Tasmanian Independent Science Council:
Submission on the *Rural Water Use Strategy Position Paper*
26 June 2020

The Tasmanian Independent Science Council is dedicated to science-based policy reform to ensure the long-term health of Tasmania's critical environments. We are composed of scientists and science communicators who are a source of independent, non-government advice, focusing on policy reforms of significant State interest. We seek to inform public debate and influence legislative reform to improve outcomes, including for terrestrial, freshwater and marine ecosystems. The Tasmanian Science Council acknowledges the Traditional Owners of lutruwita (Tasmania), the palawa people, who continue to walk this island as they always have, with a deep spiritual and practical connection to land, water and ecology. We acknowledge the deep wrongs committed against palawa people in the name of science, and are committed to a collaboration of the Western and Southern knowledge systems existing on this island, for the benefit of us all. For further information on our organisation and members, please see http://www.tassciencecouncil.org/

The RWUS Position Paper is clearly an important document to establish policy directions, identify key issues and gaps, as well as potential options to address these. The Independent Science Council welcomes the opportunity to contribute to this discussion.

Summary of key issues and recommendations

1. The primary objective of the Rural Water Use Strategy is to support the Tasmanian Government's AgriVision 2050, which seeks to grow the value of Tasmanian agriculture to $10 billion by 2050 (note: this also includes aquaculture and the seafood industry). Given that the current production value is about $2.5 billion *(Sustainable Agri-Food Plan 2019-23),* this represents a four-fold increase over a 30 year period. We request that further information be provided as to how this target was derived, and whether this can be sustainably achieved based on our actual water resources and arable land. Furthermore, we ask how has climate change been factored into this target?
2. The strategy is heavily focussed on irrigation expansion, with some reference to other water dependent industries/projects such as the Hydro's Battery of the Nation and renewable hydrogen. Although the focus is on rural water, it is essential that the needs of other water uses/users are also integrated with this strategy. In addition to the environment, these include drinking water, aquaculture and other water intensive industries, forestry and firefighting. Significant expansion of irrigation schemes has the potential to jeopardise these other uses, or to be adversely impacted by them.
3. Integrated catchment management is critical to manage both flows and water quality. We cannot manage one without the other. This integrated approach is also essential in order to address the full continuum of freshwater resources – surface run-off, groundwater, rivers, wetlands, riparian zones and estuaries.
4. Further consideration of water quality management is needed, including more clarity about how the Water Management Act and the state Water Quality Policy can be better integrated. Irrigation and other rural water uses can clearly impact freshwater systems, and poor water quality can in turn damage crops, soils and ground water. There is no discussion of salinisation or soil degradation associated with irrigation, or how this will be addressed within the RWUS.
5. It is essential that both allocation and use are monitored in a rigorous and transparent way, and on a catchment-by-catchment basis. Lack of metering is one of the biggest weaknesses of the current water management system. How can we possibly manage freshwater without accurate information about the volume and timing of water use?
6. More detail is needed to ensure that cultural and recreational values are protected, particularly palawa /First Nations Tasmanians' cultural values.
7. The RWUS is overly-focussed on the continued expansion of large-scale irrigation infrastructure. Other key aspects of rural agriculture (e.g. water efficiency, enterprise suitability, land capability) are important

elements of rural agriculture and it is unclear why these are considered to be 'outside the scope'? The strategy should also support initiatives to limit run-off from agriculture, such as fertiliser management, stock fencing and riparian buffers.

8. Significantly more investment is needed in monitoring of flows, water quality and river health more broadly. This should include monitoring and preventative management of blue-green algal blooms and aquatic weeds. Water-dependent ecosystems and species, including those that are state and federally-listed also require regular monitoring.
9. An updated State of Rivers report is long overdue for Tasmania – the last one dates back to 2008. Without this, we really have no clear idea about the condition and trends of our rivers. In particular, the 2018 Monitoring River Health review should be released.
10. Water allocation decisions must start with a rigorous (and precautionary) assessment of environmental flows together with extensive community consultation. Since 1999, there have only been 14 Water Management Plans prepared across the whole of the state. Non-statutory Water Management Statements are not an adequate substitute, as these lack the necessary science and stakeholder engagement. While a number of additional eflow studies and reports have been completed, it is unclear if or how the recommendations of these reports have been implemented.
11. Models and management need to incorporate updated climate data and observations.
12. Freshwater is undervalued in Tasmania, and there is serious risk of losing local control of this valuable resource to investors. This situation requires urgent review to ensure local farmers are not priced out. Water should be managed as a public good, not just as a commodity.
13. Public and political perceptions of abundant and clean freshwater are no longer valid in many parts of the state. We need a reality check based on metered usage and monitored quality!

Detailed comments/recommendations

Goal 1: Sustainable management of Tasmania's freshwater resources in a changing climate

As scientists with strong interest and expertise in natural resources, climate change and sustainability, this goal is the primary focus of our comments.

1.1 Valuing our freshwater resources

We believe that freshwater resources in Tasmania are undervalued, and that further consideration of the full range of values is needed in the RWUS. In addition to economic values, these include cultural, environmental and recreational values. While the focus of this paper is on rural water uses, it is essential that these do not preclude or damage other uses and values. Drinking water supplies – typically located at the lower end of river systems are directly linked to 'rural water' and are particularly vulnerable, as are estuarine systems. Adequate supplies are also needed for firefighting.

There is a false perception that Tasmania has an abundance of clean water, despite much evidence to the contrary. Freshwater is increasingly scarce – particularly as climate change progresses – and needs to be valued, used and priced accordingly.

1.2 Understanding our freshwater resources

The current understanding of the condition of Tasmania's freshwater systems is poor and further resources are needed for monitoring of river flow, water quality and broader river health. In the past, there was considerably more funding available for this work, supported in part through the National Water Initiative (NWI). However, this support has eroded over the past 10 years, with fewer sites now monitored and at decreasing frequencies. At the same time, this has been a period of increasing extraction, expansion of agriculture and aquaculture activities, declining water quality and changing climate.

The Monitoring River Health program is one of Tasmania's longest running, statewide monitoring programs, as noted in the discussion paper, and should provide important insight into waterway conditions and trends. A review paper was prepared for this program two years ago, including review of data collected over the 10+ year program as well as 34 recommendations (Hardie et al, 2018). However, the full paper has not yet been released by the government. This information is essential to guide water management and should be readily available to water managers, users and the wider public. Accordingly, we request that this paper be released as part of the RWUS process.

Routine monitoring of water-dependent ecosystems and species is rare in Tasmania. In particular, there is little recent monitoring or information about the condition of our wetlands and riparian zones. Monitoring of amphibians, fish, waterfowl, platypus and other species that rely on freshwater is also under-resourced, including those that are state and federally-listed also require regular monitoring. All of these habitats and species can be severely impacted by rural water use.

We note that considerable data is collected by other water managers, and some of this is available via the Water Information System for Tasmania (WIST) and the Bureau of Meteorology (BOM). However there has been no regular compilation and reporting of this information on a state-wide basis for over a decade. The last State of Rivers reports were issued in 2008, and the last Tasmanian State of Environment Report was released in 2009. Despite statutory requirements for a 5-yearly State of Environment (SOE) report (State Policies and Projects Act, 1993, Section 29), Tasmania did not release a report in 2014, nor in 2019. In short, we have very little understanding of the current state of our freshwater resources.

Water quality is only briefly mentioned in the RWUS discussion paper and requires much more consideration. Clearly flows influence water quality, as does run-off from rural water uses, and poor water quality can have a devastating impact on irrigation schemes and other rural water uses. In particular, faecal bacteria and pathogens, sediment, nutrients, pesticides and herbicides, and salinity all require careful management. Blue green algae blooms already occur in catchments with high level of irrigation, and there is a high risk they will increase as irrigation increases. Blue-green algal blooms require proactive management to protect both ecosystem and human health, particularly insofar as these have been linked elsewhere with both acute illness as well as chronic diseases including motor neurone disease, Parkinson's disease, and Alzheimers disease (Main, 2018; Dunlop, 2013).

There is no mention in the discussion paper about salinisation risks associated with irrigation, or indeed the irrigation risks to soil structure more broadly (e.g. Murray and Grant, 2007). Soil and water salinity are a significant problem in certain agricultural areas of the State (DPIPWE, 2020) and we have highly susceptible sodic soils in irrigation areas. These risks must be addressed as part of the RWUS.

We are concerned that most of Tasmanian rivers do not yet have comprehensive eflow assessments, and that the methods used have varied over time and between rivers. Most assessments do not include the eflow requirements for estuaries. Furthermore, it is unclear if and how the various recommendations have been implemented. We recommend an in-depth review of the eflow studies completed to date, including an updated review of best practice methods to ensure that future studies are consistent and robust.

Wetlands, riparian zones and estuaries should be clearly included as freshwater resources to be protected and managed as part of the RWUS.

We strongly support the recommendations for improved surface water modelling and for improved groundwater monitoring and management. Most rivers and wetlands depend on some level of groundwater flow during dry periods, and extraction of groundwater must be included in water budgets and regulation.

1.3 Changing climate

We strongly support the proposal for updating surface water models with more recent projections of future climate; this work should also include updated observations, where available. However, climate change implications should also be considered more broadly, including how this may influence the suitability and location of crops (e.g. Remenyi et al, 2020), as well as implications for freshwater systems and water quality.

1.4 Understanding water use

Lack of routine and transparent monitoring of water use is a major weakness of Tasmania's current water management system. It is not possible to realistically manage freshwater resources without knowing how much is taken, where, by whom and when. If domestic water users are now required to meter water use in urban areas, surely much larger agricultural users should be required to do the same. This needs to be addressed as a high priority. We recommend that the proposal for this section *('Review water accountability and reporting frameworks to strengthen risk-based water use and water conveyance measuring and reporting'*) be strengthened considerably and that it clearly state the intent to monitor water use. Metering and reporting of water use should be a requirement for water licenses, starting with the biggest allocations and working down the list. If some funding is required to achieve this, this may be a valid use of resources. Water use monitoring should be accompanied by rigorous upstream/downstream flow monitoring, particularly in problem areas.

Goal 2: Effective regulation, strong entitlements and planning

2.1 Allocation of water

The first sentence in this section '*Tasmania is in the fortunate position of not having over-allocated water resources*' is not accurate, and indeed reinforces the false perception that Tasmania has abundant and clean water resources. Where is the evidence for this? While rivers within the World Heritage Areas of the southwest may still be in good condition, there are multiple examples around the state of rivers experiencing significant overallocation, flow and/or water quality problems. These include the Jordan, Coal, Prosser, Scamander, Break O'Day, South Esk, Derwent, etc. We understand that last summer, the South Esk – one of Tasmania's largest rivers – ceased to flow. There have also been many recent water restrictions imposed on both irrigators and local communities that indicate all is not well, and these are likely to get worse over time with dual pressures of unstable climate conditions and more straws in the milkshake, so to speak.

This needs to be addressed upfront, with a comprehensive review of current allocations on a catchment by catchment basis, compared with actual use. Inclusion of environmental flows (which also need to be incorporated into allocation) is complicated by the lack of environmental flow (eflow) studies for the majority of Tasmanian rivers. The comprehensive State of Rivers Report recommended previously should show the 'allocation status' of each catchment along with maps and graphics showing the river health condition, and the location of monitoring sites (flow, water quality & MRH).

Increased access to water during high flows must be approached with caution, as intermediate and high flow pulses are important for many processes and associated systems, including wetlands, riparian zones and migratory fish. This should only be considered within a robust eflows framework, together with monitoring & reporting.

We would not support a shift from seasonal to annual allocations without rigorous monitoring and reporting of use, and better eflows understanding/management. Seasonal allocations are an important tool to protect freshwater systems at times of higher risk (summer, low-flows).

The recommendation for better access to information is strongly supported. This should include both allocations and use, and be provided on a catchment basis within spatial databases. It is difficult/impossible to extract this information from the WIST as currently structured.

2.2 Simplifying statutory water management planning

We support comprehensive statutory management plans for Tasmanian rivers that include rigorous science and comprehensive community input. However, the vast majority of catchments/rivers have no Water Management Plans (WMPs). Since the Water Management Act (WMA) came into effect in 1999, only 14 WMPs have been completed. These need to be completed and eflow established before further significant expansion of irrigation or other major uses. We are concerned that Water Management Statements are increasingly being used as a short-cut, however these are non-statutory and do not provide the same level of scientific rigour or consultation. While a review of current water planning systems and processes is valuable to ensure best practice, it is important this does not lead to watered down versions. Clearly this is an area where further resources are needed.

2.3 Local involvement in water management

We support both local and broader involvement in water management and emphasise the need for input from palawa/First Nations Tasmanians groups and NGOs. Further discussion is needed as to how this will be achieved.

2.4 Water markets

Poorly managed water markets have contributed to large scale environmental, social and economic problems in other jurisdictions. Of particular note is the Murray Darling Basin. Freshwater is undervalued in Tasmania, and there is serious risk of losing local control of this valuable resource to investors. This situation requires urgent review to ensure local farmers are not priced out. Water should be managed as a public good, not a commodity. More information is needed to better evaluate this risk, along with a strategy to ensure that Tasmania does not repeat some of the mistakes on the mainland.

2.5 Issues related to dams for irrigation

Catchment dams should be included in the broader water management system, particularly with respect to cumulative impacts at the catchment scale. The perception in the RWUS paper seems to be that the current unregulated approach is adequate. We recommend that this issue be given more detailed review, assessment and management, particular where dams are large and/or numerous.

Goal 3: Strategic development to maximise opportunities from freshwater resources

3.1 Irrigation Infrastructure Development

We recommend that this section be expanded to include other important aspects of irrigation to ensure that existing and new schemes are operating in a sustainable manner. In particular, on-ground support is needed to optimise application and minimise soil and water impacts. As noted, this could be achieved through extension, education and peer-to-peer learning. Further investment is also needed to support strategic reviews and planning with respect to enterprise suitability and land capability (including how this may vary with climate change) to ensure long-term sustainability. This should be an area of significant investment and will also support jobs. It is unclear why these aspects should be considered to be 'outside the scope' of the RWUS.

3.2 Battery of the Nation

What are the implication of the BoN project on rural and other water uses? We recommend that further review and clarification of Hydro water rights is needed, particularly with respect to transfer for consumptive uses. Have these extractions been included on the WIST, and in WMPs? Is the Hydro required to manage for eflows? If not, how can freshwater be managed in a coordinated way?

3.3 Water recycling and reuse

We support further expansion of water recycling and reuse, as this provides additional benefits such as removing nutrients from waterways, while removing pressure for additional raw water extractions. Reuse options should be considered for a wider range of activities, including recycled sewage (particularly in peri-urban areas where there

are existing schemes that are fully allocated) and for water-intensive industries that produce nutrient-rich effluent (e.g. fish hatcheries/smolt production, paper mills). However, caution is needed to ensure protection of soils, groundwater and adjacent waterways. Comprehensive/consistent management and monitoring should be required for all reuse projects. Priority funding opportunities should be provided for these schemes as part of the broader irrigation infrastructure proposals.

3.4 Other emerging water dependent industries such as renewable hydrogen

Have any preliminary estimates of freshwater requirements for the renewable hydrogen project been made, and where this might come from? Some references suggest that the production of hydrogen via electrolysis requires significant amounts of freshwater (Webber, 2007), others suggest the water requirements are modest (Hydro, 2020); this needs to be clearly ascertained.

A number of other water dependent industries/uses have not been included in the RWUS that require further consideration. In particular, freshwater use by aquaculture should be included here, as this water intensive industry is specifically included in the 2050 AgriVision goal. Given the extremely large water allocations to aquaculture, the projected growth, and the potential for reuse (with similar level of regulation as other reuse schemes), water use by aquaculture should be included in the RWUS. According to the WIST database for the Derwent/Southeast region, 5 of the top 10 water allocations are for aquaculture (18,921 to 31,572 ML/year), and in the South Esk region the top three allocations are for aquaculture (9500 to 125,900 ML/yr).

Another area that should be considered in association with the RWUS is the water requirements for forestry (both plantation and native forests), as forestry practices can impact on both the quantity and quality of water available to downstream users.

Water to support firefighting requirements is another essential use that should be addressed here, particularly given the increasing frequency, intensity and scale of fire in response to climate change. This is particularly important in dry areas with little access to large storages, as farm dams and irrigation storages can then become the default water sources.

Goal 4: Administrative efficiency

4.1 Water management information systems

We strongly support the development of better databases and improved access to public information. As currently configured, it is difficult to compile water allocation information from the WIST, particularly for specific catchments or seasons, and information on water use is missing entirely. Information systems should also include the regular review, synthesis and reporting, for example by way of regular State of Rivers reports. It is also important to make better use of data collected by other entities by way of collaborative/integrated data-sharing systems.

4.2 Water legislation amendments and review of internal processes/practices

We support a review and potential amendment of Tasmania's water legislation, and we recommend that the government review successful models from other countries/states (e.g. Victoria, New Zealand) from which we can learn.

In particular the WMA requires better integration of water quality and quantity, and should include integrated catchment management as a key element. Further consideration is also needed on how the WMA and State Policy on Water Quality Management can be integrated.

4.3 Water management fees

According to the RWMS paper, the cost to DPIPWE to manage freshwater resources was about $5 million in 2018/19. How much is currently recovered in fees? Clearly further investment is needed for a water management

system that is both robust and equitable. Full cost recovery should be the goal, particularly given the significant government investment/subsidisation for new irrigation schemes. We agree that the fee structure - now 20 years old - needs substantive review, again considering best-practice models from other states/countries.

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