

Draft Amended Mersey River Catchment Water Management Plan 2023 Impact Assessments

July 2023 - Public Exhibition

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Preferred Citation

NRE Tas 2023. *Draft Amended Mersey River Catchment Water Management Plan – Impact Assessments*. Primary Industries and Water Division, Department of Natural Resources and Environment Tasmania.

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The Primary Industries and Water Division provides a focus for water management and water development in Tasmania through a diverse range of functions, including implementing the *Water Management Act 1999* and the National Water Initiative; design of policy and regulatory frameworks to ensure sustainable use of surface water and groundwater resources; monitoring, assessment and reporting on the condition of the State’s freshwater resources; and facilitating water infrastructure development projects.

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I Introduction

This Impact Assessments document supports the Draft Amended Mersey River Catchment Water Management Plan 2023 by providing an assessment of the impacts that may occur as a result of the proposed amendments to the Mersey Water Management Plan 2005 (2005 Plan).

The key amendments proposed for the Mersey River Catchment Water Management Plan relate to the following areas:

- Defining take periods
- Quantifying allocation limits
- Monthly cease-to-take rules and thresholds from December to May
- Monthly cease-to-take rules and thresholds from June to November
- Implementing an opportunistic take – access threshold
- Amendment of groundwater management provisions

The issues, what is in the *Current Plan* (2005 Plan) and options considered and the preferred options for each amendment are identified. A summary table in each section contains the positive and negative impacts of each option under economic, environmental, social and administrative headings. It should be noted that there are often tourism-based economic advantages and disadvantages relating to the positive and negative environmental and social classifications.

Further details supporting the points are made in the Supporting Information sections can be found in the Mersey River Water Resources Information document:

NRE Tas 2022. *Mersey River Water Resources Information. Review and Amendment of the Mersey Catchment Water Management Plan.* Department of Natural Resources and Environment Tasmania.

2 Take periods

Issues

- *The Current Mersey Water Management Plan does not specify take periods as a provision in the Plan. This creates uncertainty about the take periods that can be authorised for new allocations and when setting and demonstrating compliance with allocation limits.*
- *The take periods on allocations in this Plan area are highly variable and there is a considerable overlap of allocations¹.*
- *A large volume of historic allocations are annual meaning this large volume of water can legally be taken at any time of the year, subject to access rules.*
- *The significant overlap of allocations in September, October, and November¹ can cause high demand and competition for available water under existing allocations when there are dry conditions and low flows.*
- *Take periods (and related allocation limits) applied retrospectively by the Plan are difficult to align with historically allocated entitlements.*

Comparison of options

Current Plan - No change.

No provision that specifically defines take periods detailed in the 2005 Plan. The 2005 Plan defines the take period for new allocations from 1 May to 31 October within Section 3.2.3 (Allocation Limits) in the 2005 Plan².

Option A

Includes a provision in the Plan that defines a Summer Take Period (1 November to 30 April) and a Winter Take Period (1 May to 31 October) reflecting the periods implied by the 2005 Plan and issue new allocations and align existing allocations to these take periods to make allocations and take periods consistent.

¹ Refer to NRE Tas 2022, Section 11.5.

² There is no further water available for allocation for the period from 1 November to 30 April.

Option B

Only defines a take period for new allocations in the Plan for the period 1 May to 31 October. Existing take periods on allocations that fall (in full or in part) in the 1 November to 30 April period are not able to be extended beyond current take periods.

Option C

Only defines a take period for new allocations in the Plan for the period 1 May to 31 August. Existing take periods on allocations that fall (in full or in part) in the 1 September to 30 April period are not able to be extended beyond current take periods.

The differences between the options are presented in Table 1 below.

Preferred option

Option B below is chosen as the preferred option.

Defines a take period for any new allocations in the Plan for the period 1 May to 31 October. Existing take periods on allocations that fall (in full or in part) in the 1 November to 30 April period are not able to be extended beyond current take periods detailed for these allocations.

This option:

- Limits further risk to the reliability of existing entitlements in the period 1 November to 30 April.
- Makes new water available from May to October for future development. Water access in these months is likely to be reliable in most years to support filling storages.
- Is administratively simple and does not require changes to existing entitlement holders' licences or allocations.
- Addresses the risk and concerns raised by water users related to the impact of new allocations being granted in the September to November period on their existing access.
- Limits any changes to existing allocation take periods in the period 1 September to 30 April which will limit risk to existing licensee's access.
- Licensees without access under existing allocations between 1 November and 1 December can access new water via water markets and trading of water or existing entitlements in those periods.

Table I. Summary of positive and negative impacts of each option under economic, environmental social and administrative headings.

<p>CURRENT PLAN (no change). No provision that defines take periods in the Plan. Plan only defines water available from 1 May to 31 October in allocation Limits Section.</p>	<p>OPTION A – Summer take period from 1 November to 30 April and Winter take period from 1 May to 31 October and align existing and future allocations to these periods.</p>	<p>OPTION B – Plan only defines a take period for new allocations in the period 1 May to 31 October.</p>	<p>OPTION C – Plan only defines a take period for new allocations in the period 1 May to 31 August.</p>
Positive impacts			
<p><i>Economic and administrative</i></p> <ul style="list-style-type: none"> No additional initial operational cost and ambiguity to some existing licence holders. 	<p><i>Economic and administrative</i></p> <ul style="list-style-type: none"> Aligns with the intent of the 2005 Plan in relation to take periods e.g. take periods for new allocations outlined in section 3.2.3(b) and section 3.2.1 Allocation Sureties (DPIWE 2005). Winter take period of 1 May to 31 October aligns with winter allocations issued since 2005 (NRE Tas, 2022, Section 12 Allocation Limits; DPIWE 2005; NRE Tas 2023a). Licensees with summer take period allocations that are shorter than the defined take period in the Plan will have their take periods extended to start on 1 November rather than 1 December. Aligns with natural periods of typically high and low flow in the catchment (NRE Tas 2022, Section 5. Stream flow characteristics). A winter take period of 1 May to 31 October optimises access to water in the high flow period. Generally, aligns with the periods when water is extracted within the catchment for applying directly to crops (direct take) and dam filling (storage take). Defined take periods will support adjustment of existing summer and winter period allocations so that those entitlement holders have consistent and more equitably defined access during restrictions. Improves consistency of licensing and supports more consistent processes and outcomes related to approval of new allocations. Supports more effective and precise management of access and restrictions and improves protection of the security of existing entitlements and classes of water. Simplifies compliance and management. Supports accountability for NRE Tas and Water users that water is managed, allocated and taken consistent with the Plan. Supports operation of effective water markets by providing greater clarity and consistency of the value of water entitlements. Less uncertainty for water users and compliance officers in knowing what access is authorised enabling more effective and precise management of available access when water is restricted. <p><i>Environmental</i></p> <ul style="list-style-type: none"> Improved accountability and improved capacity to manage and apply cease-to-take and staged restrictions effectively which will reduce risk to base to flows that are important for ecological values and processes. 	<p><i>Economic and administrative</i></p> <ul style="list-style-type: none"> No additional initial operational cost and ambiguity to some existing licence holders. Aligns with the intent of the current Plan in relation to take periods e.g. take periods for new allocations outlined in section 3.2.3(b) and section 3.2.1 Allocation Sureties (DPIWE 2005). Winter take period of 1 May to 31 October aligns with winter allocations issued since 2005 (NRE Tas, 2022 Section 12 Allocation Limits; DPIWE 2005; NRE Tas 2023a). Aligns with natural periods of typically high and low flow in the catchment (NRE Tas, 2022, section 5. Stream flow characteristics). A winter take period of 1 May to 31 October optimises access to water in the high flow period. 	<p><i>Economic and administrative</i></p> <ul style="list-style-type: none"> Is administratively simple and imposes no change to existing entitlement holders. Addresses most risk and concern raised by water users related to impact of new access being granted in the September to October period for existing entitlement holders. Continues to provide reasonable access to a significant volume of water for new allocation in the period from 1 May to 31 August, supporting new water development and use. Encourages storage development for extraction in months when water is still available to allocate. <p><i>Environmental</i></p> <ul style="list-style-type: none"> Reduced risk to environmental flows that are important for ecological values and processes in the period 1 September to 31 October due to no new allocations being made in this period.

<p>CURRENT PLAN (no change). No provision that defines take periods in the Plan. Plan only defines water available from 1 May to 31 October in allocation Limits Section.</p>	<p>OPTION A – Summer take period from 1 November to 30 April and Winter take period from 1 May to 31 October and align existing and future allocations to these periods.</p>	<p>OPTION B – Plan only defines a take period for new allocations in the period 1 May to 31 October.</p>	<p>OPTION C – Plan only defines a take period for new allocations in the period 1 May to 31 August.</p>
Risks or negative impacts			
<p><i>Economic and administrative</i></p> <ul style="list-style-type: none"> Overlapping allocation limits remain which creates administrative and operational complexity when assessing risks of new allocations and in understanding who is authorised to take water when applying restrictions. Creates risk that the limit in the Plan and the access provided under existing water licences are not aligned or consistent. Overlapping take periods makes it difficult for the NRE Tas to track new allocations and demonstrate compliance with the Plan’s allocation limits. Ambiguous take periods creates a risk that water entitlements are not securely defined and there is a risk that adjustments to existing take periods or new allocations will represent an ongoing risk to existing licensees access. Variable and overlapping allocation take periods mean, that different allocations taken in the same period may have different maximum daily takes (based on different methods used to define take periods in summer and winter periods that creates inequity of access during restriction periods. May require policy or licence changes to address the issue. Inconsistent take periods will remain and continue to create complexity and uncertainty regarding the value in the water market of the different types of allocation. <p><i>Environmental</i></p> <ul style="list-style-type: none"> Inconsistent and overlapping take periods and inability to effectively account for and enforce water takes may increase risk to flows in important periods for ecological values and processes. 	<p><i>Economic and administrative</i></p> <ul style="list-style-type: none"> Will require changes to take periods of many existing entitlements to align them with the new take periods in a way that will not impact existing access under current licences. Licensees with summer take period allocations that are longer than the defined summer or winter take period in the Plan will have their take periods shortened. New allocations may need to be revised and reapportioned to the new take periods to reflect the access licensees have under their current licences in the new winter take period. Does not align with dates on some summer and winter allocations issued prior to the development of the current plan including: Summer take allocations (1 September to 30 April), and; Winter take allocations (1 May to 30 November). Take periods will be administratively complex and resource intensive to adjust. Creates initial administrative workload for licensees and NRE Tas. The process to adjust take periods may require adjustments to allocation limits defined by the Plan to reflect the volumes of water that are currently authorised under existing licences. Detailed metered water use information and significant time may be needed to verify and adjust use transparently and accountably. Annual take periods may not be possible to split without recognizing the full annual volume in the summer and winter take period or going through a long process to meter and verify when water is taken under annual allocations. (NRE Tas, 2022, NRE Tas, 2023a). Potential impact on licence fees that are payable. 	<p><i>Economic and administrative</i></p> <ul style="list-style-type: none"> Overlapping allocation limits remain which creates administrative and operational complexity when assessing risks of new allocations and in understanding who is authorised to take water when applying restrictions. Creates risk that the limit in the Plan and the access provided under existing water licences are not aligned or consistent. Overlapping take periods makes it difficult for NRE Tas to track new allocations and demonstrate compliance with the Plan’s allocation limits. Ambiguous take periods creates a risk that water entitlements are not securely defined and there is a risk that adjustments to existing take periods or new allocations will represent an ongoing risk to existing licensees access. Variable and overlapping allocation take periods mean, that different allocations taken in the same period may have different maximum daily takes (based on different methods used to define take periods in summer and winter periods that creates inequity of access during restriction periods. May require policy or license changes to address the issue. Inconsistent take periods will remain and continue to create complexity and uncertainty regarding the water market values of the different types of allocation. <p><i>Environmental</i></p> <ul style="list-style-type: none"> Inconsistent and overlapping take periods and inability to effectively account for and enforce allocation may increase risk to flows in important periods for ecological values and processes. 	<p><i>Economic and administrative</i></p> <ul style="list-style-type: none"> Some water users may see this option as limiting water development opportunities. There is likely to be significant periods of high flows during September to October that can support sustainable access without impacting existing water user’s reliability. A 1 May to 31 August winter take period may limit opportunity to fill new storages in years where there is a dry autumn and early winter and high flows in September to October. Temporary Water Allocations could be used to manage this risk but is likely to be administratively resource intensive and inconvenient for water users and NRE Tas. Variable and overlapping allocation take periods mean, that different allocations taken in the same period may have different maximum daily takes (based on different methods used to define take periods in summer and winter periods. This creates inequity of access during restriction periods and may require policy or licence changes to address the issue. Inconsistent take periods will remain and continue to create complexity and uncertainty regarding the water market values of the different types of allocation. <p><i>Environmental</i></p> <ul style="list-style-type: none"> Inconsistent and overlapping take periods and inability to effectively account for and enforce allocation may increase risk to flows in important periods for ecological values and processes.

Related objectives in the Plan

1. Support the community and the Department to be accountable for water use and management through access and sharing of information to support engagement, review and improvement of water management.
2. Ensure that water access for essential needs of the community (including Surety I – town water and, stock and domestic access by riparian properties) is not impacted by lower surety use.
3. Maintain daily and seasonal extraction of non-essential water from the water resource (Surety Levels 5-6) at levels that protect key elements of stream flow and groundwater regimes by implementing access rules under this Plan in order to cause no material or serious harm to existing freshwater-dependent ecosystem values and processes outlined in section 3.1 of this Plan.
4. Maintain fair and orderly access to the water resource for agriculture and other consumptive water uses by defining classes of water entitlement, access rules and priorities for water access when water availability is limited.
5. Define classes of water entitlements and access rules to facilitate operation of a secure and accountable water supply system and market.

Supporting information

DPIWE 2005 Mersey Water Management Plan. Department of Primary Industries, Water and Environment, Hobart, Tasmania

Details related to take periods

- Allocation Sureties (Part 3.2.1). page 8
- Water Allocation Limits (Part 3.2.3), page 9

NRE Tas 2022 Review and Amendment of the Mersey River Catchment Water Management Plan. Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania.

- **Section 5.2** Stream flow characteristics. *Mersey River Catchment Water Resources Information*.
- **Section 4.2** Rainfall. Rainfall trends since 1970 and monthly rainfall and evaporation trends.
- **Section 11.5** Details of current water allocations. Allocations issued for different periods at different times under different policies leading to inconsistent allocation periods across the catchment.
- **Section 12** Allocation Limits. A more detailed description of allocation limits under the preferred option (Option B).

NRE Tas 2023a Draft Mersey River Catchment Water Management Plan. Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania.

3 Calculation of allocation limits

Issues

- *The Plan does not clearly quantify allocation limits.*
- *It is difficult to quantify, apply and account for allocation limits because of the large volume of annual and overlapping allocation take periods (NRE Tas, 2022, Section 11.5).*
- *The volume historically allocated in the period 1 September to 30 April is high and does not align with contemporary allocation policies. The large volumes of historic allocations contribute to high demand and competition for access in low flow periods when water restrictions are applied.*
- *Water users have identified that further allocation may impact the reliability of their existing allocations in dry years, particularly in the 1 September to 31 October period.*
- *The overlap between winter and summer allocations in November, may lead reduced reliability of water users existing allocations in dry years (NRE Tas, 2022, Section 11 and Section 12).*
- *There is residual risk to the reliability of existing entitlement holder's water access during low flow conditions if currently allocated entitlements that are not being used (sleeper water rights) start to be used to the full extent that is authorised by existing licences.*
- *Annual average water yield across the Mersey catchment is predicted to reduce by 11% by 2030 under a future dry climate, and climate observations are showing decreasing trends in summer and annual rainfall and evaporation that is likely to further change patterns of demand, competition for water and the reliability of allocations.*

Comparison of options

Current Plan - No change.

The existing provision is:

“There is no further water available for the Period from 1 November to 30 April

In addition to water rights in effect prior to the date of commencement of the Plan.

“A total of 30,000 ML/year for allocation at Surety 5 during the period May to October inclusive”. “

Option A

Not allow any new allocations in the period 1 November to 30 April and cap allocations in this period at existing levels. Adjust all allocations within the Plan area to align with the specified allocation take periods.

Quantify Allocation Limits (at Surety Level 5 and 6) for the period 1 May to 31 October based on current allocation policy. New allocations will only be available in this period subject to the limits and availability at the site of the allocation application.

Option B

Not allow any new allocations in the period 1 November to 30 April. Existing allocations that fall in this period (in full or in part) will be limited to their existing volumes and take periods.

The Plan only defines an allocation limit for the period 1 May to 31 October, but no further allocation will be available at Surety Level 5. New allocations at Surety 6 will only be available in this period subject to the limit and availability at the site of the allocation application.

Option C

Not allow any new allocations in the period 1 September to 30 April. Existing allocations that fall in this period (in full or in part) will be limited to their existing volumes and take periods.

The Plan only defines the allocation limits (at Surety Levels Surety 5 and 6) for new allocations for the period from 1 May to 31 August. New allocations will only be available in this period subject to the limits and availability at the site of the allocation application.

The differences between the options are presented in Table 2 below.

Preferred option

Option B below is chosen as the preferred option.

The Plan will not allow any new allocations in the period 1 November to 30 April and cap allocations that fall in this period at existing historic levels. Existing allocations that fall in this period (in full or in part) will be limited to their existing volumes and take periods.

The Plan only defines an allocation limit for the period 1 May to 31 October, but no further allocation will be available at Surety Level 5.

This option:

- protects existing surety 5 rights.
- still makes a significant volume available in the period from 1 May to 31 October. The Plan identifies a limit of 96,811 ML, of which 19,740 ML was allocated as of 9 September 2022, making 77,071 ML still available for allocation at Surety Level 6. Actual availability will depend on the location of the proposed extraction point in

the catchment (e.g., see NRE Tas 2022 Section 12 Allocation Limits, Table 12.1 and 12.3).

- does not require any administrative change to take periods.

Table 2. Summary of positive and negative impacts of each option under economic, environmental, social and administrative headings.

CURRENT PLAN (no change) - Attempt to interpret and retain the summer and winter allocation limits intended in the 2005 plan.	OPTION A – Cap allocations from November to April at existing levels. Quantify Allocation Limits for the periods 1 May to 31 October based on current allocation policy. Adjust all allocations within the Plan area to align with the specified allocation take periods.	OPTION B – The Plan only defines an Allocation Limit in the period from 1 May to 31 October, but no further allocation will be available at Surety Level 5. Existing allocations that fall in this period (in full or in part) will be limited to their existing volumes and take periods.	OPTION C – The Plan only defines Allocation Limits in the period from 1 May to 31 August. No explicit limits related to allocation take periods. Existing allocations that fall in this period (in full or in part) will be limited to their existing volumes and take periods.
Positive impacts			
<p><i>Environmental</i></p> <ul style="list-style-type: none"> Less extraction from winter flows. 	<p><i>Economic and Administrative</i></p> <ul style="list-style-type: none"> Aligns the allocation limits in the Plan in the winter take period 1 May to 31 October with NRE Tas current allocation policy. Makes water available for a longer period in high flow months than Option C. Optimises the water that is sustainably available in the winter period to support optimal access to water. Supports administrative efficiency and consistency by ensuring allocations in the winter and summer take periods are consistent with the Plan and current NRE Tas policy. 	<p><i>Economic and Administrative</i></p> <ul style="list-style-type: none"> Aligns the allocation limits in the Plan in the winter take period 1 May to 31 October with NRE Tas current allocation policy. Makes water available for a longer period in high flow months than Option C. Optimises the water that is sustainably available in the winter period to support optimal access to water. Protects the reliability of existing surety 5 allocations by allocating future allocation at a higher level of Surety. Supports administrative efficiency and consistency by ensuring future allocation and approvals in the winter take period are consistent with the Plan and current NRE Tas policy. <p><i>Environmental</i></p> <ul style="list-style-type: none"> Limiting future allocation to Surety Level 6 is better than Option A. 	<p><i>Economic and administrative</i></p> <ul style="list-style-type: none"> Protects existing rights in the period 1 September to the 30 April, and still makes a significant volume of water available for new allocation in the period 1 May to 31 August. Does not require any administrative change to take periods. Does not impose legislative risk related to limits in the Plan that may not reflect what licences authorize. Limits/caps access and provides clarity about the remaining water available for allocation which is compliant with National Water Initiative principles. <p><i>Environmental</i></p> <ul style="list-style-type: none"> Prevents further rights being allocated and hence further risk from extraction at an important time for many flow related environmental values and processes.
Risks or Negative impacts			
<p><i>Economic and administrative</i></p> <ul style="list-style-type: none"> The current winter take allocation limit is less than the limit under current allocation policy and may not facilitate as much economic development of water resources in the catchment. Difficult to verify or demonstrate compliance with the Plans limits. Lack of clarity regarding take periods may mean that allocation limits are not effective. It is not clear what volumes can be legally taken and when. <p><i>Environmental</i></p> <ul style="list-style-type: none"> Because the limits are not clearly quantified or defined it is unclear what volumes are sustainably accessible in the winter period. Limits in the period 1 May to 31 October remain ambiguous due to 	<p><i>Economic and administrative</i></p> <ul style="list-style-type: none"> Aligning summer and winter take periods on existing water licences will have a high initial administrative cost for NRE Tas and for some licence holders who will need to adjust their allocations and take periods on licences to align with the new take periods. To align annual allocations with the new take periods without impacting existing users current access may require annual allocation volumes to be allocated in full in winter and summer take periods. This may mean summer allocation limits in the plan will be very high to reflect the historically authorised volume of access. Allocating the full annual volumes in winter will reduce the volume of new allocations available to other users. New allocation in the September and October period, and corresponding increase in access and demand for water in this period, may be a risk to existing licensees access in the September and October period. May be an issue if new allocations are not limited or not defined at a lower surety level to support restrictions to be applied to mitigate this risk (as in Option B). <p><i>Environmental</i></p>	<p><i>Economic and administrative</i></p> <ul style="list-style-type: none"> May impact licensees whose existing summer water allocations start on 1 December and winter allocations finish on 31 October. These water users will not have any options to get new allocations in October if they need water access in that month and will need to acquire access through water market options or new storage and winter allocations. New allocation in the September and October period, and corresponding increase in access and demand for water in this period, may still generate a risk to the reliability of existing Surety Level 6 access in the September and October period. <p><i>All</i></p> <ul style="list-style-type: none"> Winter Allocation Limits are currently set based on 2010 CSIRO Tasmanian Sustainable Yields climate dry (C_{dry}) scenario data. If future climate modelling is updated and shows an increase or decrease in yields, it may mean that the allocation volumes may be more or less available under the plans access rules than has been predicted by the 2010 dry climate yield scenarios. N.B. low flow access rules will prevent risk that extraction will impact 	<p><i>Economic and administrative</i></p> <ul style="list-style-type: none"> No water available for new allocation outside 1 May to 30 August. Water users may need to pay more (than licence variation application fees and assessments) to acquire or purchase existing water rights or temporary trades. May impact licensees whose existing summer water allocations start on 1 December and winter allocations finish on 31 October. These water users will not have any options to get new allocations in October if they need water access in that month and will need to acquire access through water market options or new storage and winter allocations. Winter Allocation Limits are currently set based on 2010 CSIRO Tasmanian Sustainable Yields climate dry (C_{dry}) scenario data. If future climate modelling is updated and shows an increase or decrease in yields, it may mean that the allocation volumes may be more or less available under the plans access rules than has been predicted by the 2010 dry climate yield scenarios. N.B. low flow access rules will prevent risk that extraction will impact base flows in a drying climate. The risk is borne by water users having decreased access.

<p>CURRENT PLAN (no change) - Attempt to interpret and retain the summer and winter allocation limits intended in the 2005 plan.</p>	<p>OPTION A – Cap allocations from November to April at existing levels. Quantify Allocation Limits for the periods 1 May to 31 October based on current allocation policy. Adjust all allocations within the Plan area to align with the specified allocation take periods.</p>	<p>OPTION B – The Plan only defines an Allocation Limit in the period from 1 May to 31 October, but no further allocation will be available at Surety Level 5. Existing allocations that fall in this period (in full or in part) will be limited to their existing volumes and take periods.</p>	<p>OPTION C – The Plan only defines Allocation Limits in the period from 1 May to 31 August. No explicit limits related to allocation take periods. Existing allocations that fall in this period (in full or in part) will be limited to their existing volumes and take periods.</p>
<p>the large volume of annual allocation.</p>	<ul style="list-style-type: none"> • New allocation and corresponding demand for water may increase risk to the environment in September and October period if new allocations are not defined at a lower surety level to support restrictions to be applied (as in Option B). • Winter Allocation Limits are currently set based on 2010 CSIRO Tasmanian Sustainable Yields climate dry (C_{dry}) scenario data. If future climate modelling is updated and shows an increase or decrease in yields, it may mean that the allocation volumes may be more or less available under the plans access rules than has been predicted by the 2010 dry climate yield scenarios. N.B. low flow access rules will prevent risk that extraction will impact base flows in a drying climate. The risk is borne by water users having decreased access. 	<p>base flows in a drying climate. The risk is borne by water users having decreased access.</p> <p><i>Environmental</i></p> <ul style="list-style-type: none"> • New allocation and corresponding demand for water may increase risk to the environment in September and October period. New allocations at a lower surety level to support restrictions is better than Option A, but worse than the Current Plan or Option C. 	

Related objectives in the Plan

1. Support the community and the Department to be accountable for water use and management through access and sharing of information to support engagement, review and improvement of water management.
2. Ensure that water access for essential needs of the community (including Surety 1 – town water and, stock and domestic access by riparian properties) is not impacted by lower surety use.
3. Maintain daily and seasonal extraction of non-essential water from the water resource (Surety Levels 5-6) at levels that protect key elements of stream flow and groundwater regimes by implementing access rules under this Plan in order to cause no material or serious harm to existing freshwater-dependent ecosystem values and processes outlined in section 3.1 of this Plan.
4. Maintain fair and orderly access to the water resource for agriculture and other consumptive water uses by defining classes of water entitlement, access rules and priorities for water access when water availability is limited.
5. Define classes of water entitlements and access rules to facilitate operation of a secure and accountable water supply system and market.

Supporting information

DPIWE 2005 Mersey Water Management Plan. Department of Primary Industries, Water and Environment, Hobart, Tasmania. Page 9 Section 3.2.3 Water Allocation Limits.

DPIPWE 2020 Surface Water Allocation Decision Framework.

NRE Tas 2022 Section 12 Allocation Limits *Mersey River Catchment Water Resources Information*. Review and Amendment of the Mersey River Catchment Water Management Plan. Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania.

NRE Tas 2023a Draft Mersey River Catchment Water Management Plan. Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania.

4 Monthly cease-to-take thresholds from December to May

Issues

There are a number of issues with the existing cease-to-take thresholds in the Plan, these include but are not limited to:

- The access rules for Surety Level 5 and 6 allocations between 1 December and 30 May in the current Plan are confusing and complicated, and can be applied and interpreted inconsistently or applied in a discretionary way which creates uncertainty for water users and managers.*
- During low flows, the existing cease-to-take thresholds and provision conditions are not constant and can change daily which makes them impractical and difficult to administer and plan for.*
- The cease-to-take thresholds during dry periods depend on flows in the Arm River above Lake Parangana (the 'Arm River Rule'), which is outside the Plan area and do not always reflect flows within the Plan area.*
- The cease-to-take threshold of 195 ML/day is perceived by some stakeholders to be too high.*
- Other stakeholders think that rules that have restriction levels being constantly reduced or applied in a discretionary way allows flows to get too low before restrictions are applied, especially in very dry periods when water quality and temperature could be affected.*

Comparison of options

Current Plan - No change.

No change to the existing Plan's access provisions (apply rule 3.6 and rule 3.9 as per the current Plan).

Option A

Cease-to-take threshold of 195 ML/day at Mersey River at Shale Road stream flow gauging station, with a reduced cease-to-take to 185 ML/day when Arm River gauge falls below

21 ML/day, with Hydro Tasmania's 160 ML/day environmental release (this option has been determined to be fatally flawed due to the Arm River now having no impact on the main stem of the river).

Option B

Cease-to-take threshold of 195 ML/day at Mersey River at Shale Road stream flow gauging station, with Hydro Tasmania's 160 ML/day environmental release.

The differences between the options are presented in Table 3 below. The change to Hydro Tasmania's flow release conditions that are under trial and will remain in place year around until the Draft Amended Plan takes effect. Further information on the trial arrangements is presented in NRE Tas, 2022, Section 14. Option A was trialled from December to May in 2020/2021 and 2021/2022. Option B was trialled from December to May 2022/2023.

Preferred option

Option B below is chosen as the preferred option.

Assessment and modelling of flow data measured from various gauges in the catchment from 1962 to present, combined with what was found from the trial suggests that the cease-to-take flow threshold of 195 ML/day strikes the appropriate balance to maintain the needs of environmental values while continuing to provide equitable and highly reliable water access for essential and commercial needs.

This option:

- Maintains the status quo with the current Plan when flow releases at the Liena stream flow gauge were equal to or greater than 173 ML/day.
- Aligns with environmental flow recommendations and conclusions from previous studies for a minimum 173 ML/day at the Liena gauge, plus 22 ML/day from tributary and groundwater inflows by the time they reach the Shale Road stream flow gauge.
- Does not manage the Plan area based on flows in the Arm River which now does not contribute to, or align with, flows or extraction levels within the Plan area.
- Provides exceptionally good reliability of water access for commercial and irrigation water users based on current levels of water extraction.
- Provides equity between tributary and main stem water users. A lower cease-to-take would not effectively manage water extraction from the tributaries or effectively manage extraction for values in the lower part of the main channel during low flows.

Table 3. Summary of positive and negative impacts under the existing provision with the old release conditions and each option under economic, environmental, and social headings.

<p>CURRENT PLAN – No Change: No change to the existing Plan’s access provisions (apply rule 3.6 and rule 3.9 as per the current Plan).</p>	<p>OPTION A – Cease-to-take of 195 ML/day at Mersey River at Shale Road stream flow gauging station, reduced cease-to-take to 185 ML/day when Arm River gauge falls below 21 ML/day, with Hydro Tasmania’s 160 ML/day environmental release (this option has been determined to be fatally flawed due to the Arm River having no impact on the main stem of the Mersey River).</p>	<p>OPTION B – Cease-to-take threshold of 195 ML/day at Mersey River at Shale Road stream flow gauging station, with Hydro Tasmania’s 160 ML/day environmental release.</p>
Positive impacts		
<p><i>Economic</i></p> <ul style="list-style-type: none"> • The current arrangements are familiar to existing water users and this option (no change) will not require any adjustments. • When flow release is lower from Lake Parangana with the existing cease-to-take thresholds, assessments show that reliability of access for those with Surety Level 5 under the current Plan is 97 to 100%. 	<p><i>Economic</i></p> <ul style="list-style-type: none"> • Similar highly reliable levels of water access to the current arrangements and will not require major change to operational arrangements, but with a higher environmental release during very low flow conditions. • Compared to the current Plan Option A removes complication and confusion and is significantly easier to interpret and apply with less administrative burden on water users and managers compared to the current Plan. • Assessment of reliability of access to water users shows that Option A has a 95 to 100% access for water users with Surety Level 5 allocations, which slightly higher than the existing Plan in most months except March (see supporting information below, NRE Tas 2022, Section 16). • Transmission loss is likely to be lower due to baseflows being maintained by Hydro Tasmania at a higher level during dry periods than in the current Plan. <p><i>Environmental, Economic & Social</i></p> <ul style="list-style-type: none"> • An improved base flow outcome at the Liena gauge and down the Mersey River during periods when the Arm River flow is below 21 ML/day as there will be no reduction in flow release cost to water users. • Hydro Tasmania’s Special Licence Agreement conditions not being in the Plan means there is flexibility to amend the conditions if required outside of the ten-year planning cycle in the same way as other licences, if required. • Is clear on how supply volumes should be accounted for at flow measurement points. 	<p><i>Economic</i></p> <ul style="list-style-type: none"> • Similar highly reliable levels of water access to the current arrangements and will not require major change to operational arrangements, but with a higher environmental release during very low flow conditions. • Compared to both the current Plan and Option A, Option B removes complication and confusion and is significantly easier to interpret and apply with less administrative burden on water users and managers. • Two independent analyses were undertaken to assess reliability of access under Option B. The first assessment was undertaken on a monthly basis and showed access is 94 to 100% reliable for water users with Surety Level 5 allocations which may be slightly less reliable than the existing Plan from January to March and slightly more in December, April and May. The second more detailed assessment showed a seasonal reliability of access of 99%, which is higher than the current Plan. Generally, the assessments suggest reliability of access is comparable to those in the existing Plan (see supporting information below, NRE Tas 2022, Section 16, NRE Tas 2022, Section 15). • Transmission loss is likely to be lower due to baseflows being maintained by Hydro Tasmania at a higher level during dry periods than in the current plan. <p><i>Environmental, Economic & Social</i></p> <ul style="list-style-type: none"> • Applying restrictions based on flow gauges within the catchment (removing any rules based on flows in Arm River) will mean flow management is more effectively linked to flow conditions and water use within the Plan area. This is an improvement on both the current Plan and Option A. • An improved base flow outcome at the Liena gauge and down the Mersey River during periods when the Arm River flow is below 21 ML/day as there will be no reduction in flow release, as required in section 3.6 in the current Plan at no cost to water users. • Hydro Tasmania’s Special Licence Agreement conditions not being in the Plan means there is flexibility to amend the conditions if required outside of the ten-year planning cycle in the same way as other licences, if required. <p><i>Environmental and Social</i></p> <ul style="list-style-type: none"> • Aligns with environmental flow recommendations and conclusions from previous studies for a minimum 173 ML/day at the Liena gauge plus 22 ML/day from tributary and groundwater inflows by the time they reach the Shale Road stream flow gauge. • May be slightly less risk to flows in tributaries during very low flow conditions compared to Option A, as reliability to water users may be

<p>CURRENT PLAN – No Change: No change to the existing Plan’s access provisions (apply rule 3.6 and rule 3.9 as per the current Plan).</p>	<p>OPTION A –Cease-to-take of 195 ML/day at Mersey River at Shale Road stream flow gauging station, reduced cease-to-take to 185 ML/day when Arm River gauge falls below 21 ML/day, with Hydro Tasmania’s 160 ML/day environmental release (this option has been determined to be fatally flawed due to the Arm River having no impact on the main stem of the Mersey River).</p>	<p>OPTION B – Cease-to-take threshold of 195 ML/day at Mersey River at Shale Road stream flow gauging station, with Hydro Tasmania’s 160 ML/day environmental release.</p>
		<p>slightly more in some months (See supporting information below, NRE Tas 2022, Section 16).</p>
<p>Negative impacts</p>		
<p><i>Social and Environmental</i></p> <ul style="list-style-type: none"> • More risk to Surety 1 water users and the environment (Surety 2) in the Mersey River than other options depending on the flow in the Arm River and discharge from Lake Parangana. <p><i>Economic, Environmental and Social</i></p> <ul style="list-style-type: none"> • The access rules are confusing and complicated and can be applied and interpreted inconsistently or applied in a discretionary way which creates uncertainty for water users and managers. • The plan is not clear on how supply volumes should be accounted for at flow measurement points when applying the rules. • The Arm River used to manage the cease-to-take threshold during low flows is outside the Plan area (is located in an elevated, inland area of the upper Mersey River catchment) and does not necessarily align with flows or extraction conditions within the Plan area. • The flow in the Arm River changes daily when flows are below 21 ML/day demanding a lot of time and management by Hydro Tasmania, the Department and water users to cater for the daily variability. <p><i>Economic</i></p> <ul style="list-style-type: none"> • Assessment shows that reliability of access per month under the current Plan is 97 to 100% 	<p><i>Economic, Social and Environmental</i></p> <ul style="list-style-type: none"> • This option applies a reduction in the cease-to-take threshold that is based on flows in the Arm River, a flow gauge outside the Plan area, which does not contribute to or necessarily align with flows in the Plan area. Like the current Plan, flow management is not linked to flow conditions and water use within the Plan area. In comparison Option B does not use the Arm River for flow management within the Plan area. <p><i>Social and Environmental</i></p> <ul style="list-style-type: none"> • Assessments show there may be slightly more risk to Surety 1 water users and the environment (Surety 2) in the tributaries than Option B because the reliability to water users in some months may be slightly better (see supporting information below, NRE Tas 2022, Section 16). • The risk associated with dropping the cease-to-take threshold to less than 195 ML/day is unknown as there have been no environmental flows assessments in the lower river. <p><i>Economic</i></p> <ul style="list-style-type: none"> • Using this lower cease-to-take flow threshold would not lead to effective management of water extraction from the tributaries or effectively manage extraction for values in the lower part of the main channel during low flows. 	<p><i>Social and Environmental</i></p> <ul style="list-style-type: none"> • Assessments may show slightly more risk to Surety 1 water users and the environment (Surety 2) in the tributaries than the current Plan in some months because water access to commercial water users may be slightly better in those months. However, overall results of the assessments are generally comparable with the existing Plan (NRE Tas 2022, Section 16, NRE Tas 2022, Section 15). <p><i>Economic</i></p> <ul style="list-style-type: none"> • Two independent analyses were undertaken to assess reliability of access under Option B. The first assessment was undertaken on a monthly basis and showed access is 94 to 100% reliable for water users with Surety Level 5 allocations, which may be slightly less reliable than the existing Plan from January to March and slightly more in December, April and May. The second more detailed assessment showed a seasonal reliability of access of 99% which is higher than the current Plan. Generally, the assessments suggest reliability of access is comparable to those in the existing Plan (See supporting information, NRE Tas 2022, Section 16, NRE Tas 2022, Section 15).

Related objectives in the Plan

1. Support the community and the Department to be accountable for water use and management through access and sharing of information to support engagement, review and improvement of water management.
2. Ensure that water access for essential needs of the community (including Surety 1 – town water and, stock and domestic access by riparian properties) is not impacted by lower surety use.
3. Maintain daily and seasonal extraction of non-essential water from the water resource (Surety Levels 5-6) at levels that protect key elements of stream flow and groundwater regimes by implementing access rules under this Plan in order to cause no material or serious harm to existing freshwater-dependent ecosystem values and processes outlined in section 3.1 of this Plan.
4. Maintain fair and orderly access to the water resource for agriculture and other consumptive water uses by defining classes of water entitlement, access rules and priorities for water access when water availability is limited.
5. Define classes of water entitlements and access rules to facilitate operation of a secure and accountable water supply system and market.

Supporting information

Two independent analyses were undertaken to assess reliability of access under Option B.

- Analysis 1 – Table 4 presents the theoretical days of access (percent of days) per month from December to May for irrigation and commercial water users with Surety Level 5 allocations for a cease-to-take under the current plan rules, and two options under assessment for the review using flows from 2005 to 2020. (NRE Tas 2022 Section 16).
- Analysis 2 – A subsequent assessment of Option B was undertaken on all available records from 1962 to 2022 and showed when flows were at or above 173 ML/day in the Mersey River at the Liena gauge, flows at the Shale Road gauge between December and May were above the cease-to-take threshold of 195 ML/day 99% of the time. The analysis also included a number of notably dry periods. (NRE Tas 2022 Section 15).

Table 4 Summary of theoretical days of access (percent of days) per month for irrigation and commercial water users with Surety Level 5 allocations for a cease-to-take under the current plan rules, and two options under assessment (NRE Tas 2022 Section 16).

Period	CURRENT PLAN – No Change: No change to the existing Plan’s access provisions (apply rule 3.6 and rule 3.9 as per the current Plan).	OPTION A – Trialled arrangements: Cease-to-take of 195 ML/day at Mersey River at Shale Road stream flow gauging station, reduced cease-to-take to 185 ML/day when Arm River gauge falls below 21 ML/day, with Hydro Tasmania’s constant 160 ML/day environmental release (this option has been determined to be fatally flawed due to the Arm River having no impact on the main stem of the Mersey River).	OPTION B – Cease-to-take threshold of 195 ML/day at Mersey River at Shale Road stream flow gauging station, with Hydro Tasmania’s constant 160 ML/day environmental release.
December	97%	98%	98%
January	97%	98%	95%
February	97%	97%	95%
March	97%	95%	94%
April	99%	100%	100%
May	100%	100%	100%

DPIWE 2005. Mersey Water Management Plan. Department of Primary Industries, Water and Environment, Hobart, Tasmania. Page 11 Sections 3.6 and 3.9.

NRE Tas 2022 Mersey River Catchment Water Resources Information. Review and Amendment of the Mersey River Catchment Water Management Plan. Department of Natural Resources and Environment Tasmania.

- **Section 15** Comparison of flows in the Mersey River at Liena and Shale Road gauges and an assessment of tributary flow data and pickup.
- **Section 16** Reliability assessment of the trial summer cease-to-take for the Mersey River catchment water management plan review. *Mersey River Catchment Water Resources Information. Review and Amendment of the Mersey River Catchment Water Management Plan.* Department of Natural Resources and Environment Tasmania.
- **Section 14** Trial of changes to water management in the Mersey River Catchment. *Mersey River Catchment Water Resources Information. Review and Amendment of the Mersey River Catchment Water Management Plan.* Department of Natural Resources and Environment Tasmania.

5 Monthly cease-to-take thresholds from June to November

Issue

The cease-to-take thresholds in winter are inconsistent

Stakeholders are not sure if the thresholds are too high or too low in some months.

The current thresholds are based on the Instream Flow Incremental Methodology (IFIM). Are the cease-to-take thresholds optimal and consistent with more contemporary approaches?

Comparison of options

Current Plan - No change

No change to the current monthly cease-to-take thresholds - June to November.

Option A

Revised and more consistent cease-to-take thresholds based on flow percentiles³.

The differences in flow thresholds are shown in Table 5 below.

The positive and negative aspects of each option is presented in Table 6 below.

³ A percentile is the percentage of the time that the flow is exceeded in a month based on the historic flow records.

Table 5. Monthly low flow thresholds for June to November in the Mersey River catchment based on the mean daily flow records from the Mersey River stream flow gauging station 1 July 1999 to 30 June 2020 (refer to NRE Tas 2022, Section 13.3).

Month	Cease-to-take thresholds at Shale Road stream flow gauging station (ML/day)			
	Cease-to-take thresholds in the Mersey WMP 2005	Percent of time that flows exceed threshold	OPTION A – Proposed revised cease-to-take	Percent of time that flows exceed threshold
June	370	90%	330	95%
July	570	93%	540	95%
August	680	95%	660	96%
September	680	90%	580	95%
October	370	97%	370	97%
November	260	97%	260	97%

Preferred option

Option A is chosen as the preferred option.

This option provides a consistent level of access and consistent protection of monthly baseflow variation in all months when flows are low.

Table 6. Summary of positive and negative impacts of each option under economic, environmental and social headings.

CURRENT PLAN – No change (existing winter cease-to-take thresholds)	OPTION A – Revised and more consistent cease-to-take thresholds based on flow percentiles.
Positive impacts	
<p><i>Economic</i></p> <ul style="list-style-type: none"> • Maintains the ‘<i>status quo</i>’ and does not change management requirements for existing water users that have been implemented since the adoption of the current Plan. • No new administrative arrangements or requirements for water users. <p><i>Environmental</i></p> <ul style="list-style-type: none"> • Slightly less risk to ecological values and processes in low flow conditions in months between June to September, compared to Option A. 	<p><i>Economic</i></p> <ul style="list-style-type: none"> • A consistent level of reliability of access for water users for each month that protects all levels of surety in an equivalent way each month. • Improved water access in low flow conditions for the months where the threshold has been that have been changed. • Encourages more sustainable and efficient use of the water resource and mitigates against future risks to water security arising from increased demand and climate variability. • Provides security for commercial water access during low flow periods through clear and consistent cease-to-take rules. • Consistent and clearly quantified access thresholds that are related to water access risk in each month. • More consistent risk of access between months will better inform and support water management and water development investment decisions by water users. • More consistent access thresholds will also support clearer evaluation of trends in access, flow and river health in the system to support future water planning and management decisions. <p><i>Environmental</i></p> <ul style="list-style-type: none"> • Consistent with contemporary policy and the Tasmanian Environmental Flows Framework. • Low flow thresholds consistently manage the risk of water extraction extending the periods of naturally low flows (when flows in the system naturally falls below the cease-to-take thresholds without extraction). • The more consistent approach means that the risk is managed consistently in each month to sustain ecological processes, maintain genetic diversity and

CURRENT PLAN – No change (existing winter cease-to-take thresholds)	OPTION A – Revised and more consistent cease-to-take thresholds based on flow percentiles.
	minimise the risk of impacts on water quality (NRE Tas 2022, Section 13 Water Regime).
Negative impacts	
<p><i>Economic</i></p> <ul style="list-style-type: none"> • Slightly less than optimal access to water for commercial water users during low flow periods compared to the access provided under contemporary policy – Option A. • Greater likelihood of restrictions occurring in months that have lower reliability. Restrictions present a potential negative impact on direct takers who do not have storage or alternative sources of water supply and rely on direct access in winter irrigate. <p><i>Administrative</i></p> <ul style="list-style-type: none"> • Increased surveillance, engagement and administration in winter for NRE Tas as the regulator. <p><i>Environmental</i></p> <ul style="list-style-type: none"> • Does not consistently reflect the natural monthly variability of riverine low flow patterns (NRE Tas 2022, Section 13.2). 	<p><i>Environmental</i></p> <ul style="list-style-type: none"> • Slightly higher risk to ecological values and processes in low flow conditions, compared to current Plan.

Related objectives in the Plan

1. Support the community and the Department to be accountable for water use and management through access and sharing of information to support engagement, review and improvement of water management.
2. Ensure that water access for essential needs of the community (including Surety 1 – town water and, stock and domestic access by riparian properties) is not impacted by lower surety use.
3. Maintain daily and seasonal extraction of non-essential water from the water resource (Surety Levels 5-6) at levels that protect key elements of stream flow and groundwater regimes by implementing access rules under this Plan to cause no material or serious harm to existing freshwater-dependent ecosystem values and processes outlined in section 3.1 of this Plan.
4. Maintain fair and orderly access to the water resource for agriculture and other consumptive water uses by defining classes of water entitlement, access rules and priorities for water access when water availability is limited.
5. Define classes of water entitlements and access rules to facilitate operation of a secure and accountable water supply system and market.

Supporting information

NRE Tas 2022 Section 13 Water Regime. *Mersey River Catchment Water Resources Information*. Review and Amendment of the Mersey River Catchment Water Management Plan. Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania.

NRE Tas 2023a *Draft Amended Mersey River Catchment Water Management Plan*. Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania.

NRE Tas 2023c Section 1.3 Staged restriction protocol for June to November. *Mersey River Catchment Water Management Protocols*. Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania.

6 Opportunistic flow – access threshold

Issue

Opportunistic access is not included in current Plan and should be considered as there is considerable opportunity to enable improved access to water during very high flow conditions with no material risk to the environment or other water users.

Comparison of options

Current Plan - No change

No Opportunistic (very high flow) access provided in the Plan.

Option A

Opportunistic take threshold of 15,000 ML/day, measured at the Mersey River at Shale Road stream flow gauging station, to provide access to water by licensees when the tributaries are flooding, and the river is very high.

The 15,000 ML flow threshold has an average recurrence of 1 in 1.4 years and is a bank full threshold in the vicinity of most tributaries of the Mersey River.

Option B

Opportunistic take threshold of 21,500 ML/day, measured at the Mersey River at Shale Road stream flow gauging station, to provide access to water by licensees when the tributaries are flooding, and the river is very high.

The 21,500 ML flow threshold has an average recurrence of 1 in 2 years and is a bank full threshold in the vicinity of Shale Road stream flow gauging station.

The differences between the options are presented in Table 7 below.

Preferred option

Option A, below, is chosen as the preferred option.

This option will provide licensees access to additional water when there are very high flows in the Mersey River and the tributaries are in flood, and there is enough water flowing through the system to achieve all the benefits that support the high flow ecological processes and functions.

Opportunistic takes are not authorised as a specific allocation endorsed on a water licence. Rather they are authorised by permission granted under section 90(2) of the *Water Management Act 1999* that will permit any person holding a water licence within the Plan area to take water once the flow threshold is reached. A condition of the permission is that opportunistic takes are accounted for and records kept by licensees.

Authorising takes in high flow periods under formal rules will support better compliance and accountability for water taken during high flow conditions.

Reduces administrative cost and time for regulators and water users who would need to apply for Temporary Water Allocations to take volumes in excess of their allocations during very high flow conditions.

Improving access to water during high flows will support reducing demand and pressure from takes during low flow periods.

Table 7. Summary of positive and negative impacts of each option under economic, environmental and social headings.

CURRENT PLAN – No change (No opportunistic access)	OPTION A – Include a 15,000 ML/day high flow threshold in the Plan	OPTION B – Include a 21,500 ML/day high flow threshold in the Plan
Positive impacts		
<p><i>Environmental</i></p> <ul style="list-style-type: none"> Greater preservation of high (flood) flows in the river, although in most cases, these flows are so high that most dams are filled and spilling before this trigger is hit even with full compliance by dam owners to maximise passing flows through dams. 	<p><i>Economic and Environmental</i></p> <ul style="list-style-type: none"> Water is available more often than Option B (this threshold will be exceeded at a frequency of 1 in 1.4 years versus 1 in 2 years under Option B) (NRE Tas 2022, Section 17). The 1:1.4 year threshold will ensure that floods exceed bank full levels in the tributaries of the Mersey River before opportunistic takes are authorised. Due to the scale of these high flow events, it is unlikely that either Option A or B will impact flood frequency significantly if at all in the tributaries or the main stem of the river. Simpler and less costly for water users and NRE Tas to administer, provides authorisation to legally use water taken in excess of allocations in flood periods. Provides improved transparency and accountability for takes during high flows. Provides access to very high flows for commercial purposes, but only after the high flows have already had a chance to fulfil the ecological functions required for the tributaries i.e. recharging groundwater, flushing and turning over the riverbed to remove silt and fine sediments etc. Given the magnitude of floods in excess of 15,000 ML/day, and the volume of current storage, these takes are likely to have a very low risk of impacting the frequency or duration of these high flow events. 	<p><i>Economic and Environmental</i></p> <ul style="list-style-type: none"> The 1:2 year threshold will ensure that floods exceed bank full levels in the main stem of the Mersey River before opportunistic takes are authorised (NRE Tas 2022, Section 17). Due to the scale of these flood events, it is unlikely that either Option A or B will impact flood frequency significantly if at all in the tributaries or the main stem of the river. Simpler and less costly for water users and NRE Tas to administer, provides authorisation to legally use water taken in excess of allocations in flood periods. Provides improved transparency and accountability for takes during high flows. Access only provided after the high flows have reached a level where they have fulfilled the ecological functions required for the river i.e. recharging groundwater, flushing and turning over the riverbed to remove silt and fine sediments etc. Given the large magnitude of floods, in excess of 21,500 ML/day, and the volume of current storage, these takes are likely to have a very low risk of impacting the frequency or duration of very high flow events.

CURRENT PLAN – No change (No opportunistic access)	OPTION A – Include a 15,000 ML/day high flow threshold in the Plan	OPTION B – Include a 21,500 ML/day high flow threshold in the Plan
	•	
Negative impacts		
<p><i>Economic and administrative</i></p> <ul style="list-style-type: none"> • Ongoing difficulty and poor capacity to account for high flow takes. • The process to authorise opportunistic takes will remain administratively costly and inefficient as approvals must be granted on a case-by-case basis and paid for each time they are applied. • The administrative burden and cost may discourage water users seeking legal authorisation and may lead to lower levels of accountability for very high flow takes. • Legally there will be ongoing poor clarity about the authority to take and use water. 	<p><i>Economic</i></p> <ul style="list-style-type: none"> • These flows have very high volumes over short durations so are only effectively accessed by licensees with large extraction capacity and storage. • Opportunistic access is likely to be highly unreliable. While the statistics may indicate a frequency of 1 in 1.14 years. There is likely that in some years there may be multiple events and then long extended dry periods where no water may be available for several consecutive years (NRE Tas 2022, Section 17). • Accountability and record keeping is required by water users who are authorised to take water opportunistically which may require more work to install gauge boards and storage curves for dams to estimate takes (NRE Tas 2023a, NRE Tas 2023c Section 5). • In the winter months most dams will already be full under existing licensed allocations, so provides no advantage. 	<p><i>Economic</i></p> <ul style="list-style-type: none"> • Water is available less often than Option A (this threshold will be exceeded at a frequency of 1 in 2 years) (NRE Tas 2022, Section 17). • These flows have very high volumes over short durations so are only effectively accessed by licensees with large extraction capacity and storage. • Opportunistic access is likely to be highly unreliable. While the statistics may indicate a frequency of 1 in 2 years it is likely that in some periods of multiple events and then long extended dry periods where no water may be available for several consecutive years. • Accountability and record keeping is required by water users who are authorised to take water opportunistically, which may require more work to install gauge boards and storage curves for dams to estimate takes (NRE Tas 2023a; NRE Tas, 2023c Section 5). • In the winter months most dams will already be full under existing licensed allocations, so provides no advantage.

Related objectives in the Plan

3. Maintain daily and seasonal extraction of non-essential water from the water resource (Surety Levels 5-6) at levels that protect key elements of stream flow and groundwater regimes by implementing access rules under this Plan in order to cause no material or serious harm to existing freshwater-dependent ecosystem values and processes outlined in section 3.1 of this Plan.
4. Maintain fair and orderly access to the water resource for agriculture and other consumptive water uses by defining classes of water entitlement, access rules and priorities for water access when water availability is limited.
5. Define classes of water entitlements and access rules to facilitate operation of a secure and accountable water supply system and market.

Supporting information

Analysis of frequency and travel times

NRE Tas 2022 Section 17 Flood frequency analysis and opportunistic take threshold determination. *Mersey River Catchment Water Resources Information. Review and Amendment of the Mersey River Catchment Water Management Plan.* Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania. Opportunistic takes are not allocated as a volume on water licences. However, the volumes taken must be measured and accounted for in licensee's water use records.

NRE Tas 2023a Part 4.4.3 Opportunistic take threshold *Draft Amended Mersey River Catchment Water Management Plan* Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania.

NRE Tas 2023c Section 5 Accountability and Record Keeping. *Mersey River Catchment Water Management Protocols DRAFT.* Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania.

Current process to authorise additional take

In the Mersey River catchment most dams are instream and capture flood water as it passes through the dams. Currently, water users are not authorised to use water taken inadvertently into their dams in-excess of their current entitlements. To authorise this take, water users currently need to apply for a Temporary Water Allocation from the Operations Branch on an individual basis each time a major flood occurs.

Capacity of registered dams

Based on NRE Tas records, the capacity of all registered storages in the tributaries of the catchment is 9733.4 ML across 473 storages, of which 20 have a capacity between 100 and 720 ML

NRE Tas 2022 Section 11.6 Registered dams. *Mersey River Catchment Water Resources Information. Review and Amendment of the Mersey River Catchment Water Management Plan.* Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania.

7 Groundwater management

Issue

An increase in groundwater use in some parts of the catchment.

Comparison of options

Current Plan - No change

Groundwater licensing retained in the Plan and introduced.

The 2005 Plan states that “a groundwater licensing system may be implemented within the Plan area within the life of the Plan. The licensing system may provide for, but is not limited to, the allocation of water for commercial water use and the establishment of conditions under which wells may be constructed” (DPIWE 2005).

Option A

No groundwater licensing required by the Plan.

The provision under the current Plan is unnecessary and has no statutory effect.

Groundwater regulation is already applied state-wide under the *Water Management Act 1999* and the *Water Management Regulations 2019* and assessment of risk in the Mersey catchment indicates that the current regulations are adequate to manage the current risk. Groundwater risk monitoring is being implemented state-wide. Licensing can be applied under relevant provisions in the Act if the risk increases and does not need to be a provision of the Plan.

The differences between the options are presented in Table 8 below.

Preferred option

Option A is chosen as the preferred option.

Groundwater use has been assessed as low risk and the current level of groundwater regulation in place under the *Water Management Act 1999* and *Water Management Regulations 2019* is adequate to manage the current risks.

Table 8. Summary of positive and negative impacts of each option under economic, environmental and social headings.

CURRENT PLAN – No change. Groundwater licencing retained in the Plan and introduced.	Option A – No groundwater licensing system to be implemented
Positive impacts	
<p><i>Environment</i></p> <ul style="list-style-type: none"> • Applying groundwater licensing now may mean that if risk to groundwater resources increases in the future it can be responded to more quickly. <p><i>Economic</i></p> <ul style="list-style-type: none"> • Will provide greater water security for groundwater users who will have their groundwater use legally recognised and quantified as a water entitlement. • Will support water markets by having all water rights quantified and defined. 	<p><i>Administrative</i></p> <ul style="list-style-type: none"> • No change or adjustment required (administratively or operationally). • Current policies and regulations (without the need for groundwater licensing) can effectively manage the current and foreseeable low level of groundwater risk (<i>Water Management Act, 1999 (Part 7 Wells); Water Management Regulations 2019; NRE Tas 2022, Section 6 Groundwater systems; NRE Tas 2023c Sections 4 & 5</i>). • Does not impose unnecessary administrative cost and burden on water users or regulators. Supports resources to be effectively focused and prioritised to areas of higher groundwater risk in the state.
Negative impacts	
<p><i>Administrative</i></p> <ul style="list-style-type: none"> • Creates large resourcing and administrative burden to water users and NRE Tas, even though the risk of impact is considered to be low and remain low over the life of this current Plan. 	<p><i>Economic and administrative</i></p> <ul style="list-style-type: none"> • Water users are not given a legally defined and quantified water entitlement in the form of a groundwater allocation. <p><i>All</i></p> <ul style="list-style-type: none"> • May take longer to impose a formal groundwater licensing system in the future if it is needed due to an increase in the risk to groundwater resources. However, this can be offset through regulatory measures provided for in the <i>Water Management Act, 1999</i> and <i>Water Management Regulations 2019</i>.

Related objectives in the Plan

1. Support the community and the Department to be accountable for water use and management through access and sharing of information to support engagement, review and improvement of water management.
2. Ensure that water access for essential needs of the community (including Surety 1 – town water and, stock and domestic access by riparian properties) is not impacted by lower surety use.
3. Maintain daily and seasonal extraction of non-essential water from the water resource (Surety Levels 5-6) at levels that protect key elements of stream flow and groundwater regimes by implementing access rules under this Plan in order to cause no material or serious harm to existing freshwater-dependent ecosystem values and processes outlined in section 3.1 of this Plan.
4. Maintain fair and orderly access to the water resource for agriculture and other consumptive water uses by defining classes of water entitlement, access rules and priorities for water access when water availability is limited.
5. Define classes of water entitlements and access rules to facilitate operation of a secure and accountable water supply system and market.

Supporting information

The risk of impact of groundwater extraction on groundwater levels across the catchment is generally low considering the size of the groundwater water resource and the current level of groundwater use.

NRE Tas 2022 Section 6 Groundwater systems. *Mersey River Catchment Water Resources Information*. Review and Amendment of the Mersey River Catchment Water Management Plan. Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania.

NRE Tas 2005 Part 3.7 *Mersey Water Management Plan*. Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania.

Since the 2005 Plan took effect, the regulation of groundwater through the Act and Regulations has been strengthened with the inclusion of well works permitting, licensing for well drillers and accountability.

This risk is currently addressed through permitting of new wells with all applications evaluated by NRE Tas with conditions imposed on the construction of new wells or the potential for refusal if the well is likely to cause an unacceptable or significant impact on current water users or the environment. Restrictions can also be applied as and when required to groundwater as well as surface water if problems emerge and restrictions are warranted.

Water Management Act, 1999 Part 7 Wells

<https://www.legislation.tas.gov.au/view/html/inforce/current/act-1999-045>

Water Management Regulations 2019

<https://www.legislation.tas.gov.au/view/html/inforce/current/sr-2019-037>

The risk in the Plan area needs to be monitored and reviewed as significant changes to groundwater use during the life of the Plan could change the current risk profile. This is supported through the Tasmanian Groundwater Risk Assessment and Management Framework project that is currently under development and is also addressed within NRE Tas, 2023c.

NRE Tas 2023c Section 6.1 Groundwater risk management and evaluation *Draft Mersey River Catchment Water Management Protocols*. Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania.

References

DPIWE 2005 *Mersey Water Management Plan*. Water Assessment and Planning Branch, Department of Primary Industries, Water and Environment, Hobart.

DPIPWE 2020 Surface Water Allocation Decision Framework (<https://nre.tas.gov.au/Documents/Surface%20Water%20Allocation%20Decision%20Framework.pdf>).

NRE Tas 2022 *Mersey River Catchment Water Resources Information*. Review and Amendment of the Mersey River Catchment Water Management Plan. Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania.

NRE Tas 2023a *Draft Amended Mersey River Catchment Water Management Plan 2023*. Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania.

NRE Tas 2023b *Draft Amended Mersey River Catchment Water Management Plan 2023 – Statutory Assessments*. Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania.

NRE Tas 2023c *Mersey River Catchment – Water Management Protocols*. Primary Industries and Water Division. Department of Natural Resources and Environment Tasmania.

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