

Confirming approach to testing allocation options

For 25 October 2016 workshop

1. Allocation options for the Gold, Silver and Bronze scenarios

At the last Committee workshop (10 October 2016) questions about which combinations of minimum flow and allocation to include in the Gold, Silver and Bronze scenarios were left partly unresolved. The Project Team has since reviewed and proposes the following.

Table 1. Recommendations for minimum flow and allocation amounts for scenarios

Scenario	Minimum Flow [aka "Hands Off" flow]	Allocation	Rationale
Gold	Caleb Royal (2012) recommendations. Rivers/streams with no cultural flow recommendation will be given an average. Average has been established to be 2x 7dMALF. See Table 2 .	Default PNRP/PNES limit 30% MALF (small rivers) 50% MALF (large rivers)	Caleb Royal's recommendations for minimum flows were the preference of the Committee for this scenario. The default limits for allocation represent a more stringent (ie environmentally protective) regime than continuing with existing allocations.
Silver	Default PNRP/PNES limit 90% MALF (small rivers) 80% MALF (large rivers)	Default PNRP/PNES limit 30% MALF (small rivers) 50% MALF (large rivers)	The default limits for minimum flow and allocation largely represent a more stringent (ie environmentally protective) regime than continuing with existing minimum flows and allocations
Bronze	Default PNRP/PNES limit 90% MALF (small rivers) 80% MALF (large rivers)	Default PNRP/PNES limit 30% MALF (small rivers) 50% MALF (large rivers)	The default limits for minimum flow and allocation largely represent a more stringent (ie environmentally protective) regime than continuing with existing minimum flows and allocations. Consistency with the Silver Scenario (and Gold with respect to allocation) is desirable for later interpretations about overall scenario outcomes.
Business as usual	Existing minimum flows	Existing allocations (i.e. whichever is the greater of the existing allocation or the limit in the PNRP)	

Table 2. Cultural flows for the Gold scenario

River or stream (where flow applies)	Cultural flow (L/s) [as recommended by Royal (2012)]
Rivers or streams listed in the PNRP and assessed by Royal (2012)	
Kopuaranga River (Palmers Bridge)	600
Waipoua River (Mikimiki Bridge)	500
Waingawa River (Kaituna)	2,500
Parkvale Stream (Weir)	150
Mangatarere Stream (upper, lower)*	330
Waiohine River (Gorge)	3,570
Papawai Stream (Fabians Road)**	180
Otukura Stream (upstream Dock Creek)*	200
Tauherenikau River (Gorge)	1,350
Upper/Middle Ruamahanga River (Wardells)	10,000
Lower Ruamahanga River (Waihenga)*	25,130
Rivers and streams not listed in PNRP and assessed by Royal (2012)	
Booths Creek (Old Mill)	60
Taueru River (Te Whiti Rd Bridge)	600
Huangarua River (Hikawera)	2,000
Makahakaha Stream (Gladstone Rd Brigde)	80
Dock/Stonestead Creek (upstream Otukura)	570
All other streams not captured above	
All other rivers and streams*	2 x 7dMALF

* Flow derived as 2 x 7dMALF based on pro rata of Royal's recommendations (his recommendations are, on average, 200% of 7dMALF)

** A GWRC instream flow assessment for Papawai Stream in 2008 took into account cultural values (swimming hole at Papawai Marae) and these are already reflected in the PNRP minimum flow. Royal (2012) therefore did not assess this stream.

2. Analysis alongside modelling

2.1. Testing other allocation options

In parallel with the wider model testing of the Gold, Silver and Bronze scenarios work will continue to test different allocation regimes (as agreed by the Committee on 7 July 2016) in more detail. Results such as those already provided for the recommended cultural flows (see minutes of 19 September 2016 workshop and Table 2) will be provided for existing allocation/minimum flow limits as well as slightly higher and lower limits.

Outputs for each option will be focused on:

- Extent to which the **magnitude** and **duration of low flows** are affected
- Loss/gain of physical habitat space relative to that which is available at MALF
- Changes to reliability of supply for water users

2.2. Multiple band/block allocation

The Committee have also expressed a desire to test existing minimum flows with **multiple bands/blocks of allocation**. Rather than test this across the whole catchment, the Project Team proposes to focus the analysis on one river (Ruamāhanga) and one stream (Parkvale). These two waterways are considered representative of the major river/stream systems from which significant abstraction takes place in the whitua area and should provide results that can be more broadly extrapolated. For each catchment it is proposed that the allocation regimes in Table 3 are tested.

Table 3. Recommendations for reliability allocation regimes to be tested

Option	Allocation option
Single block	Existing allocation all available as a single block that can be taken above existing minimum flow
Two blocks A = High reliability B = Medium reliability	Existing allocation split equally between A and B blocks. A Block is available above existing minimum flow B Block is available (in addition to A Block) at flows above existing minimum flow + A Block
Three blocks A = High reliability B = Medium reliability C = Low reliability	Existing allocation split equally between A, B and C blocks. A Block is available above existing minimum flow B Block is available (in addition to A Block) at flows above existing minimum flow + A Block C Block is available (in addition to A and B Block) at flows above existing minimum flow + A Block + B Block

	<p>Existing allocation split <i>unequally</i> between A (20%), B (50%) and C (30%) blocks.</p> <p>A Block is available above existing minimum flow</p> <p>B Block is available (in addition to A Block) at flows above existing minimum flow + A Block</p> <p>C Block is available (in addition to A and B Block) at flows above existing minimum flow + A Block + B Block</p>
	<p>Existing allocation split <i>unequally</i> between A (20%), B (50%) and C (30%) blocks plus an additional 30% allocation available in C Block.</p> <p>A Block is available above existing minimum flow</p> <p>B Block is available (in addition to A Block) at flows above existing minimum flow + A Block</p> <p>C Block is available (in addition to A and B Block) at flows above existing minimum flow + A Block + B Block</p>

Outputs for each multiple band option will again be focused on:

- Extent to which the **magnitude** and **duration of low flows** are affected
- Loss/gain of physical habitat space relative to that which is available at MALF
- Changes to reliability of supply for water users

2.3. Assessing reasonable levels of allocation from small streams

Concern has been raised during the whitua process about the level of allocation from some of the smaller rivers and streams in the Wairarapa Valley (eg, Parkvale Stream, Mangatarere River). Modelling outputs will help characterise the extent of hydrological change under different allocation regimes but ultimately the actual impact of abstraction volumes on small stream values is relatively difficult to quantify (and separate from other stressors in these environments). There is also a scarcity of information for some of these environments that hampers the assessment of effects.

A possible approach to help the Committee inform their recommendations relating to small stream allocation is for them to engage with a small ‘panel’ of expert stream ecologists to collectively review information that is available. The merits, format and timing of such a discussion is something the Project Team would appreciate hearing Committee views on.