Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Hakatere / Ashburton River catchment resource consent review 2019:

INFORMATION FOR CONSENT HOLDERS: IMPACTS OF THE CONSENT REVIEWS ON WATER AVAILABILITY

Hakatere / Ashburton consent review

Environment Canterbury is reviewing resource consents that take surface water or stream-depleting groundwater, to implement minimum flow levels for the Hakatere/Ashburton River catchment.

The minimum flow levels were developed with the community and are implemented under the Land and Water Regional Plan, to protect the waterways' values and to ensure there is a reliable source of water for the environment, community and consent holders with water permits in the Hakatere/Ashburton River catchment.

Summary of impacts

This information sheet summarises Environment Canterbury's assessment of the impact of these minimum flow changes for consent holders in each of the eight Surface Water Abstraction Zones in the Hakatere/Ashburton River catchment.

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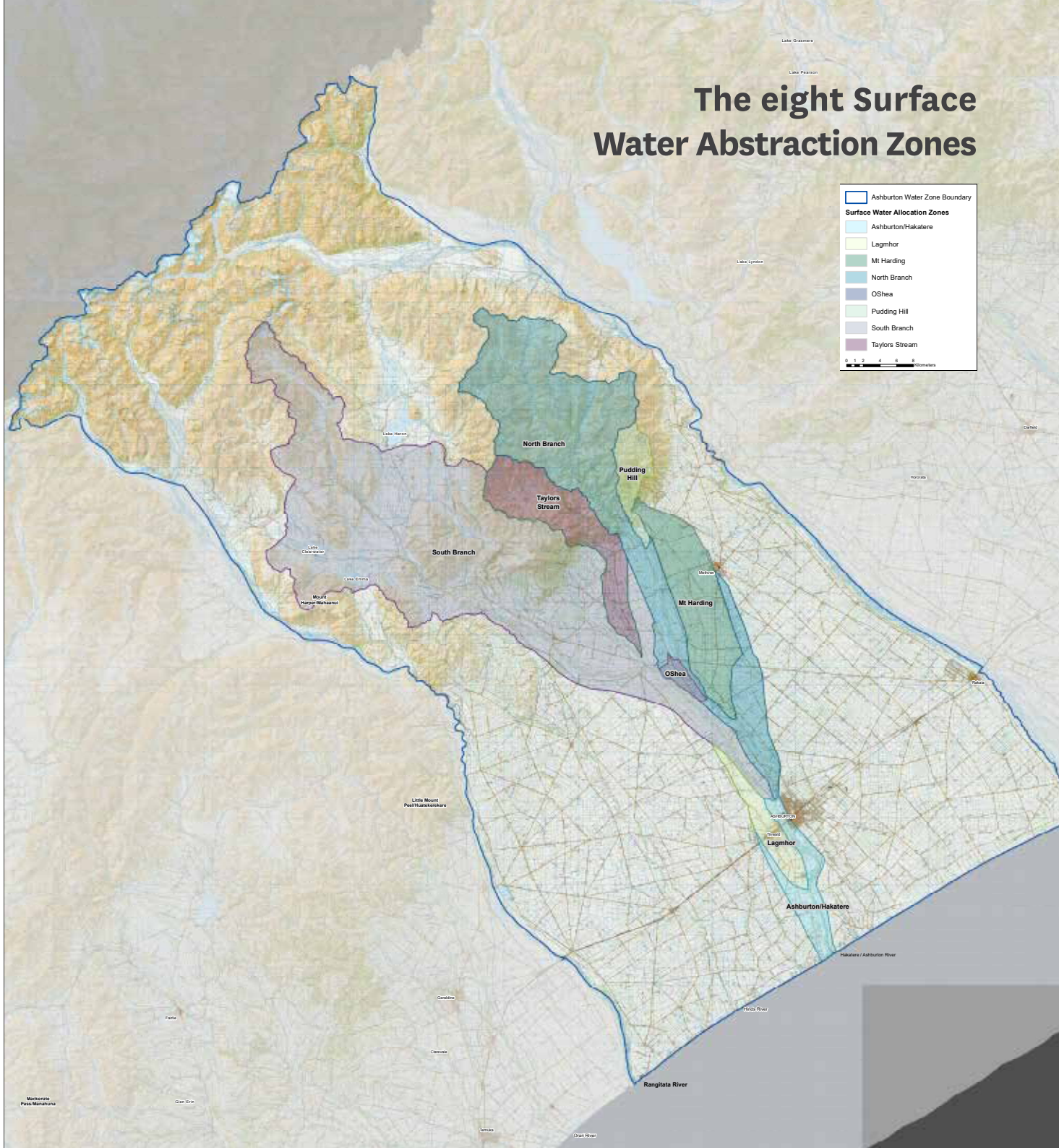


Frequently asked questions

Please visit ecan.govt.nz/Ashburton to download the 'Information sheet for consent holders - Frequently asked questions'.

How will the consent reviews benefit the whole catchment?

The consent reviews will improve water flows throughout the catchment, including the reach from SH1 to the river mouth. There will be more water in the river for longer periods of time, which will enhance habitat, improve water quality through dilution and enable the river mouth to stay open for longer. This will improve the ability of both native and introduced species of fish to move from the sea to the river and within the catchment. It will also improve the habitat for insects living on the riverbed which are food for fish and birds.

The river's minimum flow is when irrigation abstractions must cease. However, the river will still drop below the minimum flow, due to natural processes such as lack of rainfall and unrestricted abstractions. The stepped partial restriction regime (25%, 50% and 75% restrictions) is shown in modelled results as seesawing around the minimum flow – abstractors are switched on and off by taking water one day, inducing a restriction for the next day which then lifts the flow back to where water may again be taken. In practice, where this occurs elsewhere in the region the abstractors manage this process to achieve smoother flows and restrictions.

What minimum flows will apply and are there any exceptions?

The Land and Water Regional Plan ('the Plan') provides minimum flows for each Surface Water Abstraction Zone (SWAZ) . A key difference between the current and Plan minimum flows is that the Plan requires water taken from a tributary to have the Ashburton River mainstem minimum flow applied in addition to the tributary minimum flow.

Stockwater abstractions are an exception to the minimum flow requirements and will continue to not be subject to minimum flow conditions. Another exception is the Rangitata Diversion Race (RDR), which will be subject to a minimum flow downstream of its abstraction point, rather than the Ashburton River mainstem minimum flow.

What will be the impact on the days on restriction under this consent review?

Environment Canterbury's hydrological modelling shows that all consented water abstractions will be impacted. The extent of this impact depends on where in the catchment the water take is located and what, if any, minimum flow restrictions are currently on the resource consent. The largest impact will be on those resource consents which do not currently have a minimum flow.

The impact will vary between wet, average and dry years and the extent of this impact varies across the catchment. For example, some areas are more affected by the Plan 2023 minimum flow in an average season, while others are more affected in a wet or dry season. To clarify, 2015-2016 was a dry season, 2017-2018 was a wetter season and 2011-2012 is a typical average season. It is useful to keep this in mind when looking at the assessments presented in this document.

How do these results differ to 'pre-Plan' modelling?

Although the Plan development work was completed several years ago, only now is Environment Canterbury ready to implement, through this consent review, the 2023 minimum flows set by the Plan. During this time, the amount and type of information available for hydrological modelling has changed significantly. Today, much more reliable water use and river flow data is available to input into the hydrological models.

The pre-Plan modelling was based on an updated flow regime that was slightly different than that recommended by the independent hearings panel and incorporated into the operative Plan.

Another aspect that the pre-Plan modelling suggested was that if reductions could be made from Ashburton District Council (ADC) stockwater intakes at specific points in the catchment, the reliability of water supply to consent holders would not be impacted in a significant way. More recent water use data shows that the ADC reductions recommended have already occurred, or the ADC consented allocation was never fully taken.

Is climate change considered in the modelling?

The modelling uses the last nine years of available data, which includes actual water use data from many abstraction points in the catchment. While this is not a long time in terms of climatic variability, the data includes two very dry seasons, a wet season and several average seasons. An example of this is April 2016 which experienced the lowest flows for the South Ashburton River in 47 years of record. It is estimated this flow has a frequency of 1-in-30-year recurrence.

Seasonal climate variability and climate variability between years are likely more significant and relevant to this model than longer term climate change. Overall climate change predictions by NIWA are that the occurrence of droughts is likely to increase.

Minimum flows: Background information

Currently, there are a wide range of minimum flows on resource consents in the catchment, most of which are inconsistent with the Plan requirements. There are also many resource consents that should have a minimum flow but don't, which is not only inconsistent with the Plan but also with the National Policy Statement for Freshwater Management. This is a key reason why resource consent reviews were proposed by the Ashburton Zone Committee and are being undertaken by Environment Canterbury.

Summary information for each SWAZ is provided on the following pages.

Understanding the water availability information

Each Surface Water Abstraction Zone section in this document contains a hydrograph for 2015-2016 and tables estimating the impact for each season.

The hydrographs show the estimated flows under the current minimum flow regime and the flows expected under the Plan's 2023 minimum flows for the 2015-2016 irrigation season. This irrigation season was particularly dry and, in most cases is a worst-case scenario.

The tables compare the estimated number of days consent holders can expect to be under full or partial restriction under both the current minimum flow conditions on the resource consent and under the Plan 2023 minimum flows. The tables also include the maximum number of consecutive days in full restriction for each irrigation season, shown in the "max duration" column in the tables. The "timing" column shows the month(s) when the longest consecutive period of full restrictions occurs.

The results shown in the tables are for the irrigation seasons only (1 October – 30 April), from the 2010-2011 irrigation season until the 2017-2018 irrigation season. Environment Canterbury has selected this time period to be able to use actual data (flow and use) where possible, which enhances the accuracy and usefulness of the modelling. Actual use data for most water abstractions throughout the catchment has only become available since 2010. Laghmor Creek, where flow data is only available from 2016 onwards, is an exception.

The results for the 2018-2019 irrigation season are currently available up to 31 December 2018.

Water use data shows that usually well less than 50% of water that is consented is used. Environment Canterbury has therefore used the actual use data to assess the change in water availability as a result of implementing the Plan 2023 minimum flows.

The amount of water available for abstraction is limited by either the minimum flow restrictions or by the river being so low that water is not physically available to take. The exception to this is abstraction (such as for stockwater) which does not have minimum flow restrictions and is therefore only limited by the flow in the river.

Surface water allocation zone: Water availability information

Ashburton River mainstem at State Highway One

The flows in the Ashburton River at State Highway One (SH1) are dependent on all that happens in the upper tributaries. The current minimum flows for SH1 are variable throughout the year, from 3,500 litres per second (l/s) in February and March up to 8,000 l/s in September and October. The Plan specifies that the minimum flow will be 6,000 l/s year-round from 1 July 2023 and partial restrictions will be in place when flows are less than 7,275 l/s.

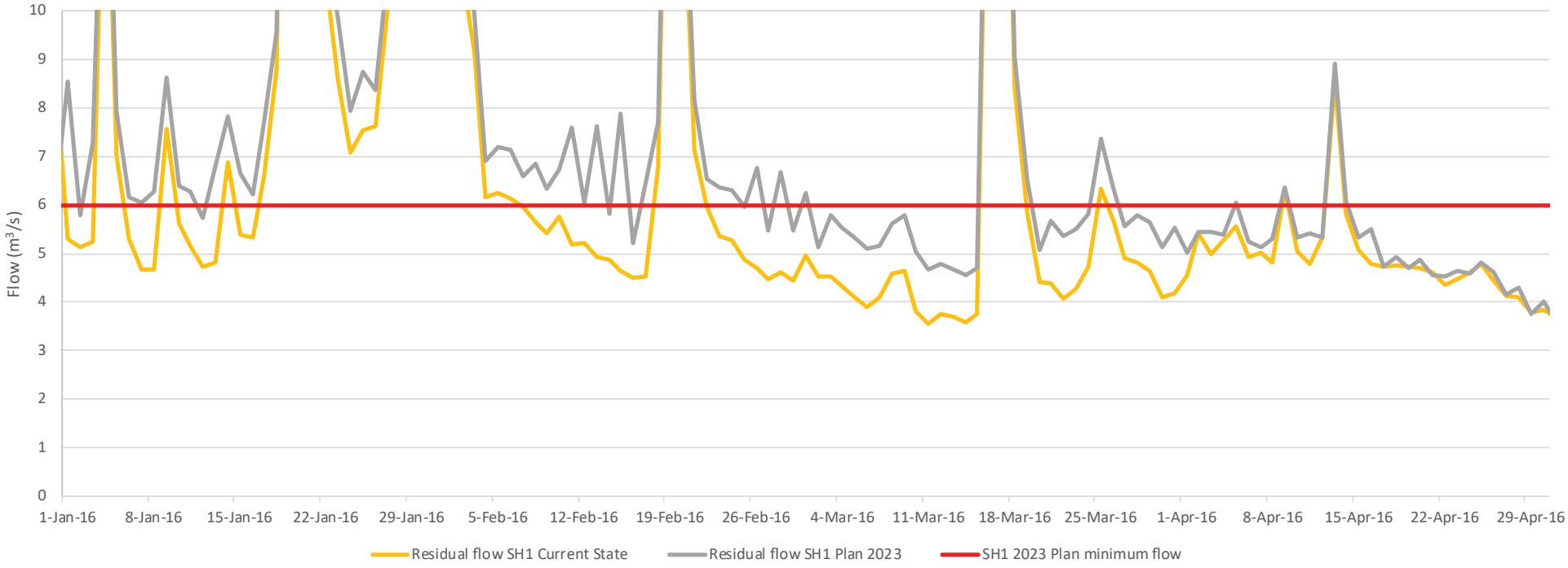
A minimum flow of 6,000 l/s for the Ashburton River mainstem at SH1 is required for the protection of ecological values including:

- Optimising instream habitat for aquatic life, especially insects and fish
- Maintaining upstream migration passage for adult trout and salmon
- Maintaining an open river mouth for an extended period.

A minimum flow of 6,000 l/s is recommended to maintain the river mouth in an open state. Maintaining an open river mouth is essential for fish migration, as well as preventing water quality degradation, which occurs when the mouth is closed. When the river mouth is closed during critical periods such as summer, the life supporting capacity of the river can decrease. Water temperature can increase above the optimal temperature of 20oC for supporting aquatic life, while dissolved oxygen concentrations can decrease below levels that support aquatic life (90% saturation). Critical periods for maintaining an open river mouth include September to November for whitebait migration, and January to March/April for salmon and trout migration, and whitebait spawning.

The hydrograph below shows the estimated flows under the current minimum flow regime and flows expected under the Plan 2023 minimum flow regime at the SH1 recorder.

Graph 1: 2015-16 mainstem at SH1 residual flows



The tables below show the estimated number of days in full and partial restriction under current minimum flow conditions and minimum flow conditions for takes from the Hakatere/ Ashburton River under Plan 2023.

Table 1: Estimated impact on days on restriction for consent holders that take water from the Ashburton River with current SH1 minimum flow conditions (including 50% restrictions)

Irrigation season (Oct – Apr)	Days on Full Restriction						Days on Partial Restriction	
	Current			Plan 2023			Current	Plan 2023
	No. of days	Max Duration	Timing	No. of days	Max Duration	Timing	No. of days	No. of days
2010-11	0	0		0	0		3	15
2011-12	1	1		6	1		4	21
2012-13	7	3	**Apr**	37	8	**Apr**	8	23
2013-14	0	0		7	1		0	9
2014-15	33	1		59	19	**Jan-Feb**	28	21
2015-16	31	14	**Apr**	58	15	**Apr**	32	59
2016-17	0	0		20	7	**Mar**	11	17
2017-18	2	1		7	1		5	2
2018	2	1		0	0		7	0

Note: if you currently have no minimum flow conditions on your consent then you will have no days on full or partial restriction in the 'Current' columns, but the results under the Plan 2023 minimum flows will apply.

Surface water allocation zone: Water availability information

South Branch Ashburton River

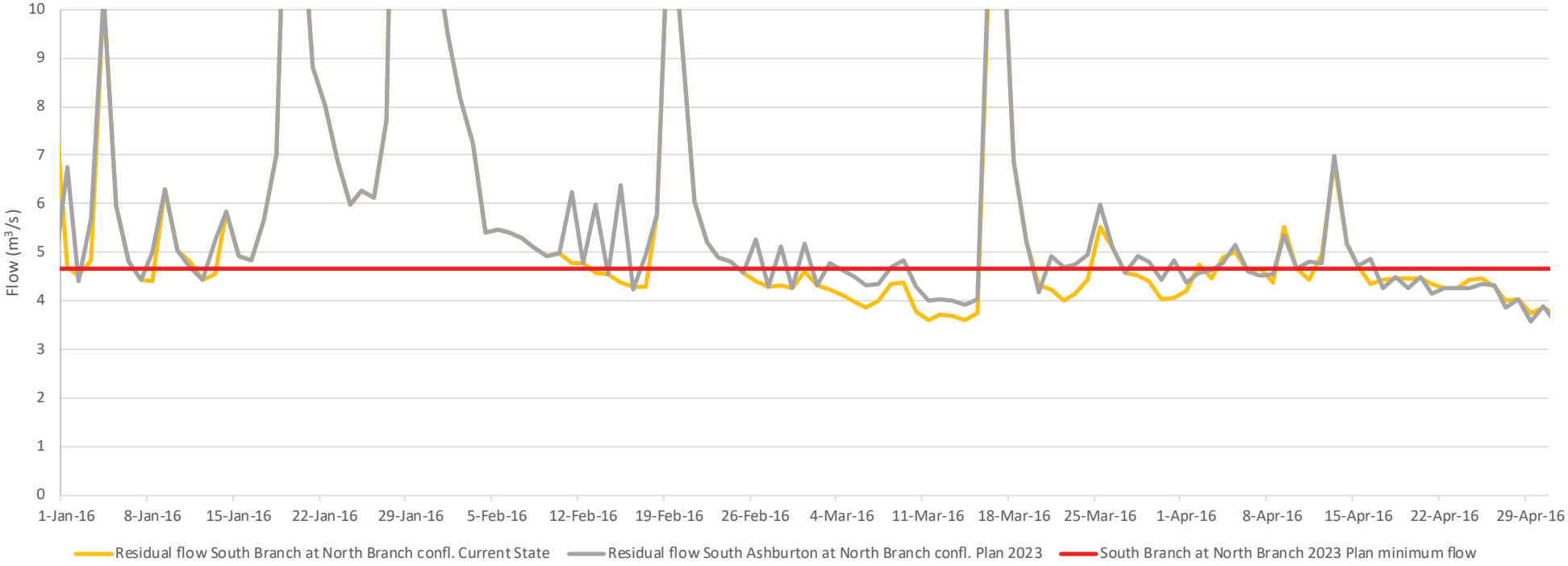
Most water taken from the South Branch of the Ashburton River is taken by Rangitata Diversion Race (RDR) for irrigation and stockwater purposes. RDR currently has the Ashburton River SH1 minimum flow, as well as a minimum flow below its intake. Most other water takes have the Ashburton River SH1 minimum flow only.

The Plan specifies that, from 1 July 2023, the RDR will keep the minimum flow site below the intake, with a higher minimum flow in the critical months of February, March and April, but will not be subject to the Ashburton River SH1 minimum flow or partial restrictions. The remaining takes will have a minimum flow at the South Branch confluence with the North Branch, as well as the Ashburton River SH1 minimum flow and partial restrictions regime.

Fish passage and habitat availability surveys have shown that the Plan 2023 minimum flows for the South Branch will increase the available habitat for trout and their food, will improve the available feeding habitat for wrybills, and will improve passage for salmon.

The hydrograph below shows the estimated flows under the current minimum flow regime and flows expected under the Plan 2023 minimum flow regime as modelled for the South Ashburton at the North Branch Confluence.

Graph 2: 2015-16 South Ashburton at North Branch Confluence residual flows



The tables below show the estimated number of days in full and partial restriction under current minimum flow conditions and under the Plan 2023 minimum flow conditions for takes from the South Branch.

Table 2: Estimated impact on days on restriction for consent holders that take water from the South Branch above or below the RDR with current SH1 minimum flow conditions (including 50% restrictions)

Irrigation season (Oct – Apr)	Days on Full Restriction						Days on Partial Restriction	
	Current			Plan 2023			Current	Plan 2023
	No. of days	Max Duration	Timing	No. of days	Max Duration	Timing	No. of days	No. of days
2010-11	0	0		0	0		3	15
2011-12	1	1		7	1		4	20
2012-13	7	3	**Apr**	37	8	**Apr**	8	23
2013-14	0	0		7	1		0	9
2014-15	33	1		59	19	**Jan-Feb**	28	21
2015-16	31	14	**Apr**	62	15	**Apr**	32	55
2016-17	0	0		20	7	**Mar**	11	17
2017-18	2	1		7	1		5	2
2018	2	1		0	0		7	0

Note: if you currently have no minimum flow conditions on your consent then you will have no days on full or partial restriction in the 'Current' columns, but the results under the Plan 2023 minimum flows will apply.

Table 3: Estimated impact on days on restriction for RDR consent that takes water from the South Branch with current residual flow immediately downstream of the intake and current SH1 minimum flow conditions (including 50% restrictions)

Irrigation season (Oct – Apr)	Days on Full Restriction						Days on Partial Restriction	
	Current			Plan 2023			Current	Plan 2023
	No. of days	Max Duration	Timing	No. of days	Max Duration	Timing	No. of days	No. of days
2010-11	1	1		5	1		3	0
2011-12	1	1		4	1		4	0
2012-13	8	3	Apr	7	1		8	0
2013-14	0	0		0	0		0	0
2014-15	36	1		31	1		27	0
2015-16	33	14	Apr	17	2	Apr	30	0
2016-17	0	0		1	1		11	0
2017-18	2	1		5	1		5	0
2018	2	1		0	0		7	0

Note: LWRP specifies that after 1 July 2023 RDR will be subject to residual flows immediately downstream of take only.

Surface water allocation zone: Water availability information

North Branch Ashburton River

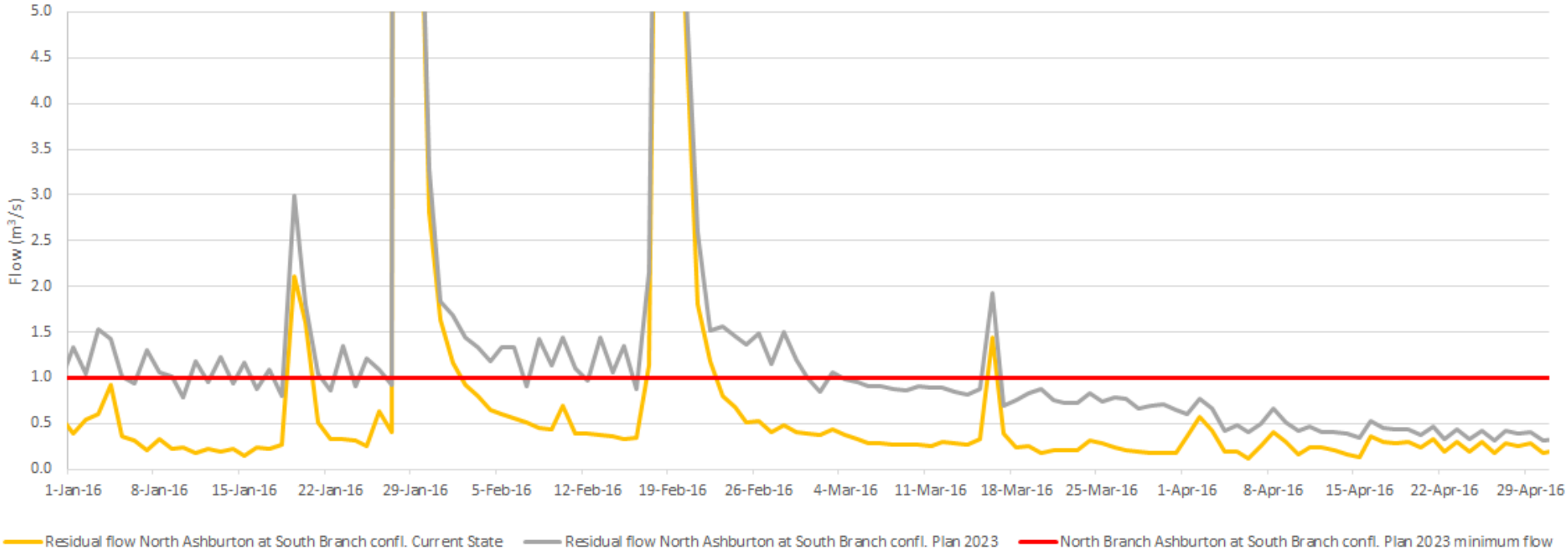
Over half of the water taken from the North Branch of the Ashburton River is for stockwater. A large amount of shallow groundwater is also taken, mostly under resource consents without minimum flows. There is a river reach that frequently dries, sometimes completely, stretching from Shearers Road (below the confluence of O'Shea Creek) to Digby's Road. Mt. Harding Creek joins the North Branch part way down the often-dry reach.

Current consents with minimum flows are mostly attached to the Old Weir site or the Ashburton River SH1 site. The minimum flows that will apply under the Plan from 1 July 2023 are the minimum flow for the North Branch (minimum flow site located at the South Ashburton confluence) as well as the minimum flow and partial restrictions regime for the Ashburton River at SH1.

The minimum flow in the Plan is set at 1,000 l/s from 1 July 2023. This minimum flow will provide more consistent flow in this reach and better connection between the sea and upstream. Additional water flow will increase the available habitat and provide for better fish passage.

The hydrograph below shows the estimated flows under the current minimum flow regime and flows expected under the Plan 2023 minimum flow regime as modelled for the North Ashburton at the South Branch confluence.

Graph 3: 2015-16 North Branch at South Branch confluence residual flows



The tables below show the estimated number of days in full and partial restriction under current minimum flow conditions and under the Plan 2023 minimum flow conditions for takes from the North Branch.

Table 4: Estimated impact on days on restriction for consent holders that take water from the North Branch with current SH1 minimum flows

Irrigation season (Oct – Apr)	Days on Full Restriction						Days on Partial Restriction	
	Current			Plan 2023			Current	Plan 2023
	No. of days	Max Duration	Timing	No. of days	Max Duration	Timing	No. of days	No. of days
2010-11	0	0		45	9	**Apr**	3	14
2011-12	1	1		60	19	**Mar-Apr**	4	12
2012-13	7	3	**Apr**	63	30	**Mar-Apr**	8	9
2013-14	0	0		44	18	**Mar-Apr**	0	4
2014-15	33	1		103	27	**Jan-Feb**	28	10
2015-16	31	14	**Apr**	85	44	**Mar-Apr**	32	45
2016-17	0	0		40	8	**Mar**	11	17
2017-18	2	1		20	6	**Apr**	5	2
2018	2	1		1	1		7	0

Note: if you currently have no minimum flow conditions on your consent then you will have no days on full or partial restriction in the 'Current' columns, but the results under the Plan 2023 minimum flows will apply.

Surface water allocation zone: Water availability information

Pudding Hill Stream

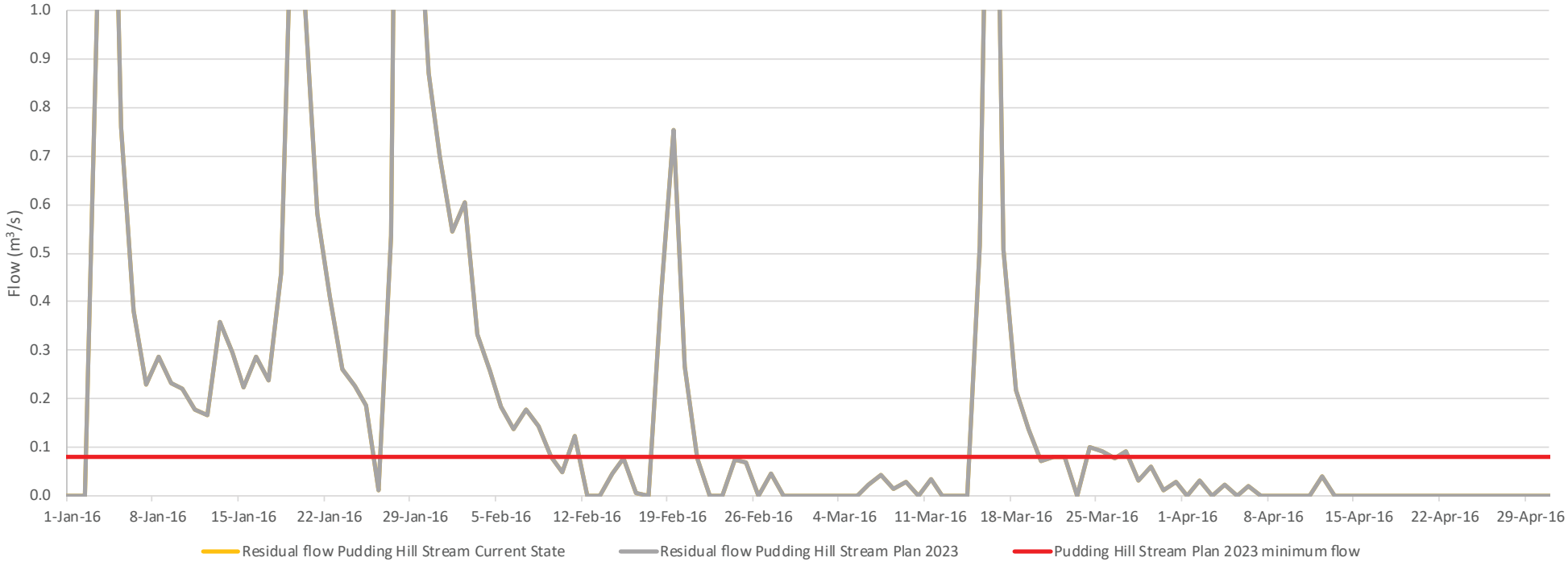
Currently all water taken from Pudding Hill Stream is consented for stockwater and snowmaking purposes. There is also an inactive irrigation consent without a minimum flow condition held by Ashburton District Council. The Plan minimum flow for the tributary is set at 80 l/s from 1 July 2023. As well as the minimum flow for Pudding Hill Stream, a consent to take water from within this SWAZ will also be subject to the Ashburton River mainstem minimum flow and partial restriction regime at SH1.

The minimum flow of 80 l/s for Pudding Hill Stream was set to improve habitat for native fish species, such as Canterbury galaxias and upland bully fish.

The hydrograph below shows the estimated flows under the current minimum flow regime and flows expected under the Plan 2023 minimum flow regime as modelled for Pudding Hill Stream.

No tables are provided for Pudding Hill Stream as all water is either taken for stockwater, which is not subject to a minimum flow, or for snowmaking, which is taken outside of the irrigation season.

Graph 4: 2015-16 Pudding Hill Stream residual flows



Note: no water that is taken from Pudding Hill during the irrigation season is subject to minimum flows, therefore the 'Current State' and 'Plan 2023' residual flow is the same.

Surface water allocation zone: Water availability information

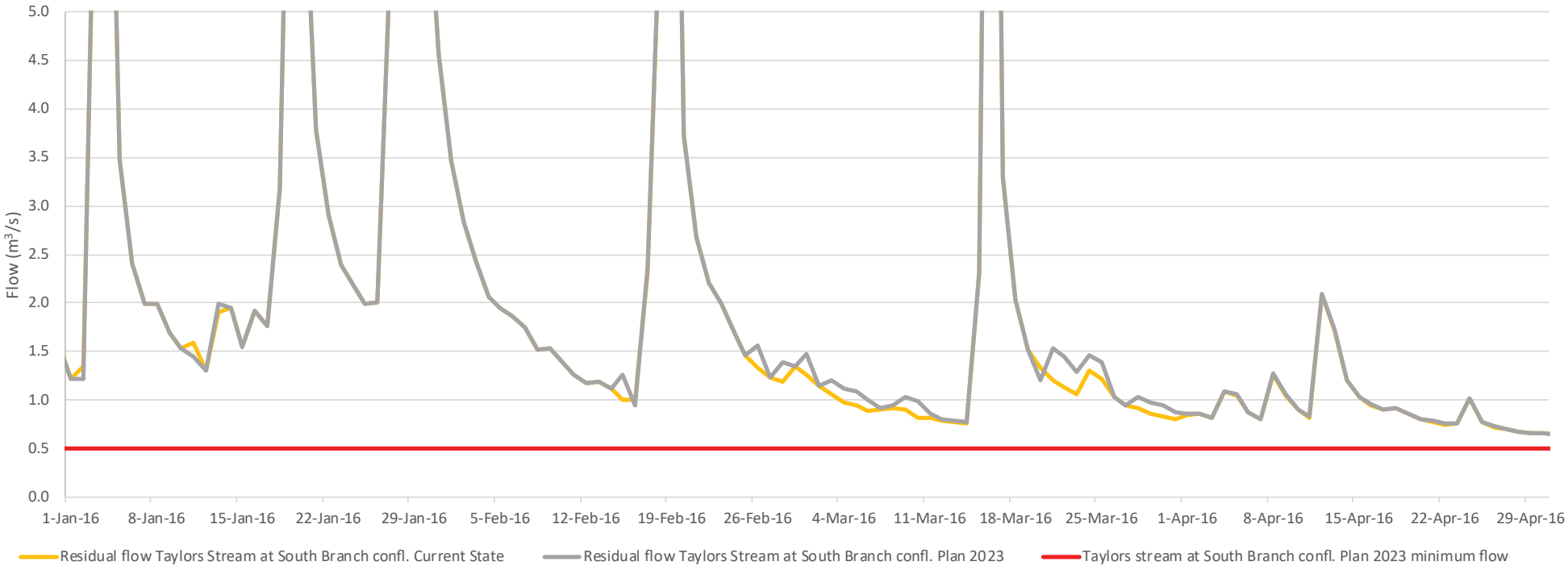
Taylor's Stream

Most of the water allocated in the Taylor's Stream SWAZ is for irrigation purposes, with a few stockwater consents. Currently there are several minimum flow sites associated with different intake points down the stream. All consents in this SWAZ will be subject to the 500 l/s minimum flow at the confluence with the South Branch of the Ashburton River as well as the minimum flow and partial restriction regime for the Ashburton River at SH1.

There will likely be an increase in habitat, and in food-producing habitat availability, with the increased minimum flow.

The hydrograph below shows the estimated flows under the current minimum flow regime and flows expected under the Plan 2023 minimum flow regime as modelled for Taylor's Stream at the South Branch confluence. The restrictions in Taylor's Stream under the Plan 2023 minimum flow will be driven by the Ashburton River SH1 minimum flow, rather than by the Taylor's Stream minimum flow.

Graph 5: 2015-16 Taylors Stream residual flows



The tables below show the estimated number of days in full and partial restriction under current minimum flow conditions and under the Plan 2023 minimum flow conditions for takes from Taylor's Stream.

Table 5: Estimated impact on days on restriction for consent holders that take water from Taylor's Stream associated with current SH1 minimum flows

Irrigation season (Oct – Apr)	Days on Full Restriction						Days on Partial Restriction	
	Current			Plan 2023			Current	Plan 2023
	No. of days	Max Duration	Timing	No. of days	Max Duration	Timing	No. of days	No. of days
2010-11	0	0		0	0		3	15
2011-12	1	1		6	1		4	21
2012-13	7	3	**Apr**	37	8	**Apr**	8	23
2013-14	0	0		7	1		0	9
2014-15	33	1		59	19	**Jan-Feb**	28	21
2015-16	31	14	**Apr**	58	15	**Apr**	32	59
2016-17	0	0		20	7	**Mar**	11	17
2017-18	2	1		7	1		5	2
2018	2	1		0	0		7	0

Note: if you currently have no minimum flow conditions on your consent then you will have no days on full or partial restriction in the 'Current' columns, but the results under the Plan 2023 minimum flows will apply.

Table 6: Estimated impact on days on restriction for consent holders that take water from Taylor's Stream associated with Taylor's Stream minimum flow below B take but abstract above Bowyers confluenceminimum flows

Irrigation season (Oct – Apr)	Days on Full Restriction						Days on Partial Restriction	
	Current			Plan 2023			Current	Plan 2023
	No. of days	Max Duration	Timing	No. of days	Max Duration	Timing	No. of days	No. of days
2010-11	1	1		0	0		0	15
2011-12	1	1		6	1		0	21
2012-13	0	0		37	8	**Apr**	0	23
2013-14	0	0		7	1		0	9
2014-15	57	24	**Jan-Feb**	59	19	**Jan-Feb**	0	21
2015-16	14	5		58	15	**Apr**	0	59
2016-17	11	8		20	7	**Mar**	0	17
2017-18	0	0		7	1		0	2
2018	0	0		0	0		0	0

Note: if you currently have no minimum flow conditions on your consent then you will have no days on full or partial restriction in the 'Current' columns, but the results under the Plan 2023 minimum flows will apply.

Table 7: Estimated impact on days on restriction for consent holders that take water from Taylor's Stream associated with Taylor's Stream minimum flow below B take and SH1 (including 50% restrictions) but abstract above Bowyers confluence

Irrigation season (Oct – Apr)	Days on Full Restriction						Days on Partial Restriction	
	Current			Plan 2023			Current	Plan 2023
	No. of days	Max Duration	Timing	No. of days	Max Duration	Timing	No. of days	No. of days
2010-11	1	1		0	0		3	15
2011-12	1	1		6	1		4	21
2012-13	7	3	Apr	37	8	Apr	8	23
2013-14	0	0		7	1		0	9
2014-15	66	25	Jan-Feb	59	19	Jan-Feb	17	21
2015-16	45	14	Apr	58	15	Apr	28	59
2016-17	11	8		20	7	Mar	6	17
2017-18	2	1		7	1		5	2
2018	2	1		0	0		7	0

Note: if you currently have no minimum flow conditions on your consent then you will have no days on full or partial restriction in the 'Current' columns, but the results under the Plan 2023 minimum flows will apply.

Surface water allocation zone: Water availability information

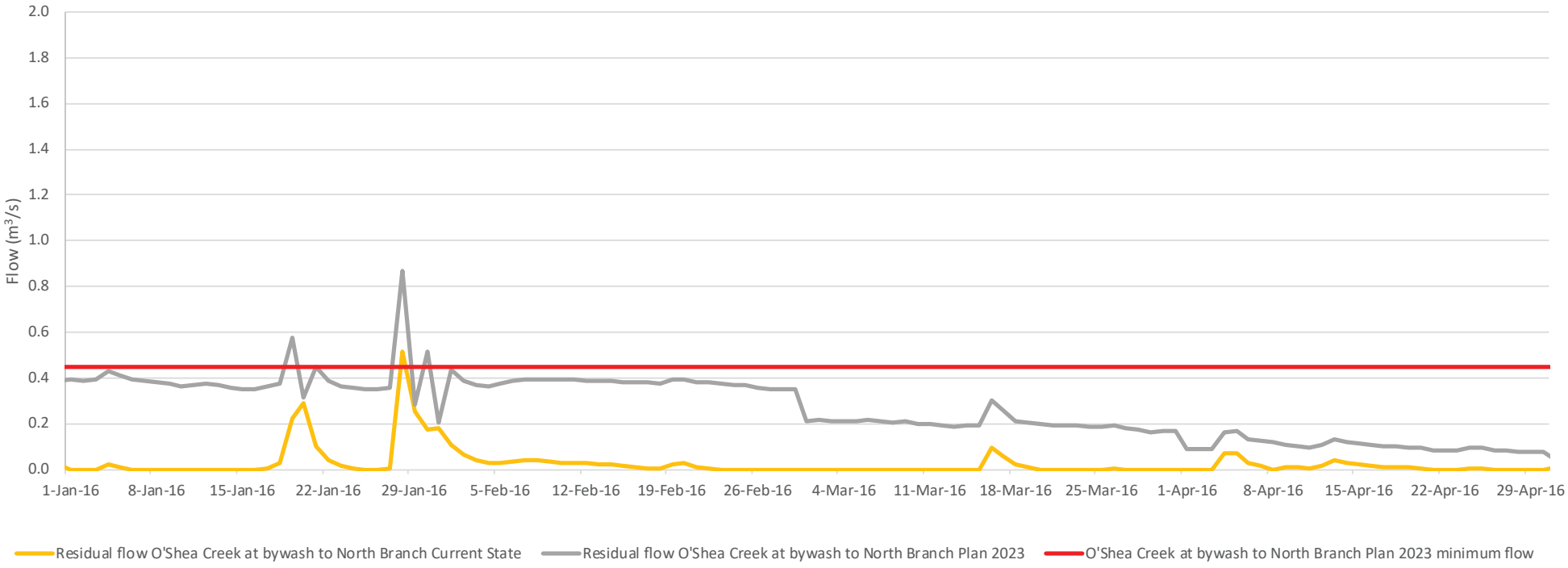
O’Shea Creek

The majority of consented abstraction from O’Shea Creek is by Greenstreet Irrigation (89% of total allocation). The current minimum flow is 50 l/s at Staveley, while the Plan sets a minimum flow of 450 l/s further downstream in the catchment at the North Ashburton bywash. This is to be met by 1 July 2023. Consents to take water from this SWAZ will be subject to the O’Shea Creek minimum flow and the minimum flow and partial flow regime for the Ashburton River at SH1.

The minimum flow of 450 l/s for O’Shea Creek will see ecological gains for trout passage, and enhanced cultural values.

The hydrograph below shows the estimated flows under the current minimum flow regime and flows expected under the Plan 2023 minimum flow regime as modelled for O’Shea Creek at the bywash to the North Ashburton.

2015-16 O’Shea Creek residual flows



The tables below show the estimated number of days on full and partial restriction under current minimum flow conditions and under the Plan 2023 minimum flow conditions for takes from O'Shea Creek.

Table 1: Estimated impact on days on restriction for consent holders that take water from O'Shea Creek associated with current O'Shea minimum flow and SH1 minimum flows and abstract below Staveley

Irrigation season (Oct – Apr)	Days on Full Restriction						Days on Partial Restriction	
	Current			Plan 2023			Current	Plan 2023
	No. of days	Max Duration	Timing	No. of days	Max Duration	Timing	No. of days	No. of days
2010-11	45	2	**Feb-Apr**	180	36	**Oct-Nov**	1	2
2011-12	38	7	**Feb-Apr**	167	22	**Mar-Apr**	2	1
2012-13	101	39	**Oct-Dec**	177	73	**Feb-Apr**	0	0
2013-14	81	15	**Oct-Nov**	138	41	**Mar-Apr**	0	2
2014-15	171	89	**Apr**	163	43	**Dec-Feb**	1	4
2015-16	119	16	**Feb**	210	111	**Oct-Jan**	9	0
2016-17	68	36	**Oct-Dec**	135	37	**Feb-Mar**	0	1
2017-18	33	3	**Feb-Apr**	134	17	**Apr**	2	0
2018	15	5	**Oct-Dec**	41	30	**Oct**	2	0

Note: Current state restrictions are based on O'Shea Creek at Staveley which is much further upstream than the minimum flow site at the bywash to North Ashburton as per Plan 2023.

Note: if you currently have no minimum flow conditions on your consent then you will have no days on full or partial restriction in the 'Current' columns, but the results under the Plan 2023 minimum flows will apply.

Table 2: Estimated impact on days on restriction for consent holders that take water from O'Shea Creek associated with current O'Shea minimum flow and abstract above Staveley

Irrigation season (Oct – Apr)	Days on Full Restriction						Days on Partial Restriction	
	Current			Plan 2023			Current	Plan 2023
	No. of days	Max Duration	Timing	No. of days	Max Duration	Timing	No. of days	No. of days
2010-11	45	2	**Oct**	186	36	**Oct-Nov**	0	1
2011-12	37	6	**Feb**	170	35	**Mar-Apr**	0	1
2012-13	101	39	**Feb-Mar**	177	73	**Feb-Apr**	0	0
2013-14	81	15	**Feb**	138	41	**Mar-Apr**	0	2
2014-15	171	89	**Dec-Mar**	163	43	**Dec-Feb**	0	4
2015-16	115	16	**Mar**	210	111	**Oct-Jan**	0	0
2016-17	68	36	**Feb-Mar**	136	38	**Feb-Mar**	0	1
2017-18	32	1		144	17	**Apr**	0	0
2018	15	5	**Oct**	41	30	**Oct**	0	0

Note: Current state restrictions are based on O'Shea Creek at Staveley which is much further upstream than the minimum flow site at the bywash to North Ashburton as per Plan 2023.

Table 3: Estimated impact on days on restriction for consent holders that take water from O'Shea Creek associated with SH1 minimum flow (including 50% restriction) and abstract above Staveley

Irrigation season (Oct – Apr)	Days on Full Restriction						Days on Partial Restriction	
	Current			Plan 2023			Current	Plan 2023
	No. of days	Max Duration	Timing	No. of days	Max Duration	Timing	No. of days	No. of days
2010-11	0	0		186	36	**Oct-Nov**	3	1
2011-12	1	1		170	35	**Mar-Apr**	4	1
2012-13	7	3	**Apr**	177	73	**Feb-Apr**	8	0
2013-14	0	0		138	41	**Mar-Apr**	0	2
2014-15	33	1		163	43	**Dec-Feb**	28	4
2015-16	31	14	**Apr**	210	111	**Oct-Jan**	32	0
2016-17	0	0		136	38	**Feb-Mar**	11	1
2017-18	2	1		144	17	**Apr**	5	0
2018	2	1		41	30	**Oct**	7	0

Note: if you currently have no minimum flow conditions on your consent then you will have no days on full or partial restriction in the 'Current' columns, but the results under the Plan 2023 minimum flows will apply.

Surface water allocation zone: Water availability information

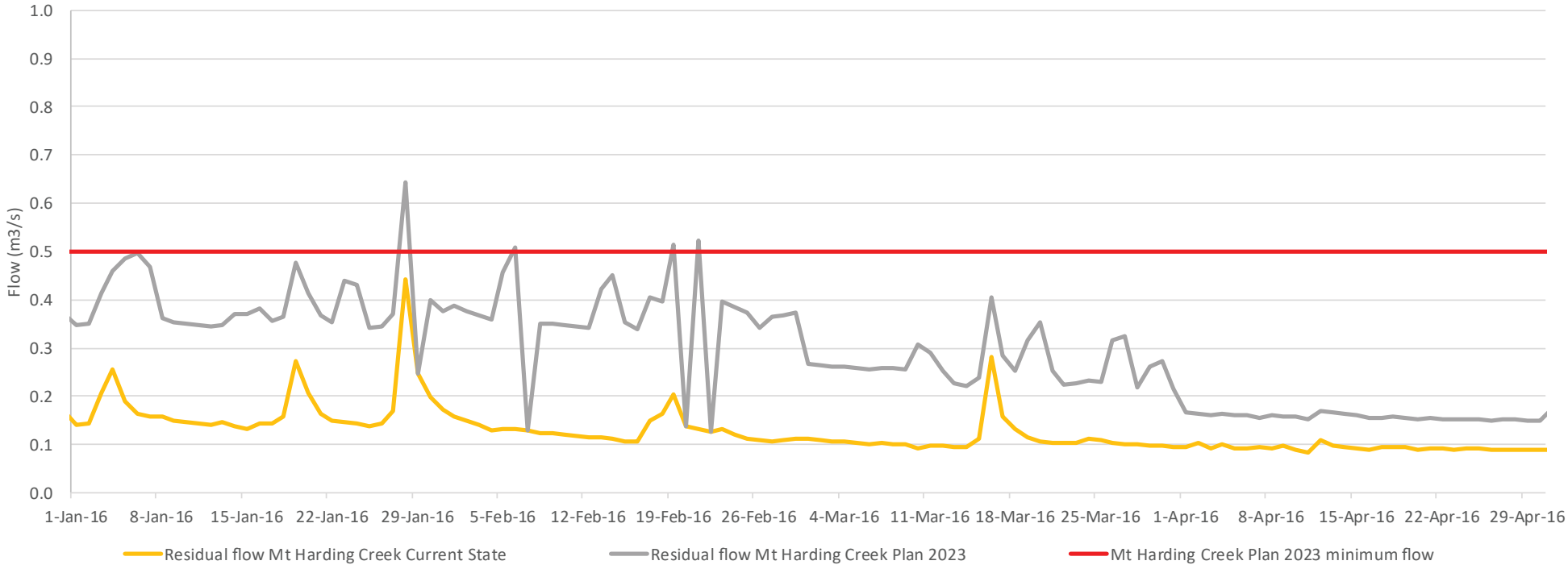
Mt. Harding Creek

There is no current minimum flow set on Mt. Harding Creek, with minimum flow conditions on existing consents connected to the SH1 minimum flow. The Plan sets a minimum flow for Mt. Harding Creek at Aitkens Road at 500 l/s to be met by 1 July 2023. Consents to take and use water from this SWAZ will be subject to the Mt. Harding Creek minimum flow as well as the Ashburton River at SH1 minimum flow and partial restriction regime. Stockwater consents account for more than 1,000 l/s of the total allocation from Mt. Harding Creek.

The minimum flow of 500 l/s for Mt. Harding Creek will benefit the habitat requirements for trout passage to access spawning sites, and enhance cultural values.

The hydrograph below shows the estimated flows under the current minimum flow regime and flows expected under the Plan 2023 minimum flow regime as modelled for Mt. Harding Creek at Aitkens Road.

2015-16 Mt Harding Creek residual flows



The tables below show the estimated number of days on full and partial restriction under the current minimum flow conditions and under the Plan 2023 minimum flow conditions for takes from Mt. Harding Creek.

Table: Estimated impact on days on restriction for consent holders that take water from Mt. Harding Creek associated with current SH1 minimum flows

Irrigation season (Oct – Apr)	Days on Full Restriction						Days on Partial Restriction	
	Current			Plan 2023			Current	Plan 2023
	No. of days	Max Duration	Timing	No. of days	Max Duration	Timing	No. of days	No. of days
2010-11	0	0		101	16	**Mar**	3	6
2011-12	1	1		111	22	**Mar-Apr**	4	3
2012-13	7	3	**Apr**	92	32	**Mar-Apr**	8	5
2013-14	0	0		91	32	**Mar-Apr**	0	2
2014-15	33	1		205	150	**Dec-Apr**	28	0
2015-16	31	14	**Apr**	195	68	**Feb-Apr**	32	3
2016-17	0	0		118	59	**Feb-Mar**	11	0
2017-18	2	1		39	5	**Jan**	5	1
2018	2	1		22	6	**Oct**	7	0

Note: if you currently have no minimum flow conditions on your consent then you will have no days on full or partial restriction in the 'Current' columns, but the results under the Plan 2023 minimum flows will apply.

Surface water allocation zone: Water availability information

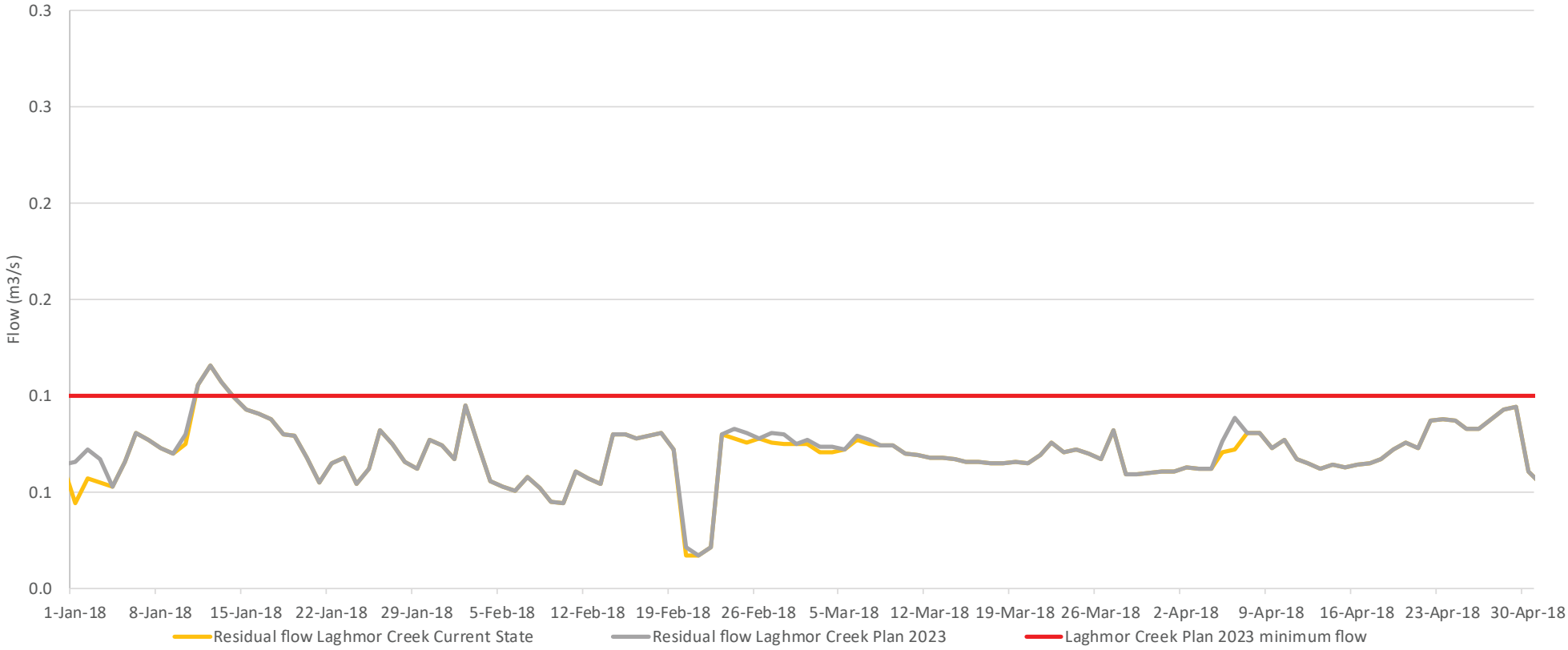
Laghmor Creek

Roughly a third of water taken from Laghmor Creek is for stockwater, with the rest taken for irrigation. Two of these irrigation consents are connected to a minimum flow downstream of the takes, at Frasers Road, while the remaining consents with minimum flows are connected solely to the Ashburton River at SH1 site. The Plan sets the 2023 minimum flow at Frasers Road at 100 l/s and the Ashburton River minimum flow and partial restrictions regime at SH1 that will also apply.

The minimum flow of 100 l/s in Laghmor Creek will have benefits for brown trout spawning and yearling habitat.

The hydrograph below shows the estimated flows under the current minimum flow regime and flows expected under the Plan 2023 minimum flow regime as modelled for Laghmor Creek at Frasers Road.

Graph: 2017-18 Laghmor Creek residual flows



The tables below show the estimated number of days on full and partial restriction under current minimum flow conditions and under the Plan 2023 minimum flows conditions for takes from Laghmor Creek.

Table 1: Estimated impact on days on restriction for consent holders that take water from Laghmor Creek associated with current SH1 minimum flows

Irrigation season (Oct – Apr)	Days on Full Restriction						Days on Partial Restriction	
	Current			Plan 2023			Current	Plan 2023
	No. of days	Max Duration	Timing	No. of days	Max Duration	Timing	No. of days	No. of days
2016-17	0	0		177	136	Dec-Apr	9	1
2017-18	2	1		205	106	Dec-Apr	5	0
2018	2	1		32	20	Nov-Dec	7	1

Table 2: Estimated impact on days on restriction for consent holders that take water from Laghmor Creek associated with Laghmor Creek minimum flow and current SH1 minimum flows flows

Irrigation season (Oct – Apr)	Days on Full Restriction						Days on Partial Restriction	
	Current			Plan 2023			Current	Plan 2023
	No. of days	Max Duration	Timing	No. of days	Max Duration	Timing	No. of days	No. of days
2016-17	25	4		177	136	Dec-Apr	9	1
2017-18	5	3		205	106	Dec-Apr	5	0
2018	2	1		32	20	Nov-Dec	7	1

Note: if you currently have no minimum flow conditions on your consent then you will have no days on full or partial restriction in the 'Current' columns, but the results under the Plan 2023 minimum flows will apply.

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