Upper Takaka Zone

Water Demand

Existing Takes		Waiting List		Future Irrigation	
Surface	333	Surface	120		
Ground	0	Ground	0		
Total	333	Total	120	Total	65

(There is a further 105 l/s on the waiting list in the Middle Takaka zone)

Existing & Waiting 453

Max Demand 518

Flow Statistics and Default Allocations

Statistic	Methodology	% of 5yrLF	l/s	Location
7 day MALF			2380	Harwoods
1 day MALF			1669	Harwoods
1 in 5 Year Low Flow (7 day)			1646	Harwoods
1 in 10 Year Low Flow (7 day)			1397	Harwoods
Allocation default Lower Limit (AL)	10% of 5yr Low Flow	10%	165	Harwoods
Allocation default Upper Limit (AL)	33% of 5yr Low Flow	33%	543	Harwoods

Opportunity for C type takes to storage (over last hydrological year)	
Median flow (l/s)	10100
% of time flow above median flow	52%
Volume of water above median flow for year (million m3)	298

Significance of Ecological Values#	Moderate

 # as assessed by Dr. Roger Young (Freshwater Ecologist, Cawthron - Coastal and Freshwater Group Manager)

Suggested option

Available Water

Regime Option (MF%-AL%)	80%-30%	70%-20%	70%-15%	70%-10%	status quo
Minimum Flow Percentage of MALF	80%	70%	70%	70%	none
Minimum Flow l/s (MF)	1904	1666	1666	1666	none
Allocation Percentage of MALF	30%	20%	15%	10%	14%
Total allocation l/s (AL)	714	476	357	238	333
% of demand met by allocation limit					
% of Existing met	100.0%	100.0%	100.0%	71.5%	100.0%
% of Waiting List met	100.0%	100.0%	20.0%	0.0%	0.0%
% of Future Irrigation met	100.0%	35.4%	0.0%	0.0%	0.0%

Low Flow Management

Regime option	80%-30%	70%-20%	70%-15%	70%-10%	status quo
Risk to instream values (Roger Young's advice)	low-mod	moderate	moderate	moderate	moderate
Rationing Trigger	none	none	none	none	none
Cease Take Trigger l/s (MF + AL)	2618	2142	2023	1904	1657*
Average days below Minimum Flow per yr	12	8	8	8	na

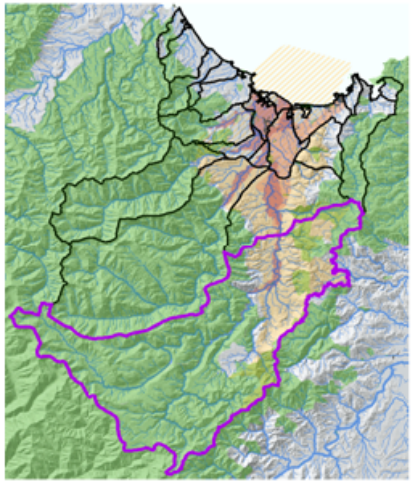
Security of Supply (based on data from 1975-2015 - Nov-April inclusive)

Regime option	80%-30%	70%-20%	70%-15%	70%-10%	status quo*
% of time flows are above cease trigger	87.6%	91.9%	92.9%	93.9%	96.1%

nd = no data available

na = not applicable

** information for 3 large consented takes only*



Summary of the existing takes, amount on the waiting list and amount of future irrigation taken from the plausible irrigation map. All figures in litres per second.

Upper Takaka Zone

Water Demand					
Existing Takes		Waiting List		Future Irrigation	
Surface	333	Surface	120		
Ground	0	Ground	0		
Total	333	Total	120	Total	65

(There is a further 105 l/s on the waiting list in the Middle Takaka zone)

Existing & Waiting 453

Max Demand 518

Flow Statistics and Default Allocations				
Statistic	Methodology	% of 5yrLF	l/s	Location
7 day MALF			2380	Harwoods
1 day MALF			1669	Harwoods
1 in 5 Year Low Flow (7 day)			1646	Harwoods
1 in 10 Year Low Flow (7 day)			1397	Harwoods
Allocation default Lower Limit (AL)	10% of 5yr Low Flow	10%	165	Harwoods
Allocation default Upper Limit (AL)	33% of 5yr Low Flow	33%	543	Harwoods

Opportunity for C type takes to storage (over last hydrological year)	
Median flow (l/s)	10100
% of time flow above median flow	52%
Volume of water above median flow for year (million m3)	298

Significance of Ecological Values#	Moderate

 # as assessed by Dr. Roger Young (Freshwater Ecologist, Cawthron - Coastal and Freshwater Group Manager)

Suggested option

Available Water					
Regime Option (MF%-AL%)	80%-30%	70%-20%	70%-15%	70%-10%	status quo
Minimum Flow Percentage of MALF	80%	70%	70%	70%	none
Minimum Flow l/s (MF)	1904	1666	1666	1666	none
Allocation Percentage of MALF	30%	20%	15%	10%	14%
Total allocation l/s (AL)	714	476	357	238	333
% of demand met by allocation limit					
% of Existing met	100.0%	100.0%	100.0%	71.5%	100.0%
% of Waiting List met	100.0%	100.0%	20.0%	0.0%	0.0%
% of Future Irrigation met	100.0%	35.4%	0.0%	0.0%	0.0%

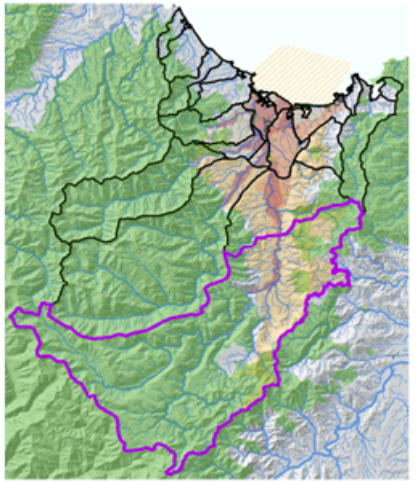
Low Flow Management					
Regime option	80%-30%	70%-20%	70%-15%	70%-10%	status quo
Risk to instream values (Roger Young's advice)	low-mod	moderate	moderate	moderate	moderate
Rationing Trigger	none	none	none	none	none
Cease Take Trigger l/s (MF + AL)	2618	2142	2023	1904	1657*
Average days below Minimum Flow per yr	12	8	8	8	na

Security of Supply (based on data from 1975-2015 - Nov-April inclusive)					
Regime option	80%-30%	70%-20%	70%-15%	70%-10%	status quo*
% of time flows are above cease trigger	87.6%	91.9%	92.9%	93.9%	96.1%

nd = no data available

na = not applicable

** information for 3 large consented takes only*



The various flow statistics for the respective flow measuring sites (locations listed on the right column). The 5 yr low flow stats show the current plan default for comparison.

Upper Takaka Zone

Water Demand					
Existing Takes		Waiting List		Future Irrigation	
Surface	333	Surface	120		
Ground	0	Ground	0		
Total	333	Total	120	Total	65

(There is a further 105 l/s on the waiting list in the Middle Takaka zone)

Existing & Waiting 453

Max Demand 518

Flow Statistics and Default Allocations				
Statistic	Methodology	% of 5yrLF	l/s	Location
7 day MALF			2380	Harwoods
1 day MALF			1669	Harwoods
1 in 5 Year Low Flow (7 day)			1646	Harwoods
1 in 10 Year Low Flow (7 day)			1397	Harwoods
Allocation default Lower Limit (AL)	10% of 5yr Low Flow	10%	165	Harwoods
Allocation default Upper Limit (AL)	33% of 5yr Low Flow	33%	543	Harwoods

Opportunity for C type takes to storage (over last hydrological year)	
Median flow (l/s)	10100
% of time flow above median flow	52%
Volume of water above median flow for year (million m3)	2[illegible]

Significance of Ecological Values#	Moderate

 # as assessed by Dr. Roger Young (Freshwater Ecologist, Cawthron - Coastal and Freshwater Group Manager)

Suggested option

Available Water					
Regime Option (MF%-AL%)	80%-30%	70%-20%	70%-15%	70%-10%	status quo
Minimum Flow Percentage of MALF	80%	70%	70%	70%	none
Minimum Flow l/s (MF)	1904	1666	1666	1666	none
Allocation Percentage of MALF	30%	20%	15%	10%	14%
Total allocation l/s (AL)	714	476	357	238	333
% of demand met by allocation limit					
% of Existing met	100.0%	100.0%	100.0%	71.5%	100.0%
% of Waiting List met	100.0%	100.0%	20.0%	0.0%	0.0%
% of Future Irrigation met	100.0%	35.4%	0.0%	0.0%	0.0%

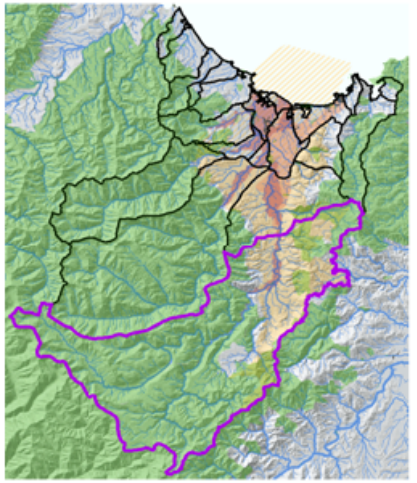
Low Flow Management					
Regime option	80%-30%	70%-20%	70%-15%	70%-10%	status quo
Risk to instream values (Roger Young's advice)	low-mod	moderate	moderate	moderate	moderate
Rationing Trigger	none	none	none	none	none
Cease Take Trigger l/s (MF + AL)	2618	2142	2023	1904	1657*
Average days below Minimum Flow per yr	12	8	8	8	na

Security of Supply (based on data from 1975-2015 - Nov-April inclusive)					
Regime option	80%-30%	70%-20%	70%-15%	70%-10%	status quo*
% of time flows are above cease trigger	87.6%	91.9%	92.9%	93.9%	96.1%

nd = no data available

na = not applicable

** information for 3 large consented takes only*



This part shows the flows above median flows which provides an indication of how applicable takes to storage (C-class permits) would be in the zone

Upper Takaka Zone

Water Demand					
Existing Takes		Waiting List		Future Irrigation	
Surface	333	Surface	120		
Ground	0	Ground	0		
Total	333	Total	120	Total	65

(There is a further 105 l/s on the waiting list in the Middle Takaka zone)

Existing & Waiting 453

Max Demand 518

Flow Statistics and Default Allocations				
Statistic	Methodology	% of 5yrLF	l/s	Location
7 day MALF			2380	Harwoods
1 day MALF			1669	Harwoods
1 in 5 Year Low Flow (7 day)			1646	Harwoods
1 in 10 Year Low Flow (7 day)			1397	Harwoods
Allocation default Lower Limit (AL)	10% of 5yr Low Flow	10%	165	Harwoods
Allocation default Upper Limit (AL)	33% of 5yr Low Flow	33%	543	Harwoods

Opportunity for C type takes to storage (over last hydrological year)	
Median flow (l/s)	10100
% of time flow above median flow	52%
Volume of water above median flow for year (million m3)	298

Significance of Ecological Values#	Moderate

 # as assessed by Dr. Roger Young (Freshwater Ecologist, Cawthron - Coastal and Freshwater Group Manager)

Suggested option

Available Water					
Regime Option (MF%-AL%)	80%-30%	70%-20%	70%-15%	70%-10%	status quo
Minimum Flow Percentage of MALF	80%	70%	70%	70%	none
Minimum Flow l/s (MF)	1904	1666	1666	1666	none
Allocation Percentage of MALF	30%	20%	15%	10%	14%
Total allocation l/s (AL)	714	476	357	238	333
% of demand met by allocation limit					
% of Existing met	100.0%	100.0%	100.0%	71.5%	100.0%
% of Waiting List met	100.0%	100.0%	20.0%	0.0%	0.0%
% of Future Irrigation met	100.0%	35.4%	0.0%	0.0%	0.0%

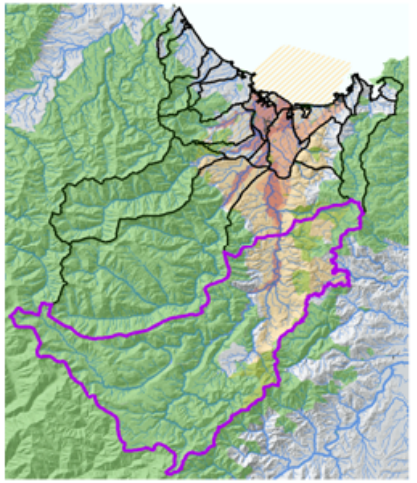
Low Flow Management					
Regime option	80%-30%	70%-20%	70%-15%	70%-10%	status quo
Risk to instream values (Roger Young's advice)	low-mod	moderate	moderate	moderate	moderate
Rationing Trigger	none	none	none	none	none
Cease Take Trigger l/s (MF + AL)	2618	2142	2023	1904	1657*
Average days below Minimum Flow per yr	12	8	8	8	na

Security of Supply (based on data from 1975-2015 - Nov-April inclusive)					
Regime option	80%-30%	70%-20%	70%-15%	70%-10%	status quo*
% of time flows are above cease trigger	87.6%	91.9%	92.9%	93.9%	96.1%

nd = no data available

na = not applicable

** information for 3 large consented takes only*



This is the assessment of ecological values by Roger Young

Upper Takaka Zone

Water Demand					
Existing Takes		Waiting List		Future Irrigation	
Surface	333	Surface	120		
Ground	0	Ground	0		
Total	333	Total	120	Total	65

(There is a further 105 l/s on the waiting list in the Middle Takaka zone)

Existing & Waiting 453

Max Demand 518

Flow Statistics and Default Allocations				
Statistic	Methodology	% of 5yrLF	l/s	Location
7 day MALF			2380	Harwoods
1 day MALF			1669	Harwoods
1 in 5 Year Low Flow (7 day)			1646	Harwoods
1 in 10 Year Low Flow (7 day)			1397	Harwoods
Allocation default Lower Limit (AL)	10% of 5yr Low Flow	10%	165	Harwoods
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Opportunity for C type takes to storage (over last hydrological year)	
Median flow (l/s)	10100
% of time flow above median flow	52%
Volume of water above median flow for year (million m3)	298

Significance of Ecological Values#	Moderate

 # as assessed by Dr. Roger Young (Freshwater Ecologist, Cawthron - Coastal and Freshwater Group Manager)

Suggested option

Available Water					
Regime Option (MF%-AL%)	80%-30%	70%-20%	70%-15%	70%-10%	status quo
Minimum Flow Percentage of MALF	80%	70%	70%	70%	none
Minimum Flow l/s (MF)	1904	1666	1666	1666	none
Allocation Percentage of MALF	30%	20%	15%	10%	14%
Total allocation l/s (AL)	714	476	357	238	333
% of demand met by allocation limit					
% of Existing met	100.0%	100.0%	100.0%	71.5%	100.0%
% of Waiting List met	100.0%	100.0%	20.0%	0.0%	0.0%
% of Future Irrigation met	100.0%	35.4%	0.0%	0.0%	0.0%

Low Flow Management					
Regime option	80%-30%	70%-20%	70%-15%	70%-10%	status quo
Risk to instream values (Roger Young's advice)	low-mod	moderate	moderate	moderate	moderate
Rationing Trigger	none	none	none	none	none
Cease Take Trigger l/s (MF + AL)	2618	2142	2023	1904	1657*
Average days below Minimum Flow per yr	12	8	8	8	na

Security of Supply (based on data from 1975-2015 - Nov-April inclusive)					
Regime option	80%-30%	70%-20%	70%-15%	70%-10%	status quo*
% of time flows are above cease trigger	87.6%	91.9%	92.9%	93.9%	96.1%

nd = no data available

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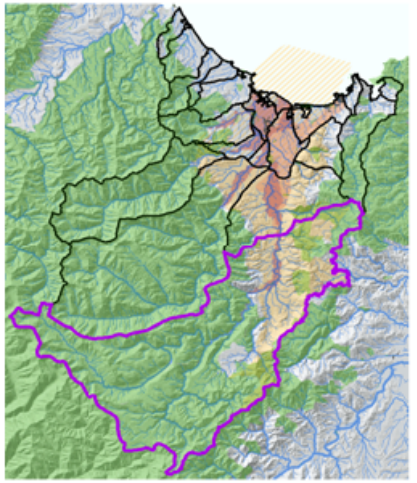
** information for 3 large consented takes only*



This shows the different management regimes in each column based on various combinations of % of MALF for minimum flows and % of MALF for allocation. The current situation is the status quo column.

The % of the existing takes, waiting list and future demand met by each regime are shown in the bottom rows and colour-coded for comparison.

The regime previously agreed by FLAG or suggested by staff is highlighted with the arrow at the top of the column.

Upper Takaka Zone

Water Demand					
Existing Takes		Waiting List		Future Irrigation	
Surface	333	Surface	120		
Ground	0	Ground	0		
Total	333	Total	120	Total	65

(There is a further 105 l/s on the waiting list in the Middle Takaka zone)

Existing & Waiting 453

Max Demand 518

Flow Statistics and Default Allocations				
Statistic	Methodology	% of 5yrLF	l/s	Location
7 day MALF			2380	Harwoods
1 day MALF			1669	Harwoods
1 in 5 Year Low Flow (7 day)			1646	Harwoods
1 in 10 Year Low Flow (7 day)			1397	Harwoods
Allocation default Lower Limit (AL)	10% of 5yr Low Flow	10%	165	Harwoods
Allocation default Upper Limit (AL)	33% of 5yr Low Flow	33%	543	Harwoods

Opportunity for C type takes to storage (over last hydrological year)	
Median flow (l/s)	10100
% of time flow above median flow	52%
Volume of water above median flow for year (million m3)	298

Significance of Ecological Values#	Moderate

 # as assessed by Dr. Roger Young (Freshwater Ecologist, Cawthron - Coastal and Freshwater Group Manager)

Suggested option

Available Water					
Regime Option (MF%-AL%)	80%-30%	70%-20%	70%-15%	70%-10%	status quo
Minimum Flow Percentage of MALF	80%	70%	70%	70%	none
Minimum Flow l/s (MF)	1904	1666	1666	1666	none
Allocation Percentage of MALF	30%	20%	15%	10%	14%
Total allocation l/s (AL)	714	476	357	238	333
% of demand met by allocation limit					
% of Existing met	100.0%	100.0%	100.0%	71.5%	100.0%
% of Waiting List met	100.0%	100.0%	20.0%	0.0%	0.0%
% of Future Irrigation met	100.0%	35.4%	0.0%	0.0%	0.0%

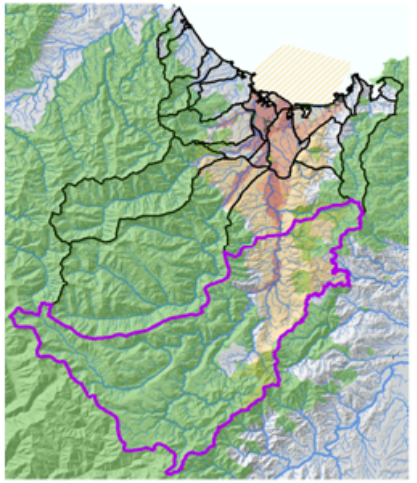
Low Flow Management					
Regime option	80%-30%	70%-20%	70%-15%	70%-10%	status quo
Risk to instream values (Roger Young's advice)	low-mod	moderate	moderate	moderate	moderate
Rationing Trigger	none	none	none	none	none
Cease Take Trigger l/s (MF + AL)	2618	2142	2023	1904	1657*
Average days below Minimum Flow per yr	12	8	8	8	na

Security of Supply (based on data from 1975-2015 - Nov-April inclusive)					
Regime option	80%-30%	70%-20%	70%-15%	70%-10%	status quo*
% of time flows are above cease trigger	87.6%	91.9%	92.9%	93.9%	96.1%

nd = no data available

na = not applicable

** information for 3 large consented takes only*



This compares the different regimes in terms of low flow management – the risk to the instream values is colour-coded for comparison and is based on the classes given on the colour-code key (refer pdf attached to email) – these have been developed with advice from Roger Young.

Upper Takaka Zone

Water Demand					
Existing Takes		Waiting List		Future Irrigation	
Surface	333	Surface	120		
Ground	0	Ground	0		
Total	333	Total	120	Total	65

(There is a further 105 l/s on the waiting list in the Middle Takaka zone)

Existing & Waiting 453

Max Demand 518

Flow Statistics and Default Allocations				
Statistic	Methodology	% of 5yrLF	l/s	Location
7 day MALF			2380	Harwoods
1 day MALF			1669	Harwoods
1 in 5 Year Low Flow (7 day)			1646	Harwoods
1 in 10 Year Low Flow (7 day)			1397	Harwoods
Allocation default Lower Limit (AL)	10% of 5yr Low Flow	10%	165	Harwoods
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Opportunity for C type takes to storage (over last hydrological year)	
Median flow (l/s)	10100
% of time flow above median flow	52%
Volume of water above median flow for year (million m3)	298

Significance of Ecological Values#	Moderate

 # as assessed by Dr. Roger Young (Freshwater Ecologist, Cawthron - Coastal and Freshwater Group Manager)

Suggested option

Available Water					
Regime Option (MF%-AL%)	80%-30%	70%-20%	70%-15%	70%-10%	status quo
Minimum Flow Percentage of MALF	80%	70%	70%	70%	none
Minimum Flow l/s (MF)	1904	1666	1666	1666	none
Allocation Percentage of MALF	30%	20%	15%	10%	14%
Total allocation l/s (AL)	714	476	357	238	333
% of demand met by allocation limit					
% of Existing met	100.0%	100.0%	100.0%	71.5%	100.0%
% of Waiting List met	100.0%	100.0%	20.0%	0.0%	0.0%
% of Future Irrigation met	100.0%	35.4%	0.0%	0.0%	0.0%

Low Flow Management					
Regime option	80%-30%	70%-20%	70%-15%	70%-10%	status quo
Risk to instream values (Roger Young's advice)	low-mod	moderate	moderate	moderate	moderate
Rationing Trigger	none	none	none	none	none
Cease Take Trigger l/s (MF + AL)	2618	2142	2023	1904	1657*
Average days below Minimum Flow per yr	12	8	8	8	na

Security of Supply (based on data from 1975-2015 - Nov-April inclusive)					
Regime option	80%-30%	70%-20%	70%-15%	70%-10%	status quo*
% of time flows are above cease trigger	87.6%	91.9%	92.9%	93.9%	96.1%

nd = no data available

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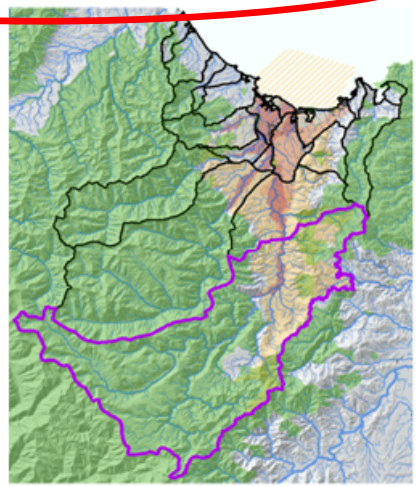
** information for 3 large consented takes only*



This compares the different regimes in terms of security of supply. The metric chosen for this is the % of time that flows are above the cease take trigger – that is how much of the time water users will have all or part of their allocation available to them.

These have been colour-coded for comparison using the classes defined on the colour code key (refer pdf attached to email) – these classes may need to be reviewed for appropriateness with water users.

Upper Takaka Zone

Water Demand					
Existing Takes		Waiting List		Future Irrigation	
Surface	333	Surface	120		
Ground	0	Ground	0		
Total	333	Total	120	Total	65

(There is a further 105 l/s on the waiting list in the Middle Takaka zone)

Existing & Waiting 453

Max Demand 518

Flow Statistics and Default Allocations				
Statistic	Methodology	% of 5yrLF	l/s	Location
7 day MALF			2380	Harwoods
1 day MALF			1669	Harwoods
1 in 5 Year Low Flow (7 day)			1646	Harwoods
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Allocation default Lower Limit (AL)	10% of 5yr Low Flow	10%	165	Harwoods
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Opportunity for C type takes to storage (over last hydrological year)	
Median flow (l/s)	10100
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Volume of water above median flow for year (million m3)	298

Significance of Ecological Values#	Moderate

 # as assessed by Dr. Roger Young (Freshwater Ecologist, Cawthron - Coastal and Freshwater Group Manager)

Suggested option

Available Water					
Regime Option (MF%-AL%)	80%-30%	70%-20%	70%-15%	70%-10%	status quo
Minimum Flow Percentage of MALF	80%	70%	70%	70%	none
Minimum Flow l/s (MF)	1904	1666	1666	1666	none
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% of Waiting List met	100.0%	100.0%	20.0%	0.0%	0.0%
% of Future Irrigation met	100.0%	35.4%	0.0%	0.0%	0.0%

Low Flow Management					
Regime option	80%-30%	70%-20%	70%-15%	70%-10%	status quo
Risk to instream values (Roger Young's advice)	low-mod	moderate	moderate	moderate	moderate
Rationing Trigger	none	none	none	none	none
Cease Take Trigger l/s (MF + AL)	2618	2142	2023	1904	1657*
Average days below Minimum Flow per yr	12	8	8	8	na

Security of Supply (based on data from 1975-2015 - Nov-April inclusive)					
Regime option	80%-30%	70%-20%	70%-15%	70%-10%	status quo*
% of time flows are above cease trigger	87.6%	91.9%	92.9%	93.9%	96.1%

nd = no data available

na = not applicable

** information for 3 large consented takes only*

This map shows the boundary for the relevant zone (purple) relative to the other zones in the Takaka Water Management Area.