

9 November 2017

Daniel Meehan  
Surface Waters Operations Engineer  
Selwyn District Council

Dear Daniel

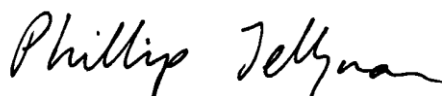
As required as a condition of Resource Consent CRC172231 (discharge of Stormwater and Land Drainage Water from the Osbornes Drain Catchment into Lake Ellesmere), NIWA has completed monitoring and fish relocation in Osbornes Drain, Pump Forebay and Branch Drain.

NIWA set 10 fine-meshed fyke nets in the required area on 31<sup>st</sup> October and 8<sup>th</sup> 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<sup>1</sup>.

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

A handwritten signature in black ink that reads 'Phillip Jellyman'.

Dr Phillip Jellyman  
Freshwater Fisheries Scientist  
Group Manager - Freshwater Ecology

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<sup>1</sup> When the conductivity of the water is extremely high (it was measured at well in excess of 2000  $\mu\text{S cm}^{-1}$ ) 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        |              |               |  |