



## **APPENDIX 7-6**

### ***ELECTROFISHING SITE CHARACTERISTICS***

## Appendix 7-6 Kilgarvan Electrofishing Site Characteristics

| Site Code                     | Site K16   |
|-------------------------------|--|
| River Name                    | Un-named tributary of Roughty River (Glanlee tributary) (2 <sup>nd</sup> order)  |
| EPA RWB Code                  | IE_SW_21R010250  |
| Segment Code                  | 21_5754  |
| Coordinates - ITM             | 508928, 575840   |
| Survey Type                   | 5-minute timed pass  |
| Length Fished (m)             | ~ 60.0   |
| Area Fished (m <sup>2</sup> ) | ~ 180  |
| Average Width (m)             | ~ 3.0  |
| Depth (cm)                    | Riffle/run 10-15, Run /pool 25-30  |
| Substrate Type                | Mainly cobble and boulder, with occasional bedrock   |
| Fish species captured         | None   |
| Habitat Type                  | Habitats include long pool/glides and short runs over cobble and vertical drops, which may form barriers to fish passage upstream. Moderately high gradient, mountain-type stream with leafy liverworts, <i>Fontinalis antipyretica</i> , <i>Rhynchostegium</i> and trace amounts of FGA ( <i>Microspora</i> and <i>Mougeotia</i> ) on the coarse substrate. |
| Other Observations            | Generally open and unshaded in the sampled reach, but conifer meets the channel upstream. Habitat largely suitable for fish, but none present.   |



**Plate 1** Site K16 – Glanlee tributary, view upstream over lower reach of fished area (29/09/2022)

|                               |   |
|-------------------------------|---|
| Site Code                     | Site K18  |
| River Name                    | Un-named tributary of Roughty River (Glanlee tributary) (3 <sup>rd</sup> order)   |
| EPA RWB Code                  | IE_SW_21R010250   |
| Segment Code                  | 21_5755   |
| Coordinates - ITM             | 507930, 575117  |
| Survey Type                   | 5-minute timed pass   |
| Length Fished (m)             | 40.0  |
| Area Fished (m <sup>2</sup> ) | 140.0   |
| Average Width (m)             | 3.5   |
| Depth (cm)                    | Pool 30; run 15   |
| Substrate Type                | Mainly cobble but with some small boulders, interstitial patches of pebble.   |
| Fish species captured         | Small numbers of 0+ and 1+ trout (8.9cm, 12.9cm, 15cm)  |
| Habitat Type                  | Step-pool, cascade, glide/run and riffle/run. Moderately high gradient, mountain-type stream with leafy liverworts, <i>Fontinalis antipyretica</i> , <i>Rhynchostegium</i> .  |
| Other Observations            | Trout density was very low for a small upland river despite oligotrophic nature, siliceous rocks and high energy. Density should be 5-fold higher for a channel of its type. Possibly related to afforestation and/or absence of upstream / broadleaved riparian buffers. |



**Plate 2** Site K18, main channel of Inchee branch of Glanlee tributary – view downstream (29/09/2022)



|                               |   |
|-------------------------------|---|
| Site Code                     | Site K18B   |
| River Name                    | Un-named tributary of Roughty River (Glanlee tributary) (1 <sup>st</sup> order)   |
| EPA RWB Code                  | IE_SW_21R010250   |
| Segment Code                  | 21_5328   |
| Coordinates - ITM             | 508078, 575311  |
| Survey Type                   | 5-minute timed pass   |
| Length Fished (m)             | 150.0   |
| Area Fished (m <sup>2</sup> ) | 160   |
| Average Width (m)             | ~ 1.2   |
| Depth (cm)                    | <5cm in riffle/run  |
| Substrate Type                | Cobble and pebble with a good cover of leafy liverwort, <i>Fontinalis antipyretica</i> and <i>Batrachospermum</i> on the larger substrate elements. Small amounts of interstitial peaty organic detritus present. |
| Fish species captured         | Small numbers of 1+ trout (13.8cm, 12.8cm)  |
| Habitat Type                  | Pool-glide 70%; riffle-run 30%<br>Small pool/glides and short riffle/run stretches, the latter in moderate to swift flow.   |
| Other Observations            | This site is on a small tributary of K18, the main channel (see above).   |



**Plate 3** Site K18B - view upstream (29/09/2022)

|                               |   |
|-------------------------------|---|
| Site Code                     | Site K19  |
| River Name                    | Un-named tributary of Roughy River (Glanlee tributary) (3 <sup>rd</sup> order)  |
| EPA RWB Code                  | IE_SW_21R010250   |
| Segment Code                  | 21_5469   |
| D/S Coordinates - ITM         | 507240, 574589  |
| Survey Type                   | 10-minute timed pass  |
| Length Fished (m)             | 18.0  |
| Area Fished (m <sup>2</sup> ) | 66.5  |
| Average Width (m)             | 3.5   |
| Depth (cm)                    | 10 (5-10 mainly, max. 20)   |
| Substrate Type                | Boulder 30%, cobble 70%   |
| Fish species captured         | Relatively low numbers of salmon (n=15, 0+ and 1+); trout (n=2, 7cm and 17.7cm)   |
| Habitat Type                  | Riffle-run 100%<br>Moderate to swift flow riffle/run with short step-cascades. In unshaded areas the channel had 30-50% cover of the filamentous green algae <i>Ulothrix zonata</i> . |
| Other Observations            | Highly shaded in the lower reaches before the Roughy confluence. Heavy cattle access immediately downstream of survey reach.  |



**Plate 4** Site K19, lower end of Glanlee tributary (just upstream Roughy River confluence) (19/08/2022)



|                                    |   |
|------------------------------------|---|
| <b>Site Code</b>                   | <b>Site K23</b>   |
| <b>River Name</b>                  | Un-named tributary of Roughty River (Lettercannon tributary) (2 <sup>nd</sup> order)  |
| <b>EPA RWB Code</b>                | IE_SW_21R010250   |
| <b>Segment Code</b>                | 21_4733   |
| <b>D/S Coordinates - ITM</b>       | 506754, 575270  |
| <b>Survey Type</b>                 | 10-minute timed pass  |
| <b>Length Fished (m)</b>           | 59.0  |
| <b>Area Fished (m<sup>2</sup>)</b> | 64.0  |
| <b>Average Width (m)</b>           | 1.1   |
| <b>Depth (cm)</b>                  | Riffle-run 3-8  |
| <b>Substrate Type</b>              | Cobble 70%, pebble/gravel 30%   |
| <b>Fish species captured</b>       | Good numbers of juvenile salmon and trout (0+ and 1+)   |
| <b>Habitat Type</b>                | Glide/run 70%, riffle/run 30%<br>Moderate to moderate/swift flow over a largely plant free substrate. Good salmonid nursery habitat.  |
| <b>Other Observations</b>          | Small tributary of the Roughty just above the confluence. Open, unfenced channel with improved pasture on both banks. Difficult to catch fish due to combination of coarse substrate and very shallow flows – density underestimated. |



**Plate 5** Site K23 survey stretch – view upstream (19/08/2022)

|                               |  |
|-------------------------------|--|
| ASU Site Code                 | Site K23 DS  |
| River Name                    | Roughy River (5 <sup>th</sup> order)   |
| EPA RWB Code                  | IE_SW_21R010250  |
| Segment Code                  | 21_7617  |
| D/S Coordinates - ITM         | 506679, 575282   |
| Survey Type                   | Quantitative – 3-pass depletion with stop nets   |
| Length Fished (m)             | 47   |
| Area Fished (m <sup>2</sup> ) | ~ 330  |
| Average Width (m)             | ~ 7 (4.0-13.7)   |
| Depth (cm)                    | Riffle (10), Run (20), Pool/Glide (30-50)  |
| Substrate Type                | Large cobble with pockets of pebble  |
| Fish species captured         | Exceptionally high density of juvenile salmon (0+ and 1+); high density of trout (0+, 1+ and older), and minnow.   |
| Habitat Type                  | Riffle 90% glide/pool 10%<br>Clear, Moderate to swift flow. Linear pool/glide all along the right-hand side (RHS) of the channel for ~ 40m with slight bank overhang and tree roots & branches extending into the channel concentrating the larger fish in the associated pools. <i>Lemanea</i> sp. was present on large boulders with <i>Fontinalis antipyretica</i> near the water line on the RHS. The RHS bank had some armouring below and grass and herbs above in a moderate to swift flow. Ideal for salmonid nursery. |
| Other Observations            | Generally open in this reach with improved grassland up to the unfenced RHS bank.  |



**Plate 6** Site K23 DS - Roughy River main channel, view downstream (20/08/2022)



|                                    |  |
|------------------------------------|--|
| <b>ASU Site Code</b>               | Site K27   |
| <b>River Name</b>                  | Un-named tributary of Roughty River (Thurechouma tributary) (3 <sup>rd</sup> order)  |
| <b>EPA RWB Code</b>                | IE_SW_21R010250  |
| <b>Segment Code</b>                | 21_7708  |
| <b>D/S Coordinates - ITM</b>       | 505850, 575788   |
| <b>Survey Type</b>                 | 10-minute timed pass   |
| <b>Length Fished (m)</b>           | 43   |
| <b>Area Fished (m<sup>2</sup>)</b> | 107.5  |
| <b>Average Width (m)</b>           | 2.5  |
| <b>Depth (cm)</b>                  | 30-40 (pool) 15-20 (cascade/run)   |
| <b>Substrate Type</b>              | Boulder (65), large cobble (30), gravel (5)  |
| <b>Fish species captured</b>       | Low density of salmon and trout (mainly 0+)  |
| <b>Habitat Type</b>                | Riffle-run 50%; Glide 50%<br>Steep channel, comprising step-pools and short cascades of moderate to swift and swift flow. Substrates were covered with a light algal/peaty biofilm but were generally scoured. |
| <b>Other Observations</b>          | Intermittently high-energy, spate stream. Good salmonid nursery, but limited spawning habitat owing to lack of finer gravels. Open, difficult to fish due to large boulders, fish density underestimated.      |



**Plate 7** Site K27 - Lower Thurechouma tributary, just upstream Roughty confluence (19/08/2022)



**Additional sites with no fish - sampled on 20 August 2022:**

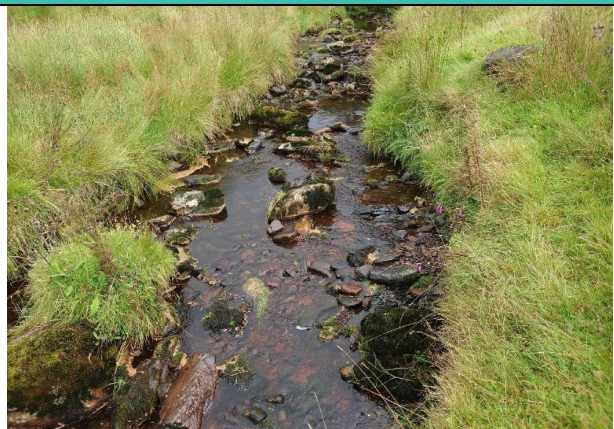
**Site K5 (X, Y ITM: 506599, 577082) Thurechouma tributary (2<sup>nd</sup> order)**

Small channel on the same tributary as K27 (see above) but further upstream near the windfarm.  
10-minute timed pass - suitable salmonid habitat but **no fish present**, possibly owing to natural fish passage barrier(s) downstream.



**Site K17A (X, Y ITM: 508868, 575239) Glanlee tributary (2<sup>nd</sup> order)**

Small channel on the same tributary as K19 and K18 (see above) but further upstream.  
10-minute timed pass - suitable salmonid habitat but **no fish present**, possibly owing to natural fish passage barrier(s) downstream.  
A steep waterfall was noted downstream of the survey site which explains absence of salmon.



**Site K25 (X, Y ITM: 507473, 575651) Lettercannon tributary (2<sup>nd</sup> order)**

Small channel on the same tributary as K23 (see above) but further upstream near the windfarm.  
10-minute timed pass - suitable salmonid habitat but **no fish present**, possibly owing to natural fish passage barrier(s) downstream.

