Attachment 1 – Actions, Timetable and Performance Indicators

Stage	Objective of Stage	How the Stage will Reduce Faecal Coliforms	Actions	Dates	Performance Indicators
1. Biological Optimisation	Biologically optimise the plant through equipment changes and operational changes, to increase its ability to treat influent sufficiently	Modifications will include the installation of an inlet filter screen to assist in the removal of objects such as rags, plastics, and metals to prevent damage and clogging of plant equipment. This will additionally assist in decreasing the desludging times	Construct a 5m x 3m concrete slab with a perimeter bund (with a ramp at one end) for the screen to the placed on. The concrete slab will also feature a concrete channel that drains into the adjacent sludge holding tank.	To be completed by December 31st 2015	Concrete slab and channel constructed.
			Install one (1) in-tank screen extractor with a 5mm screen including discharge chute, bagging unit, control panel, and manual internal bypass screen	To be completed by December 31st 2015	In-tank screen extractor installed.
		Modification will direct the screened wastewater into the bioreactor at a location away from the weir. This modification will also allow the volumes of screened waste water to be recorded.	Redirect the waste water inflow lines to the new screen and installing a new flow meter on the inlet to the screen	To be completed by 31st December 2015	Waste water inflow lines redirected New flow meter installed on inlet to screen.
			Install all pipework, valves and fittings for the screen to bioreactor outflow line and the storm water bypass line.	To be completed by 31st December 2015	All pipework, valves and fittings for screen installed.
			Install all electrical and control panel components	To be completed by 31st December 2015	All electrical and control panel components installed.
			Remove redundant valve pit, distribution box, and flow meter from old inlet line	To be completed by 31st January 2016.	Redundant valve pit, distribution box and flow meter removed.

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		Modifications will increase the Mixed Liquor Suspended Solids (MLSS) and the sludge age, which will increase the biomass in the bioreactor to effectively treat inflow	Pass existing Bioreactor volume through filter screen.	To be completed by 31st January 2016	Existing bioreactor volume passed through filter screen.
			Implement an operating strategy to increase the sludge age to optimal or recommended range in a staged approach: • 7 Days • 9.5 Days • 12.2 Days • 15.6 Days.	To be completed by : • January 31st 2016 • February 29th 2016 • March 31st 2016 • April 30th 2016	Implement the operating strategy. F:M ratio within recommended range of 0.04 to 0.10 Sludge age increased in line with identified stage approach.
		Assess effectiveness of Stage 1 modifications	Conduct water quality testing to assess the effectiveness of the Stage 1 modifications and detail in a report submitted to the Administering Authority.	Weekly monitoring to be conducted from the 11th December 2015 until June 30th 2016. Report to be submitted by July 31st 2016	Weekly monitoring completed Report to administering authority submitted.
			If Stage 1 modifications are effective in transitioning to compliance to Faecal Coliform release limits in accordance with Condition C4 of Development Approval EHP Permit number SPCE05672613, as required by Environmental Authority EHP Permit number EPPR03383115, no further action under this TEP is required, and a final TEP report will be provided within one month of Stage 1 being completed. **If Stage 1 modifications are not effective in transitioning to compliance to Faecal Coliform release limits, RT Weipa will proceed with Stage 2.**		

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2. Function Design Changes	Modify the plant to improve nutrient removal and include an anoxic treatment phase into the plant cycle	Modifications of pipework will redirect screened waste water into a holding tank to avoid short circuiting and hold peak volumes during high rainfall events. This will improve nutrient removal in the bioreactor.	Clean out sludge lagoon	To be completed by August 31st 2016	Clean out of sludge lagoon complete.
			If required, construct and install platform/walkway over sludge lagoon. If pumps can be removed safely (see next action) then no platform required	If required, to be completed by October 31st 2016	Safe access to maintain the submersible pumps is available
			Install new submersible pumps and rails	To be completed by November 30th 2016	Submersible pumps and rails installed
			Modify pipework to accommodate additional operational changes	To be completed December 31st 2016	Pipework modified
		Modifications will include the installation of mixers in the bioreactor. This will reduce nitrate levels.	Install mixers in the bioreactor	To be completed by November 30th 2016	Mixers in bioreactor installed
			Modify coding of plant to incorporate changes and add a mixing phase to the cycle	To be completed by December 31st 2016	Coding of plant modified.
		Assess effectiveness of Stage 2 modifications	Conduct water quality testing to assess the effectiveness of the Stage 2 modifications and detail in a report submitted to the Administering Authority.	Weekly monitoring to be conducted from August 1st 2016 until February 28th 2017. Report to be submitted by March 31st 2017.	Weekly monitoring completed Report to administering authority submitted.
			If Stage 2 modifications are effective in transitioning to compliance to Faecal Coliform release limits in accordance with Condition C4 of Development Approval EHP Permit number SPCE05672613, as required by Environmental Authority EHP Permit number EPPR03383115, no further action under this TEP is required, and a final TEP report will be provided within one month of Stage 2 being completed. **If Stage 2 modifications are not effective in transitioning to compliance to Faecal Coliform release limits, RT Weipa will proceed with Stage 3.**		

Stage	Objective of Stage	How the Stage will Reduce Faecal Coliforms	Actions	Dates	Performance Indicators
3. Upgrade Plant with Selected Option	Install an additional disinfection treatment system that will achieve compliance to Faecal Coliform release limit	Purchase and installation of an additional disinfection treatment system	Assess and select a disinfection treatment system option. Options to be assessed and selected from include, but are not limited to: 1. Hydrogen Peroxide System 2. Packaged Ozone System 3. Packaged Membrane System 4. Chlorine Disinfection System	To be completed by July 31st 2017.	Selection of a disinfection treatment system
			Install selected option	To be completed by November 24th 2017.	Selected option installed.
		Assess effectiveness of Stage 3 modifications	Conduct water quality testing of key parameters to measure the performance of key equipment within the plant. Complete Final TEP close out report	Weekly monitoring to be conducted from April 1st 2017 until November 24th 2017. To be submitted by December 24th 2017.	Weekly monitoring completed Achieve compliance to Faecal Coliform release limits in accordance with Condition C4 of Development Approval EHP Permit number SPCE05672613 as required by Environmental Authority EHP Permit number EPPR03383115