

Te Awarua-o-Porirua information on fresh water current state and scenario results: *E. coli*

Drains to	WMU group	WMU name	Reporting point name (from modelling)	What is the current state?				What could the scenarios give us?			
				From SoE monitoring data (2013 to 2017)	From WWL monitoring data (2014 - 17)	From MfE swimmability modelling	From CMP modelling of current state	BAU	Improved	Water sensitive	
Open coast	Coastal catchments	Pukerua	Hongoeka as proxy				E	E	D	D	
		Hongoeka to Pukerua	Hongoeka				E	E	D	D	
		Whitireia	Mouth				E	E ↑	C	C	
Taupo	Taupo Stream and Swamp	Taupo Stream	Camborne case study				E	E ↑	E ↑↑	B	
			Mouth		E		E	E	D	C	
			Wetland				E	E	D	C	
Pauatahanui inlet	Pauatahanui steep rural streams	Horokiri and Motukaraka	Battle Hill				E	E	D	C	
			Near Pauatahanui Golf Club	E		C	D	D	C	B	
			Mouth				D	D ↑	D ↑	B	
		Kakaho Stream	Mouth				E	E	E ↑	D	
		Judgeford Stream	Bottom of sub-catchment				E	E	D	D	
	Upper Duck Creek	Bottom of sub-catchment				E	E ↑	E ↑	E ↑↑		
	Pauatahanui rural streams	Pauatahanui Stream	Middle reaches	E		E	E	D	D	C	
			Mouth				E	D	C	B	
	Pauatahanui urban streams	Lower Duck Creek	Mouth		E		E	E	D	D	
			Pauatahanui fringe streams	Titahi Bay as proxy				E	E	C	C
Onepoto inlet	Onepoto steep rural streams	Rangituhi Stream	Bottom of sub-catchment				E	A	A	A	
			Takapu Stream	Bottom of sub-catchment				E	E	E ↑	E ↑
			Upper Kenepuru	Bottom of sub-catchment				E	E ↑	E ↑	E ↑↑
	Onepoto rural streams	Belmont Stream	Lincolnshire Farms				E	E	D	D	
			Stebbings Stream	Bottom of sub-catchment				E	E	D	C
	Onepoto small urban streams	Hukarito Stream	Mouth		E		E	E	E ↑↑	E ↑↑	
			Mahinawa Stream	Mouth		D		E	E	D	D
			Onepoto Fringe	Elsdon		E		E	E	C	C
			Titahi	Titahi Bay				E	E	C	C
	Kenepuru Stream	Kenepuru	Infill case study				E	E	E ↑↑	E ↑↑	
			Mouth		E		E	E	E ↑↑	E ↑↑	
	Porirua Stream	Porirua	Grenada North industrial	Mitchell Stream				E	E	E ↑↑	E ↑↑
				Willowbank				E	E	D	D
				Kenepuru Drive	E		E	E	E	E ↑↑	E ↑↑
			Mouth					E	E	E ↑↑	D
							E	E	D	D	

Description of risk of Campylobacter infection (based on <i>E. coli</i> indicator)	NOF Attribute state - <i>E. coli</i>				
	A	B	C	D	E
	For at least half the time, the estimated risk is <1 in 1000 (0.1% risk). The predicted average infection risk is 1%*	For at least half the time, the estimated risk is <1 in 1000 (0.1% risk). The predicted average infection risk is 2%*	For at least half the time, the estimated risk is <1 in 1000 (0.1% risk). The predicted average infection risk is 3%*	20-30% of the time the estimated risk is ≥50 in 1000 (>5% risk). The predicted average infection risk is >3%*	For more than 30% of the time the estimated risk is ≥50 in 1000 (>5% risk). The predicted average infection risk is >7%* the estimated risk is ≥50 in 1000 (>5% risk)

Likely change within a band				
Much worse	A bit worse	No change	A bit better	Much better
↓↓	↓		↑	↑↑
Numeric result is more than 50% worse than current state	Numeric result is between 15 and 50% worse than current state	Numeric result is less than 15% different than current state	Numeric result is between 15 and 50% better than current state	Numeric result is more than 50% better than current state

Red line indicates the minimum point at which an objective can be set - i.e. objectives must be set in A, B or C band

http://www.mfe.govt.nz/sites/default/files/media/Fresh%20water/nps-freshwater-ameneded-2017_0.pdf

* The predicted average infection risk is the overall average infection to swimmers based on a random exposure on a random day, ignoring any possibility of not swimming during high flows or when a surveillance advisory is in place (assuming that the *E. coli* concentration follows a lognormal distribution). Actual risk will generally be less if a person does not swim during high flows.

Te Awarua-o-Porirua information on fresh water current state and scenario results: Ammonia toxicity

Drains to	WMU group	WMU name	Reporting point name (from modelling)	What is the current state?		What could the scenarios give us?		
				From monitoring data**	From CMP modelling of current state	BAU	Improved	Water sensitive
Open coast	Coastal catchments	Pukerua	Hongoeka as proxy		B	B	A	A
		Hongoeka to Pukerua	Hongoeka		B	B	A	A
		Whitireia	Mouth		B	A	A	A
Taupo	Taupo Stream and Swamp	Taupo Stream	Camborne case study		B	B ↑	B ↑	A
			Mouth		B	B	B ↑	B ↑
			Wetland		B	B	B	A
Pauatahanui inlet	Pauatahanui steep rural streams	Horokiri and Motukaraka	Battle Hill		B	B	A	A
			Near Pauatahanui Golf Club	A (B)	A	A	A ↑	A ↑
			Mouth		A	A	A	A ↑
			Kakaho Stream		B	B	B ↑	A
			Judgeford Stream		B	B	B	A
	Pauatahanui rural streams	Pauatahanui Stream	Middle reaches	A (B)	B	B	A	A
			Mouth		A	A	A	A ↑
			Ration Creek		B	B	B	B ↑
	Pauatahanui urban streams	Lower Duck Creek	Mouth		B	B	B ↑	B ↑
			Pauatahanui fringe streams		Titahi Bay as proxy	C	C ↓	C
Onepoto inlet	Onepoto steep rural streams	Rangituhi Stream	Bottom of sub-catchment		B	A	A	A
			Takapu Stream		B	B	B	B ↑
			Upper Kenepuru		B	B ↑	A	A
	Onepoto rural streams	Belmont Stream	Lincolnshire Farms		C	C ↑	C ↑	C ↑
			Stebbings Stream		B	B ↑	B ↑	A
	Onepoto small urban streams	Hukarito Stream	Mouth		C	C	C	B
			Mahinawa Stream		B	B	B	B
			Onepoto Fringe		C	C	C ↑	B
			Titahi		C	C ↓	C	B
	Kenepuru Stream	Kenepuru	Infill case study		C	C	C	C
			Mouth*	C (C)	C	C	C ↑	C ↑
	Porirua Stream	Porirua	Grenada North industrial		A	A	A	A
			Mitchell Stream*	A (B)	C	C	C ↑	B
Willowbank				C	C	C	B	
Kenepuru Drive			B (B)	C	C	C	C ↑	
			Mouth		C	C	C	C ↑

	NOF Attribute state - ammonia toxicity			
	A	B	C	D
Description of protection of aquatic species	99% species protection level: No observed effect on any species tested	95% species protection level: Starts impacting occasionally on the 5% most sensitive species	80% species protection level: Started impacting regularly on the 20% most sensitive species (reduced survival of most sensitive species)	Starts approaching acute impact level (i.e. risk of death) for sensitive species

Likely change within a band				
Much worse	A bit worse	No change	A bit better	Much better
↓↓	↓		↑	↑↑
Numeric result is more than 50% worse than current state	Numeric result is between 15 and 50% worse than current state	Numeric result is less than 15% different than current state	Numeric result is between 15 and 50% better than current state	Numeric result is more than 50% better than current state

Red line indicates the national bottom line - i.e. objectives must be set in A, B or C band

http://www.mfe.govt.nz/sites/default/files/media/Fresh%20water/nps-freshwater-ameneded-2017_0.pdf

* Monitoring data has been benchmarked using the most recent five years' data. Sites marked with * have only one years' data available.

** Grades are calculated from pH adjusted measurements, while grades in brackets are from unadjusted measurements. Modelling results cannot be pH adjusted as pH is not modelled.

Te Awarua-o-Porirua information on fresh water current state and scenario results: Nitrate toxicity

Drains to	WMU group	WMU name	Reporting point name (from modelling)	What is the current state?		What could the scenarios give us?			
				From monitoring data	From CMP modelling of current state	BAU	Improved	Water sensitive	
Open coast	Coastal catchments	Pukerua	Hongoeka as proxy		B	B	A	A	
		Hongoeka to Pukerua	Hongoeka		B	B	A	A	
		Whitireia	Mouth		B	B ↑	B ↑	B ↑	
Taupo	Taupo Stream and Swamp	Taupo Stream	Camborne case study		C	B	B	A	
			Mouth		B	B	B ↑	A	
			Wetland		B	B	B	A	
Pauatahanui inlet	Pauatahanui steep rural streams	Horokiri and Motukaraka	Battle Hill		B	B	A	A	
			Near Pauatahanui Golf Club	A	A	A	A ↑	A ↑	
			Mouth		A	A	A ↑	A ↑	
			Kakaho Stream	Mouth		B	B	B ↑	A
			Judgeford Stream	Bottom of sub-catchment		B	B	A	A
	Pauatahanui rural streams	Pauatahanui Stream	Middle reaches	A	A	A	A	A ↑	
			Mouth		A	A	A	A ↑	
			Ration Creek	Mouth		B	B ↑	B ↑	A
	Pauatahanui urban streams	Lower Duck Creek	Mouth		B	A	A	A	
			Pauatahanui fringe streams	Titahi Bay as proxy		A	A ↓	A	A ↓
Onepoto inlet	Onepoto steep rural streams	Rangituhi Stream	Bottom of sub-catchment		B	A	A	A	
			Takapu Stream	Bottom of sub-catchment		B	B	B	B ↑
			Upper Kenepuru	Bottom of sub-catchment		B	B ↑	B ↑	B ↑
	Onepoto rural streams	Belmont Stream	Lincolnshire Farms		B	B ↑	B ↑	B ↑	
			Stebbings Stream	Bottom of sub-catchment		C	B	B	B
	Onepoto small urban streams	Hukarito Stream	Mouth		B	B	B	B	
			Mahinawa Stream	Mouth		B	B	B	B
			Onepoto Fringe	Elsdon		A	A	A	A
			Titahi	Titahi Bay		A	A ↓	A	A ↓
	Kenepuru Stream	Kenepuru	Infill case study		B	B	B	B	
			Mouth*	A	B	B	B	B	
	Porirua Stream	Porirua	Grenada North industrial		B	B	B	B	
			Mitchell Stream*	A	B	B	A	A	
			Willowbank		B	B	B	B ↑	
			Kenepuru Drive	B	B	B	B	A	
			Mouth		B	B	A	A	

	NOF Attribute state - nitrate toxicity			
	A	B	C	D
Description of protection of aquatic species	High conservation value systems. Unlikely to be effects on even sensitive species	Some growth effect on up to 5% of species	Growth effects on up to 20% of species (mainly sensitive species such as fish). No acute effects	Impacts on growth of multiple species, and starts approaching acute impact level (ie risk of death) for sensitive species at higher concentrations (>20mg/L)

Likely change within a band				
Much worse	A bit worse	No change	A bit better	Much better
↓↓	↓		↑	↑↑
Numeric result is more than 50% worse than current state	Numeric result is between 15 and 50% worse than current state	Numeric result is less than 15% different than current state	Numeric result is between 15 and 50% better than current state	Numeric result is more than 50% better than current state

Red line indicates the national bottom line - i.e. objectives must be set in A, B or C band
http://www.mfe.govt.nz/sites/default/files/media/Fresh%20water/nps-freshwater-amended-2017_0.pdf

* Monitoring data has been benchmarked using the most recent five years' data. Sites marked with * have only one years' data available.

Te Awarua-o-Porirua information on fresh water current state and scenario results: Dissolved zinc toxicity

Drains to	WMU group	WMU name	Reporting point name (from modelling)	What is the current state?		What could the scenarios give us?			
				From monitoring data	From CMP modelling of current state	BAU	Improved	Water sensitive	
Open coast	Coastal catchments	Pukerua	Hongoeka as proxy		A	A	A ↑	A ↑	
		Hongoeka to Pukerua	Hongoeka		A	A	A ↑	A ↑	
		Whitireia	Mouth		B	B	A	A	
Taupo	Taupo Stream and Swamp	Taupo Stream	Camborne case study		D	C	B	A	
			Mouth		C	C ↑	B	A	
			Wetland		B	B	A	A	
Pauatahanui inlet	Pauatahanui steep rural streams	Horokiri and Motukaraka	Battle Hill		A	A	A	A	
			Near Pauatahanui Golf Club		A	A ↓↓	A ↓↓	A ↓↓	
			Mouth		A	A ↓↓	A ↓↓	A ↓↓	
			Kakaho Stream	Mouth		A	A ↓↓	A	A
			Judgeford Stream	Bottom of sub-catchment		A	A	A	A
	Pauatahanui rural streams	Pauatahanui Stream	Middle reaches		A	A ↓↓	A	A	
			Mouth		A	A ↓	A	A ↑	
			Ration Creek	Mouth		A	A ↓↓	A ↓↓	A ↓↓
	Pauatahanui urban streams	Lower Duck Creek	Mouth		B	B	B ↑	A	
			Pauatahanui fringe streams	Titahi Bay as proxy		C	C ↑	C ↑↑	A
Onepoto inlet	Onepoto steep rural streams	Rangituhi Stream	Bottom of sub-catchment		A	A	A	A	
			Takapu Stream	Bottom of sub-catchment		C	C	C ↑	A
			Upper Kenepuru	Bottom of sub-catchment		A	A ↓↓	A ↓↓	A ↑
	Onepoto rural streams	Belmont Stream	Lincolnshire Farms		C	C ↑	B	A	
			Stebbings Stream	Bottom of sub-catchment		A	A ↓↓	A ↓	A ↓↓
	Onepoto small urban streams	Hukarito Stream	Mouth		B	B	B ↑	A	
			Mahinawa Stream	Mouth		B	B	A	A
			Onepoto Fringe	Elsdon		D	D	D ↑	B
			Titahi	Titahi Bay		C	C ↑	C ↑↑	A
	Kenepuru Stream	Kenepuru	Infill case study		C	C	B	B	
			Mouth*		C	C	B	A	
	Porirua Stream	Porirua	Grenada North industrial		D	D	D ↑	A	
			Mitchell Stream*		C	D	C	A	
Willowbank				C	C	C ↑	A		
Kenepuru Drive				D	C	C ↑	A		
		Mouth		C	C	C ↑	A		

	Attribute state - Dissolved metals toxicity			
	A	B	C	D
Description of protection of aquatic species	99% species protection level: No observed effect on any species tested	95% species protection level: Starts impacting occasionally on the 5% most sensitive species	80% species protection level: Starts impacting regularly on the 20% most sensitive species (reduced survival of most sensitive species)	Starts approaching acute impact level (ie risk of death) for sensitive species

Likely change within a band				
Much worse	A bit worse	No change	A bit better	Much better
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NB. This is not a NOF attribute

1) Monitoring data has been benchmarked using the most recent five years' data. Sites marked with * have only one years' data available.

Te Awarua-o-Porirua information on fresh water current state and scenario results: Dissolved copper toxicity

Drains to	WMU group	WMU name	Reporting point name (from modelling)	What is the current state?		What could the scenarios give us?				
				From monitoring data	From CMP modelling of current state	BAU	Improved	Water sensitive		
Open coast	Coastal catchments	Pukerua	Hongoeka as proxy		C	C	C	C		
		Hongoeka to Pukerua	Hongoeka		C	C	C	C		
		Whitireia	Mouth		C	C	C	C		
Taupo	Taupo Stream and Swamp	Taupo Stream	Camborne case study		D	D ↓	C	C		
			Mouth		D	C	C	C		
			Wetland		C	C	C ↓	B		
Pauatahanui inlet	Pauatahanui steep rural streams	Horokiri and Motukaraka	Battle Hill		A	A	A	A		
			Near Pauatahanui Golf Club		A	A ↓↓	A ↓↓	A ↓↓		
			Mouth		A	A ↓↓	A ↓↓	A ↓↓		
			Kakaho Stream	Mouth		A	A ↓↓	A ↓	A	
			Judgeford Stream	Bottom of sub-catchment		A	A	A	A	
	Pauatahanui rural streams	Pauatahanui Stream	Upper Duck Creek	Bottom of sub-catchment		A	C	C	A ↓↓	
			Middle reaches		A	A ↓↓	A ↓↓	A		
			Mouth		A	B	A ↓↓	A		
	Pauatahanui urban streams	Lower Duck Creek	Pauatahanui fringe streams	Mouth		C	C ↓	C	C	
				Titahi Bay as proxy		D	D	C	C	
Onepoto inlet	Onepoto steep rural streams	Rangituhi Stream	Bottom of sub-catchment		A	A	A	A		
			Takapu Stream	Bottom of sub-catchment		A	A	A ↑	A ↑	
			Upper Kenepuru	Bottom of sub-catchment		A	C	C	B	
	Onepoto rural streams	Belmont Stream	Stebbings Stream	Lincolnshire Farms		C	C ↓	C ↑	C	
				Bottom of sub-catchment		A	C	A ↓↓	A ↓↓	
	Onepoto small urban streams	Hukarito Stream	Mahinawa Stream	Mouth		C	C	C	C	
				Mouth		C	C	C	C	
				Onepoto Fringe	Elsdon		D	D	D ↑	D ↑↑
				Titahi	Titahi Bay		D	D	C	C
	Kenepuru Stream	Kenepuru	Infill case study	Mouth*	C	D	D	C	D	
				Mouth*		D	D	C	D	
	Porirua Stream	Porirua	Grenada North industrial	Mitchell Stream*	B	D	D	C	C	
Willowbank					D	D	C	C		
Kenepuru Drive				D	D	D	C	C		
Mouth					D	D	C	C		

	Attribute state - Dissolved metals toxicity			
	A	B	C	D
Description of protection of aquatic species	99% species protection level: No observed effect on any species tested	95% species protection level: Starts impacting occasionally on the 5% most sensitive species	80% species protection level: Starts impacting regularly on the 20% most sensitive species (reduced survival of most sensitive species)	Starts approaching acute impact level (ie risk of death) for sensitive species

Likely change within a band				
Much worse	A bit worse	No change	A bit better	Much better
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Numeric result is more than 50% worse than current state	Numeric result is between 15 and 50% worse than current state	Numeric result is less than 15% different than current state	Numeric result is between 15 and 50% better than current state	Numeric result is more than 50% better than current state

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