

Aquatic Macroinvertebrate Sampling Report

MeenbogWind Farm, Co. Donegal



Planning & Environmental Consultants

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1 INTRODUCTION



1.1 Survey Background and Methodology

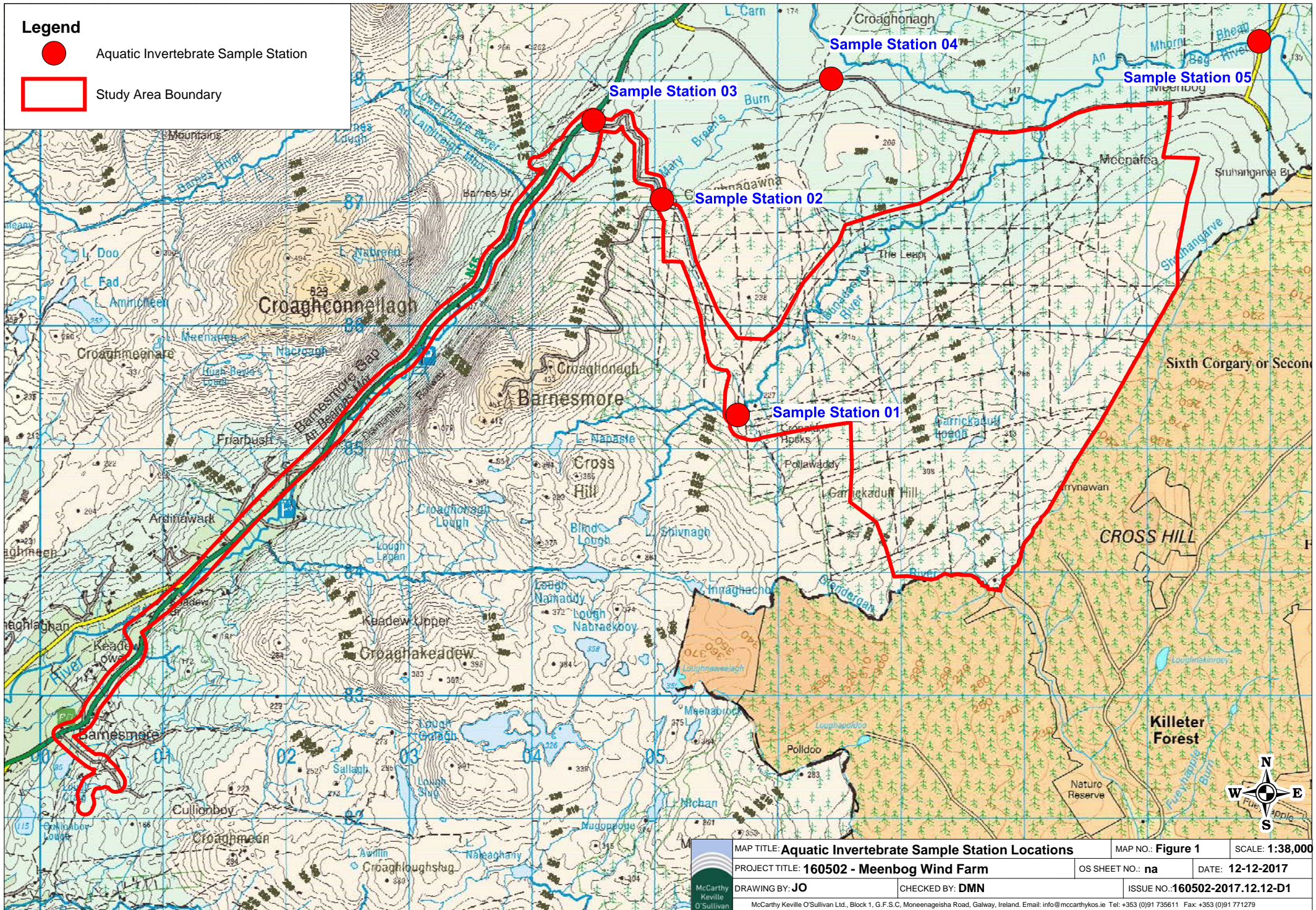
McCarthy Keville O’Sullivan Ltd. were appointed by Planree Ltd to conduct surveys for aquatic macroinvertebrates for Q-Value determination Mourne Beg/Derg catchment, Co. Donegal. The survey work was conducted by suitably qualified ecologists, Dr. Chris Peppiatt B.Sc., M.Sc. PhD MCIEEM, Mr John Hynes B.Sc., M.Sc., and Ms. Laoise Kelly B.Sc..

Sampling was carried out downstream of the study area at 5 sites on the 16-18th of September 2014. The method used was the same as that used by the EPA for their national water sampling regime (Toner *et al.* 2003). A two minute kick sample was collected from a stream bed area of approximately one square metre with a standard handnet (250 mm x 250 mm, with a 300 mm bag depth and a 1 mm mesh size). Rock washing was also carried out. The aquatic macroinvertebrates collected were sorted, stored in a 70% alcohol solution and identified using a binocular dissecting microscope.

Figure 1. provides a site location map showing the location of the surveys.

Legend

-  Aquatic Invertebrate Sample Station
-  Study Area Boundary



2 RESULTS

The following sections outline the findings of the surveys.

2.1 Sample Station 1 (Mourne Beg/Derg catchment)

Sample Station 1 was located along a suitable riffle area within the Bunadaowen Stream, (Grid Ref: E 205677 N 385281). The watercourse was approximately 2-3 metres wide with a wet width of 2.5 metres and an average depth of 0.1 metres (Plate 2.1). The benthic substrate was dominated by exposed bedrock, boulders cobble and gravel. There was no cattle access to the channel and no instream rubbish. The substrate was loose with no compaction. There was a low discharge, moderate flow rate and the water was slightly coloured.

The only instream macrophyte was the aquatic moss *Fontinalis antipyretica*. The benthic substrate had a luxuriant covering of filamentous algae (*Cladophora* sp.). No emergent vegetation was recorded. The bankside vegetation was dominated by Creeping Buttercup (*Ranunculus repens*), Compact Rush (*Juncus conglomeratus*), Gorse (*Ulex europaeus*), Bent Grasses (*Agrostis* spp.) and Soft Rush (*Juncus effusus*) The adjoining habitats were dominated by Conifer Plantation (WD4).

The Q rating assigned to the channel was Q3-4. It was assigned this value as Group A invertebrates were few, Group B invertebrates were few and Group C invertebrates were dominant. Group D invertebrates were absent and Group E invertebrates (the most pollution tolerant) were few (Table 2.1).

Table 2.1: Invertebrate Sample Station 1 Results

Indicator Group	Taxon	Dominance
Group A - Very Pollution Sensitive	<i>Plecoptera</i>	Few
Group B - Moderately Pollution Sensitive	<i>Tricoptera</i> (Cased spp.)	Few
	<i>Plecoptera</i> (<i>Leuctra</i>)	Few
Group C - Moderately Pollution Tolerant	<i>Baetis rhodani</i>	Few
	<i>Tricoptera</i> (Uncased spp.)	Few
	<i>Chironomidae</i> (<i>ex. Chironomus</i>)	Few
	<i>Simuliidae</i>	Few
	<i>Hydracarina</i>	Few
Group D - Very Pollution Tolerant	<i>None</i>	None
Group E - Most Pollution Tolerant	<i>Oligochaeta</i>	Few



Plate 2.1: Sample Station 01

2.2 Sample Station 2 (Mourne Beg/Derg catchment)

Sample Station 2 was located along a suitable riffle area within Mary Breen's Burn (Grid Ref: E205062 N387033). The watercourse was approximately 0.5 metres wide with a wet width of 0.4 metres and an average depth of 0.1 metres (see Plate 2.2). The benthic substrate was dominated by boulders cobble and gravel. There was no cattle access to the channel and no instream rubbish. The substrate was loose with no compaction. There was a low discharge, moderate flow rate and the water was slightly coloured.

The only instream macrophytes were the aquatic moss *Fontinalis antipyretica* and filamentous algae (*Cladophora* sp.). The algal growth was luxuriant and suggests eutrophication of the stream. Horsetail (*Equisetum* sp.) was recorded in the emergent vegetation. The bankside vegetation was dominated by Bramble (*Rubus fruticosus* agg.), Sweet Vernal-grass (*Anthoxanthum odoratum*), Wild Angelica (*Angelica sylvestris*), Willow (*Salix* spp.), and Soft Rush (*Juncus effusus*). The adjoining habitats were dominated Wet grassland (GS4), Cutover Bog (PB4) and Conifer plantations (WD4).

The Q rating assigned to the channel was Q3-4. It was assigned this value as Group A invertebrates were few, Group B invertebrates were few and Group C invertebrates were few. Group D invertebrates were absent and Group E invertebrates (the most pollution tolerant) were few (table 2.2).

Table 2.2: Invertebrate Sample Station 2 Results

Indicator Group	Taxon	Dominance
Group A - Very Pollution Sensitive	<i>Plecoptera</i>	Few
Group B - Moderately Pollution Sensitive	<i>Plecoptera (Leuctra)</i>	Few
Group C - Moderately Pollution Tolerant	<i>Hydracarina</i>	Few
Group D - Very Pollution Tolerant	<i>None</i>	None
Group E - Most Pollution Tolerant	Oligochaeta	Few



Plate 2.2: Sample Station 2

2.3 Sample Station 3 (Mourne Beg/Derg catchment)

Sample Station 3 was located along a suitable riffle area within and unnamed stream located adjacent to the N15 National Primary Route, (Grid Ref: E 204505 N 387675). The watercourse was approximately 2-3 metres wide with a wet width of 2.5 metres and an average depth of 0.1 metres (Plate 2.3). The benthic substrate was dominated by boulders cobble and gravel. There was no cattle access to the channel and no instream rubbish. The substrate was loose with no compaction. There was a low discharge, moderate flow rate and the water was slightly coloured.

The only instream macrophyte was the aquatic moss *Fontinalis antipyretica*. The benthic substrate had a luxuriant covering of filamentous algae (*Cladophora* sp.). There was a strong Iron influence instream No emergent vegetation was recorded. The bankside vegetation was dominated by Brambles (*Rubus fruticosus* agg.), Compact Rush (*Juncus conglomeratus*), Gorse (*Ulex europaeus*), Bent Grasses (*Agrostis* spp.) and Soft Rush (*Juncus effusus*). The adjoining habitats were dominated by Wet Grassland (GS4), Scrub (WS1) and Blanket Bog (PB2).

The Q rating assigned to the channel was Q3-4. It was assigned this value as Group A invertebrates were few, Group B invertebrates were few and Group C invertebrates were few. Group D invertebrates and Group E invertebrates (the most pollution tolerant) were absent (table 2.3).

Table 2.3: Invertebrate Sample Station 3 Results

Indicator Group	Taxon	Dominance
Group A - Very Pollution Sensitive	<i>Plecoptera</i>	Few
Group B - Moderately Pollution Sensitive	<i>Plecoptera (Leuctra)</i>	Few
Group C - Moderately Pollution Tolerant	<i>Baetis rhodani</i>	Few
	<i>Tricoptera</i> (Uncased spp.)	Few
	<i>Chironomidae</i> (ex. <i>Chironomus</i>)	Few
	<i>Simuliidae</i>	Few
	<i>Hydracarina</i>	Few
Group D - Very Pollution Tolerant	<i>None</i>	None
Group E - Most Pollution Tolerant	<i>None</i>	None



Plate 2.3: Sample Station 03

2.4 Sample Station 4 (Mourne Beg/Derg catchment)

Sample Station 4 was located along a suitable riffle area within Mary Breen's Burn (Grid Ref: E 206437 N 388014). The watercourse was approximately 1-1.5 metres wide with a wet width of one metre and an average depth of 0.1 metres (Plate 2.4). The benthic substrate was dominated by boulders cobble and gravel. There was no cattle

access to the channel and instream rubbish was observed. The substrate was relatively loose with little compaction. There was a low discharge, moderate flow rate and the water was slightly coloured.

The only instream macrophyte was the aquatic moss *Fontinalis antipyretica*. The benthic substrate had a luxuriant covering of filamentous algae (*Cladophora* sp.). There was a strong Iron influence No emergent vegetation was recorded. The bankside vegetation was dominated by Brambles, Compact Rush (*Juncus conglomeratus*), Bent Grasses (*Agrostis* spp.) and Soft Rush (*Juncus effusus*) The adjoining habitats were dominated by Wet Grassland (GS4) and Blanket Bog (PB2).

The Q rating assigned to the channel was Q3-4. It was assigned this value as Group A invertebrates were few, Group B invertebrates were few and Group C invertebrates were few. Group D invertebrates were and Group E invertebrates (the most pollution tolerant) were absent (table 2.4).

Table 2.4: Invertebrate Sample Station 3 Results

Indicator Group	Taxon	Dominance
Group A - Very Pollution Sensitive	<i>Plecoptera</i>	Few
Group B - Moderately Pollution Sensitive	<i>None</i>	None
Group C - Moderately Pollution Tolerant	<i>Tricoptera</i> (Uncased spp.)	Few
	<i>Hydracarina</i>	Few
Group D - Very Pollution Tolerant	<i>None</i>	None
Group E - Most Pollution Tolerant	<i>None</i>	None



Plate 2.4: Sample Station 04

2.5 Sample Station 5 (Mourne Beg/Derg catchment)

Sample Station 5 was located along a suitable riffle area within the Mourne Beg River, (Grid Ref: E 209917 N 388319). The watercourse was approximately 12-15 metres wide with a wet width of 14 metres and an average depth of 0.4 metres (Plate 2.5). The benthic substrate was dominated by boulders, cobble and gravel. There was no cattle access to the channel and no instream rubbish. The substrate was loose with no compaction. There was a low discharge, moderate flow rate and the water was slightly coloured.

The only instream macrophytes were *Sparganium angustifolium* and the aquatic moss *Fontinalis antipyretica*. The benthic substrate had a covering of filamentous algae (*Cladophora* sp.). The algal growth was luxuriant and suggests eutrophication of the stream. No emergent vegetation was recorded. The bankside vegetation was dominated by Compact Rush (*Juncus conglomeratus*), Bent Grasses (*Agrostis* spp.) and Soft Rush (*Juncus effusus*). The adjoining habitats were dominated by Conifer Plantation(WD4) and Wet Grassland (GS4).

The Q rating assigned to the channel was Q3-4. It was assigned this value as Group A invertebrates were few, Group B invertebrates were few and Group C invertebrates were dominant. Group D invertebrates were absent and Group E invertebrates (the most pollution tolerant) were few (table 2.5).

Table 2.5: Invertebrate Sample Station 6 Results

Indicator Group	Taxon	Dominance
Group A - Very Pollution Sensitive	None	None
Group B - Moderately Pollution Sensitive	<i>Plecoptera (Leuctra)</i>	Few
Group C - Moderately Pollution Tolerant	<i>Baetis rhodani</i>	Common
	<i>Tricoptera</i> (Uncased spp.)	Few
	<i>Chironomidae (ex. Chironomus)</i>	Few
	<i>Simuliidae</i>	Few
	<i>Coleoptera</i>	Few
	<i>Hydracarina</i>	Few
Group D - Very Pollution Tolerant	None	None
Group E - Most Pollution Tolerant	None	None



Plate 2.5: Sample Station 05

3 CONCLUSIONS

Samples at 5 stations within the Mourne Beg/Derg catchment were surveyed. The survey was conducted in accordance with the methodology set out by the EPA in its survey guidelines.

There are a number E.P.A. Q-value monitoring sites for both catchments in the wider area. The most relevant sites for comparison are discussed here. The river sampling station “Bridge SW of Tonreagh” (Mourne Beg/Derg catchment, Grid Ref. E209903 N388300, the same position as Sample Station 5, above) was sampled in 2013 and a Q-Value of 3 (poor) was assigned, c.f. a value of 3-4 for Sample Station 5 in 2014. The data from these 5 sampling sites provides a baseline against which any water quality changes occurring in the future can be measured.

References

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