prudently accelerate its pace
- The risk of overlapping of works has been included by cross checking works locations in the condensed schedule
- The provision of upfront project planning (assumed to be the smaller funding allowance in the first year of the project) is maintained although capital spend may be condensed in subsequent years
- The condensed plan gives no priority is to be given to a certain asset classes, with the spread of projects to largely be maintained but delivered over a shorter time frame.

Given the amount of information provided, the above methodology appears reasonable.

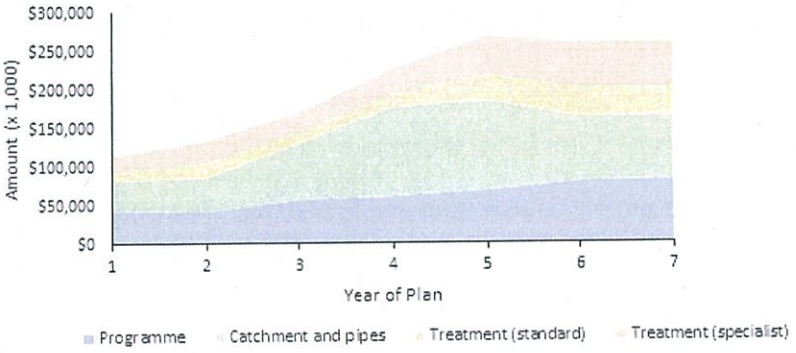
Under the condensed plan, expenditure peaks at around $280 Million in years five (2023), six (2024) and seven (2025). While this is considered a substantial programme, it is not dissimilar to programmes delivered by other Tasmanian Infrastructure agencies such as the Department of State Growths Roads programme.

The following chart compares TasWater's ten year programme with the proposed condensed programme with the works broken down into treatment plants, catchment/pipes and programme works. Generally, the Tasmanian Water sector is not equipped to deliver water and wastewater treatment projects on a large scale and assistance from specialised interstate suppliers will be required. As a rule of thumb, about 40% to 60% of a treatment plant's capital cost will require specialist process and equipment works. This is depicted on the charts below as dark and light orange.

Breakdown of TasWater's 10 Plan



Breakdown of Proposed Condensed Seven Year Plan



A number of conclusions can be drawn from the above analysis that are relevant:

- For the TasWater's ten-year plan, capital expenditure on catchments and pipes drops by a third after year 7. This scenario may make local contractors reluctant to mobilise for years 1 to 7 if they are unlikely to have continuity of supply for subsequent years
- For the condensed programme, the maximum increase in annual expenditure for the catchment and pipes work when compared to the ten-year plan is 24%. This occurs in year 4. However generally, the condensed plan increase is around 10%, which is considered to be well within the capability of the local industry, provided:
  - They can be provided with clear advanced warning of the likely increase in expenditure in order to gear up to meet the higher demand
  - There are no external constraints such as large parallel capital expenditure programs by other Tasmanian Government agencies
  - TasWater can develop a method of procurement that provides certainty and consistency of project delivery
- If it is assumed that 40% of the capital spend on treatment plants will require the support of local industry, then the condensed seven year plan will increase the annual expenditure for local suppliers by 35% in years 4 and 5 when compared to TasWater's ten-year plan. Again, this level of increase is not considered unreasonable provided the steps above are implemented.

- For the specialist treatment plant works, the condensed programme increases the annual expenditure by 2 – 3 times after year 3, with a 400% increase in year 6. Given the size of the Australian Water industry market, when compared to TasWater's expenditure, the interstate specialist suppliers should be able to accommodate this provided TasWater develops systems and processes that make it a reliable and consistent customer.
- For the condensed plan, the programme works annual expenditure gradually increases by just over 80% in years six and seven. This level of increase will require gradual gearing up of the contractors involved and is not unreasonable provided both TasWater and the service industry work collaboratively to meet the increased workload.

From the above, it appears that a condensed seven year capital works programme for TasWater is feasible. It should be noted, however that this assessment is only based on high level data and this needs further evaluation to confirm that the assumptions made are valid.

Implementation of this condensed programme is not without risk and the following will need to be considered as part of the planning process:

- The programme depends heavily on the ability of the local industry to deliver the works. To meet the increased demand, local industry will need to upskill and gear up to achieve this. TasWater can assist this process by providing certainty on their proposed plan, along with a consistent means of delivery, procurement and implementation
- The programme would be put under considerable strain if other infrastructure agencies propose a similar ramping of expenditure. This is recognised in the Infrastructure Tasmania report and it is suggested that a whole of government approach is required to plan and manage all of Tasmania's infrastructure spend
- Statutory approvals and stakeholder management are a substantial risk to any project delivery and while this can be managed to a certain extent by careful up-front planning, it is likely that some projects will experience delays. To offset this, it is prudent to bank some future projects that can be brought forward to fill any programming gaps that will inevitably arise
- Alternative models such as service agreements, stewardship arrangements and schedule of rates contracts will be required to deliver a $100 Million annual spend on program works. This type of model is not too dissimilar to how the State delivers its road maintenance program. The Infrastructure Tasmanian report does investigate alternative delivery models and we would add that, for large projects, conventional design and construct processes do put a large strain on the Tasmanian construction industry resources because of the large duplication of effort required at the front end
- We believe that it is important for TasWater to consider delivery models that encourage development and retention of water industry capability in Tasmania thus ensuring that there are sufficient local resources available to support the future longer term maintenance requirements of this new infrastructure
- The condensed programme will rely heavily on procurement of interstate specialist water industry contractors and is therefore at risk of external market forces such as a ramping of water sector work in other states. This risk can be best offset by developing a culture whereby TasWater is the agency of choice for high performing suppliers. This is best achieved by ensuring a consistent approach to planning, procurement, delivery and finalisation.

It is our opinion that, given the limited data available, the approach taken by Infrastructure Tasmania to investigate options to condense TasWater's ten year plan into seven years is reasonable. The amount of expenditure in the condensed plan is substantial in the latter years, but we believe that it is achievable under a collaborative approach by the entire Tasmanian Water Industry sector.

We trust that the above addresses your concerns.

Yours sincerely,

Robert Casimaty

Robert Casimaty
Senior Principal

Appendix 3: Department of Treasury and Finance assessment of the economic impact of accelerating the water and sewerage capital program

The re-profiling of TasWater's capital expenditure program by Infrastructure Tasmania results in additional investment of $437 million in the five years to 2022-23. This would generate a significant additional level of economic activity in the State. Relative to the level of infrastructure investment each year in TasWater's original 10 year plan, the re-profiled program would lead to higher levels of employment, particularly in the construction industry, over this period.

These economic benefits would occur earlier than under TasWater's original plan. As one example, in the case of the Launceston Sewer Improvement Program, the estimated $270 million expenditure is scheduled to be completed in 2025-26 in TasWater's original plan, with an average expenditure of $30 million per year. In the re-profiled program, this work is completed in 2022-23, resulting in average annual expenditure of $45 million per year. This would result in a higher level of employment in the Launceston area over this period, including from the impact on other industries, including local manufacturing.

It is expected that this additional employment will largely be sourced from within Tasmania. If TasWater is able to align its projects and its contracts over the five year period to provide a sustained high level of work for the major construction firms in the State, this will encourage these firms to expand their workforce, including taking on more apprentices. It is expected that the greater the longer term certainty for these businesses, the less TasWater will have to source firms from interstate for its infrastructure projects and programs.

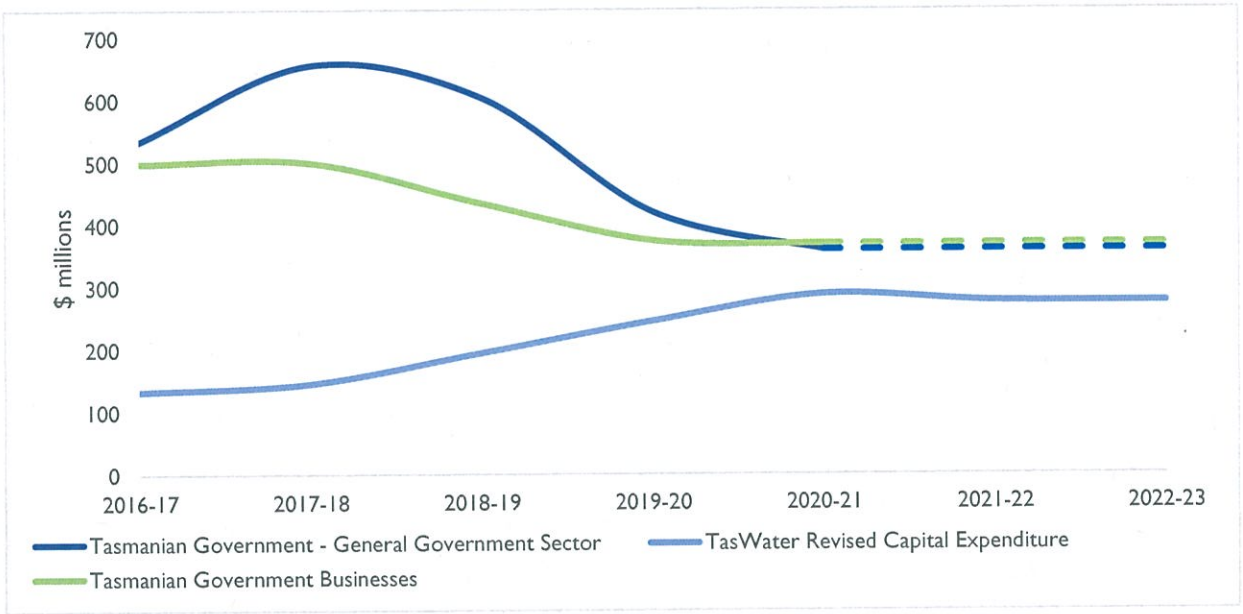
The increase in activity may result in shortages in Tasmania of labour with specialist skills in the water and sewerage industry, and potentially in project management, which may only be addressed by utilising labour from interstate or overseas.

In cases where an accelerated expenditure program simply brings forward investment that would otherwise have occurred over a longer period, the overall level of economic activity is unchanged. Such a program leads to a sharp reduction in investment when the program ends, which detracts from economic activity in the State in the latter years. In the case of the re-profiled TasWater investment program, however, this outcome does not arise because TasWater will still need to invest at historically high rates from 2023-24 onwards. It will still have, for example, an asset renewals backlog of around $400 million at the end of the five year program. In addition, it is likely that new infrastructure demands will emerge. For the decade from 2016-17, the overall level of investment under the re-profiled program is therefore greater over the period of TasWater's original 10 year plan.

An important issue to examine is the extent to which the Tasmanian economy has the capacity to absorb this additional investment activity without crowding out other public and private sector projects and without resulting in major cost increases in the construction and related sectors.

This can be assessed by examining forecast investment by the General Government Sector of the State Government and by the State Government's businesses over this period. As Figure 2 shows, over the next four years, investment at the General Government Sector level, and by the State Government's businesses, is forecast to be substantially greater than TasWater's investment under the re-profiled program. Importantly, at the time when TasWater's investment begins to ramp up, investment in these other two sectors is forecast to ease.

Figure 2: Forecast and projected public investment in Tasmania, in current prices, 2016-17 to 2022-23



Source: 2017-18 Tasmanian Budget: Budget Paper No 1; TasWater 10 year plan as re-profiled by Infrastructure Tasmania; projections by the Department of Treasury and Finance.

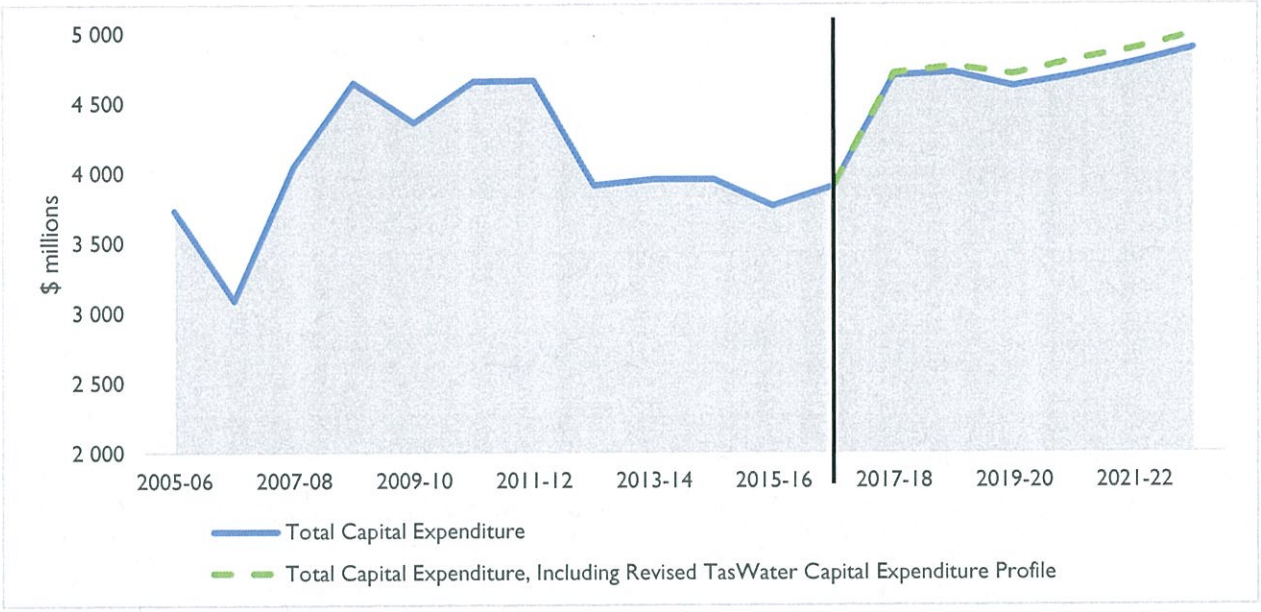
While there will be some differences in the type of investment activity, this does suggest that a substantial amount of capacity will become available to accommodate much of TasWater's re-profiled investment program. There may, nonetheless, be local cost pressures but these are likely to be temporary and may only be significant if the overall level of public and private investment were substantially higher than current levels.

The potential economic impact of the re-profiled investment program can also be assessed by examining the significance of the additional investment relative to an estimate of future total public and private capital investment in Tasmania. Projections of future public and private capital investment in the State have been prepared based on forecast investment by the State Government's General Government Sector and the State Government's businesses, and by increasing other public and private investment categories from current levels based on long term trends. Dwelling investment has been excluded.

As Figure 3 shows, total capital investment in Tasmania has been highly volatile over the past decade. The construction industry and other related industries have a history of expanding and contracting as economic conditions change.

Figure 3 also shows that the additional investment in TasWater's re-profiled program ramps up as the overall level of capital investment is projected to decline. This additional investment accounts for no more than 2.4 per cent of the total level of projected total capital investment over this period. Furthermore, in real terms, the projected level of annual capital expenditure over the five year period to 2022-23 is likely to be lower than in the years immediately following the global financial crisis, even with the additional TasWater-related investment. This suggests the economy does have the capacity to absorb this additional investment.

Figure 3: Capital Investment in Tasmania, in nominal terms, 2005-06 to 2022-23



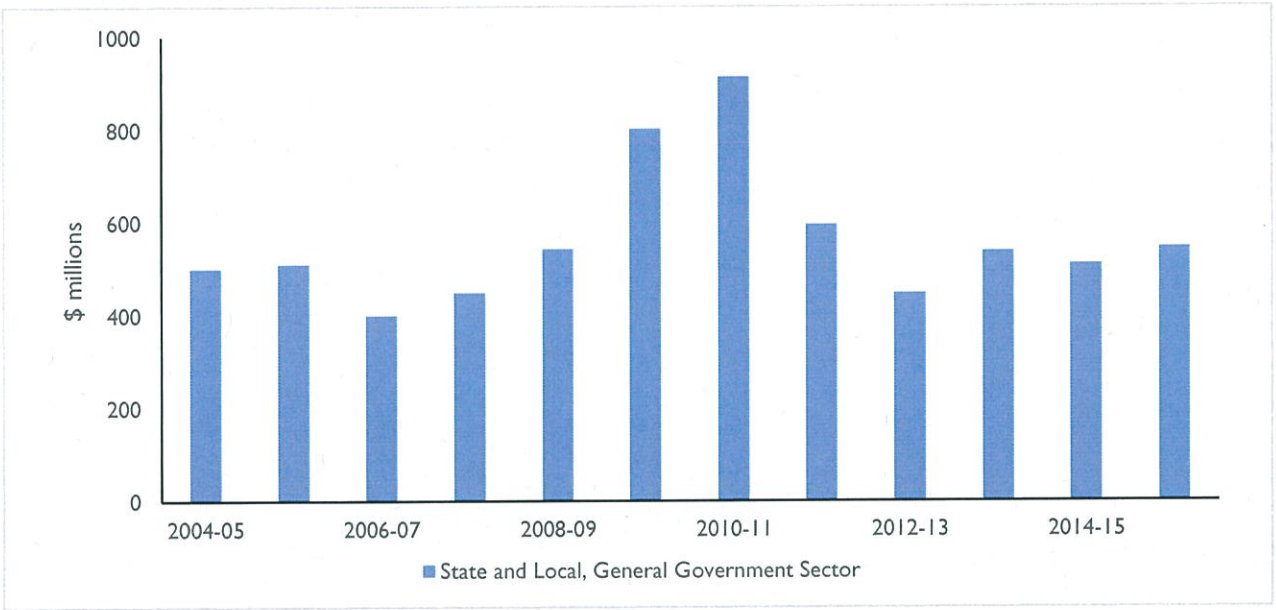
Source: 2005-06 to 2016-17 data - Australian National Accounts: National Income, Expenditure and Product, ABS Cat No 5206.0. 2017-18 & onwards - Treasury projections; 2017-18 Tasmanian Budget: Budget Paper No 1 and TasWater 10 year plan as re-profiled by Infrastructure Tasmania.

The potential impact of the re-profiled TasWater investment can also be assessed by examining the very substantial increase in investment by the State Government's General Government Sector and at the local government level from 2006-07 to 2010-11 (Figure 4). This public investment increased from $400 million in 2006-07 to $914 million in 2010-11 in real terms (which removes the impact of any inflation in the construction and other investment-related industries). This was a much greater increase than under the re-profiled program for TasWater.

Over the period when this public investment increased, private sector business investment also increased, in real terms, from $2.5 billion in 2006-07 to $2.7 billion in 2010-11. Even the construction component of business investment increased over this period, from $460 million 2006-07 to $580 million in 2010-11.

Equally, in the subsequent period when this public investment declined sharply, business investment also declined, from $3 billion in 2011-12 to just over $2.4 billion in 2013-14. The construction component of business investment also declined over this period.

Figure 4: Tasmanian Government General Government Sector and Local Government investment, constant prices, 2004-05 to 2015-16

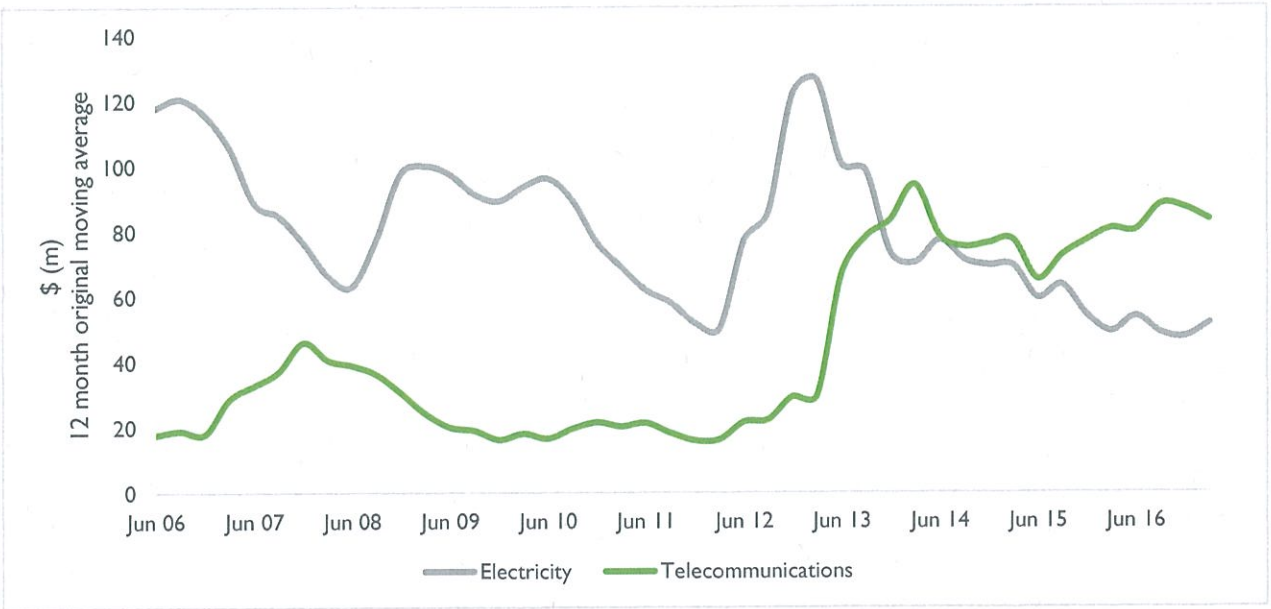


Source: Government Finance Statistics, Australia, 2015-16, ABS Cat No 5512.0

These examples suggest that there are different drivers for public sector investment and business investment and that any increase in public investment would not necessarily crowd out private sector investment projects.

Due to the relatively small size of Tasmania's economy, Tasmanian capital expenditure has often been variable as a result of particular investment projects. The Tasmanian economy has absorbed short-term spikes in the past of a similar scale to that of the re-profiled TasWater program. This volatility in investment activity is illustrated by the data on engineering work done in the State in the electricity supply and telecommunications industries (Figure 5). As Figure 5 illustrates, Tasmania's electricity and telecommunications industries have been subject to a number of spikes over the past decade. These spikes have involved investment in that sector increasing by more than $50 million in one year.

Figure 5: Value of engineering work done in Tasmania by selected categories, current prices, 2005-06 to 2015-16



Source: Engineering Construction Activity, Australia, ABS Cat No 8762.0.

In summary, based on past experience, Tasmania's economy has the capacity to absorb the additional level of infrastructure investment in the re-profiled program prepared by Infrastructure Tasmania without any significant disruption to other public and private sector investment projects in the State.

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