9 November 2017

Daniel Meehan
Surface Waters Operations Engineer
Selwyn District Council

Dear Daniel

As required as a condition of Resource Consent CRC172231 (discharge of Stormwater and Land Drainage Water from the Osbornes Drain Catchment into Lake Ellesmere), NIWA has completed monitoring and fish relocation in Osbornes Drain, Pump Forebay and Branch Drain.

NIWA set 10 fine-meshed fyke nets in the required area on 31st October and 8th November 2017. No nets were set in Branch Drain on either date because it was dry. Gee-minnow traps were not set as the fine-meshed fyke nets we used capture small and large fish and have compartments to separate the smaller fishes from larger eels. Electrofishing surveys were not possible because the conductivity of the water was extremely high[1].

A total of 103 fish were caught during the monitoring and released into the Halswell Canal. There were 70 fish on the first night and 33 fish on the second night. There were three species captured which were shortfin eel, inanga and common bully. Shortfin eel were the most abundant fish caught comprising 96% (67/70) and 76% (25/33) of the fish caught on nights one and two, respectively. The length of shortfin eels caught were estimated (to the nearest 50 mm) and varied between 150 and 800 mm.

A full breakdown of the fish captured during the monitoring is provided on the following page. Location data (i.e., GPS co-ordinates) of where each net was set are available upon request.

Yours sincerely

Phillip Jellyman

Dr Phillip Jellyman
Freshwater Fisheries Scientist
Group Manager - Freshwater Ecology

[1] When the conductivity of the water is extremely high (it was measured at well in excess of 2000 µS cm^{-1}) the amount of electrical current (amps) that would be put into the water at the lowest voltage setting possible (100 volts) is very unsafe. The internal safety features of the electric fishing machine will not permit this to occur so the machine does not work.

Date	Drain	Location	Net number	Fish species	Number caught	Est. eel sizes (mm)
31/10/2017	Main drain	Upstream	1	Shortfin eel	10	150-450
31/10/2017	Main drain	Upstream	1	Common bully	1	50
31/10/2017	Main drain	Upstream	1	Inanga	1	75
31/10/2017	Main drain	Middle	2	Shortfin eel	2	400, 520
31/10/2017	Main drain	Middle	3	Shortfin eel	6	500, 700, 350, 200, 600, 600
31/10/2017	Main drain	Middle	4	Shortfin eel	4	400, 300, 600, 650
31/10/2017	Main drain	Downstream	5	Shortfin eel	9	350, 200, 400, 800, 650, 650, 500, 600, 600
31/10/2017	Sump by pump	Upstream	6	Shortfin eel	12	500, 350, 300, 200, 750, 500, 350, 550, 600, 350, 250, 300
31/10/2017	Sump by pump	Middle	7	Shortfin eel	8	500, 400, 750, 600, 600, 400, 400, 200
31/10/2017	Sump by pump	Middle	8	Shortfin eel	12	400, 300, 150, 300, 450, 500, 450, 250, 400, 550, 750, 500
31/10/2017	Sump by pump	Middle	8	Inanga	1	70
31/10/2017	Sump by pump	Middle	9	Shortfin eel	3	450, 300, 650
31/10/2017	Sump by pump	Downstream	10	Shortfin eel	1	400
31/10/2017	Branch drain		DRY			
8/11/2017	Main drain	Upstream	1	Shortfin eel	6	450, 450, 500, 550, 600, 600
8/11/2017	Main drain	Middle	2	Shortfin eel	10	300, 450, 500, 200, 250, 500, 500, 250, 300, 300
8/11/2017	Main drain	Middle	3	NO FISH		
8/11/2017	Main drain	Middle	4	Shortfin eel	1	700
8/11/2017	Main drain	Middle	4	Inanga	1	75
8/11/2017	Main drain	Downstream	5	Shortfin eel	5	300, 350, 500, 600, 450
8/11/2017	Sump by pump	Upstream	6	NO FISH		
8/11/2017	Sump by pump	Middle	7	Shortfin eel	1	350
8/11/2017	Sump by pump	Middle	8	Shortfin eel	1	350
8/11/2017	Sump by pump	Middle	8	Inanga	3	70
8/11/2017	Sump by pump	Middle	8	Common bully	2	60,55
8/11/2017	Sump by pump	Middle	9	Shortfin eel	1	200
8/11/2017	Sump by pump	Middle	9	Inanga	1	75
8/11/2017	Sump by pump	Downstream	10	Inanga	1	70
8/11/2017	Branch drain		DRY			