

EPA Division report on water and algal sampling from the Russell River in the vicinity of the Huon Aquaculture Fish Farm at Lonnvale on 8 October 2015.

The water quality measurements and analysis results provided in Table 1 below show that the nutrient concentrations for ammonia and nitrate are elevated above background in the outfall and in the Russell River at 50 m downstream of the outfall in comparison with the background nutrient concentrations represented by the intake sample. The nutrient concentrations in the river had returned to background levels or below at Lorkins Rd.

The outfall results do not exceed water quality guideline values in the Australian Drinking Water Guidelines or the ANZECC toxicant trigger values.

The outfall result for ammonia at 0.033 mg/L is a minor exceedence of the Environment Protection Notice (EPN) limit of 0.032 mg/L. This degree of exceedence is within the margin of error for reporting and is not considered to be a breach of the EPN. Testing of the outfall by Huon Aquaculture on 16/10/15 showed that it was within all compliance limits.

Table 1. Water quality results.

Analyte	Intake	Outfall	~50 m d/stream Outfall	Lorkins Rd	Difference from intake ~ 50 m d/stream (%)	Difference from intake at Lorkins Rd (%)
Time sampled	1340	1522	1540	1440	-	-
pH	6.82	7.26	7.36	7.28	-	-
Temperature (°C)	9.88	11.08	11.41	10.58	-	-
Conductivity (ms/cm)	0.069	0.070	0.070	0.070	1.4	1.4
Dissolved Oxygen (mg/L)	11.17	11.55	10.81	11.49	-3.2	2.9
Total Suspended Solids (mg/L)	<2	<2	<2	<2	0.0	0.0
Alkalinity (mg CaCO ₃ /L)	24	23	23	23	-4.2	-4.2
Ammonia (mg/L)	0.006	0.033	0.014	0.006	133.3	0.0
Nitrate (mg/L)	0.004	0.011	0.006	0.004	50.0	0.0
Nitrite (mg/L)	<0.002	<0.002	<0.002	<0.002	0.0	0.0
Total Nitrogen (mg/L)	0.16	0.13	0.13	0.15	-18.8	-6.3
Dissolved Reactive Phosphorus (mg/L)	0.008	0.007	0.005	0.004	-37.5	-50.0
Total Phosphorus (mg/L)	0.01	<0.01	<0.01	<0.01	0.0	0.0

Observations of algal cover in the Russell River were made at several locations. The amount of green algal cover that was present in the wetted channel area of the river was estimated as a percentage of the channel area. The length of green algal strands was also estimated. The results are provided in Table 2.

Algal cover and growth increased with distance downstream. The greatest amount of cover and growth of algae was observed in the area of Lorkins Rd.

Table 2. Visual estimate of green algal cover and strand length in the wetted channel area.

Location	Green algal cover (%)	Green algae strand length (cm)
50 m upstream Russell Rd	25	~2
Russell Rd	75	~3-5
HAC intake	50	~3-5
HAC access bridge	75	~3-5
50 m downstream from HAC outfall	80	~5-10
Lorkins Rd	100	~20-30

Grab samples of the algae present in four locations were collected for identification. The results are provided in Table 3. The diatoms, algae and euglenoids identified are typical of fresh water rivers in this region and the time of year that the samples were collected. No toxic species were identified.

Table 3. Algal and diatom species identified in Russell River from samples collected on 8 October 2015.

Intake	~50 m d/stream Outfall	Lorkins Rd	~50 m d/stream Lorkins Rd
Bacillariophyta (Diatoms)			
Order: Cymbellales <i>Cymbella sp.</i> <i>Gomphonema sp.</i>	Order: Cymbellales <i>Cymbella sp.</i> <i>Gomphonema sp.</i>	Order: Cymbellales <i>Cymbella sp.</i> <i>Gomphonema sp.</i>	Order: Cymbellales <i>Cymbella sp.</i> <i>Gomphonema sp.</i>
Order: Fragilariales <i>Synedra sp.</i> <i>Tabellaria flocculosa</i>	Order: Fragilariales <i>Synedra sp.</i>	Order: Fragilariales <i>Synedra sp.</i> <i>Tabellaria flocculosa</i>	Order: Fragilariales <i>Synedra sp.</i> <i>Tabellaria flocculosa</i>
	Order: Melosirales <i>Melosira sp.</i>	Order: Melosirales <i>Melosira sp.</i>	Order: Melosirales <i>Melosira sp.</i>
Order: Rhopalodiales <i>Rhopalodia sp.</i>			Order: Rhopalodiales <i>Rhopalodia sp.</i>
Chlorophyta (Green)			
Order: Chaetophorales <i>Draparnaldia sp.</i>	Order: Chaetophorales <i>Draparnaldia sp.</i>		
	Order: Oedogoniales <i>Oedogonium sp.</i>		Order: Oedogoniales <i>Oedogonium sp.</i>
	Order: Ulotrichales <i>Ulothrix sp.</i>		Order: Ulotrichales <i>Ulothrix sp.</i>
		Order: Sphaeropleales <i>Actinastrum sp.</i>	
		Order: Zygnematales <i>Cosmarium sp.</i> <i>Mougeotia sp.</i>	Order: Zygnematales <i>Cosmarium sp.</i> <i>Mougeotia sp.</i>
Euglenophyta (Euglenoids)			
		Order: Euglenales <i>Euglena sp.</i>	