WORKSHEET for handling modelling outputs in freshwater objectives work

Attributes: Phytoplankton, TN, TP, TLI, TSS, ammonia (toxicity), macrophytes

FMU type	**Lakes**
Lake names	Lake Wairarapa, Lake Onoke

1. What is the current state?						**2. What must happen as a minimum?**		**3. What does the future state look like under the scenarios?**								**4. What is contributing to this result?** (i.e. what is the story here?)
Attribute	**Value(s) to which this attribute and analysis applies**	**What is it like now?**				**Maintain or improve?**	**To what state?**	**What is the likely change under this scenario from scenario baseline to 2080?** (change in grade or % change)								**What are the drivers or pressures behind this?**
		Monitoring data	**Modelling data**		☺😐☹			**BAU**	**Silver**	**Gold**	**Silver + 1m additional depth**	**Silver + Onoke outlet closed**	**Silver + Onoke outlet closed + all flows of Ruamāhanga into Lake Wairarapa**	**Silver + all flows of Ruamāhanga into Lake Wairarapa**	**Silver + non-flood flows of Ruamāhanga into Lake Wairarapa**	
			No NOF band	**NOF band**												
Lake Wairarapa*																
Phytoplankton	Te Mana o Ruamāhanga - mauri, habitat, biodiversity and natural character	D		C				–	↑	↑	–			↑	↑	The reduction in TP decreased phytoplankton growth, changed NOF band
Total nitrogen		C		B				–	–	–	–			↓	–	Increased concentrations of TN from diversion. Only 5% reduction in catchment loads
Total phosphorus		D		D				–	–	–	–			–	–	42% decrease in catchment load, not enough to change and off bands
Trophic Level Index -TLI		5.1	5.6					–	–	–	–			–	–	Combination of reduction of Chl, TN, TP and increasing clarity through scenarios
Total suspended sediment			65					-2	-3	-3	-29			-8	-12	Reduction of sediment from catchment. Less suspended sediment resuspension at 1m depth increase
Ammonia toxicity		A		A				–	–	–	–			–	–	
Macrophytes (% cover)			0.027					–	–	–	↑			–	–	More light available for phytoplankton growth due to lower suspended sediment under 1 m increase scenario
Lake Onoke																
Phytoplankton - lake mouth open	Te Mana o Ruamāhanga - mauri, habitat, biodiversity and natural character	A		C				–	↑	↑	–	↑	↑			The reduction in TP decreased phytoplankton growth
Phytoplankton - lake mouth closed		C														
Total nitrogen - lake mouth open		C		B				–	–	–	–	–	–			Only 10% in catchment loads
Total nitrogen - lake mouth closed		B														
Total phosphorus - lake mouth open		C		D				–	↑	↑	↑	↑	↑			42% decrease in catchment TP load
Total phosphorus - lake mouth closed		B														
TLI		4.4	5.4					–	–	–	↑	↑	–			Combination of reduction of Chl, TN, TP and increasing clarity through scenarios
Total suspended sediment			32					-52	-54	-54	-65	-66	-49			Less external load of sediment from catchment. Less suspended sediment resuspension at 1 m depth increase
Ammonia toxicity		A		A				–	–	–	–	–	–			
Macrophytes (% cover)			0.030					–	–	–	–	–	–			

Likely change				
>1 band worse	1 band worse	No change	1 band better	>1 band better
↓↓	↓	–	↑	↑↑

* Lake Wairarapa Site 2 is used for monitoring data