

Kilkenny Central Access Scheme

Follow-up Aquatic Ecological Report



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Prepared on behalf of John Craddock Ltd.



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1. INTRODUCTION

Ecofact undertook a survey of the River Nore in the environs of the proposed Kilkenny Central Access Scheme in July 2014 on behalf of John Craddock Ltd. (ECOFAC, 2014). John Craddock Ltd. requested a follow up survey of the site to cover aquatic macroinvertebrates and aquatic plants. This report outlines the observations of a survey of the study area following a survey undertaken in early October 2014.

2. METHODOLOGY

The current was undertaken on 3rd October 2014. The River Nore at proposed bridge crossing point was assessed in terms of the aquatic plants and macroinvertebrates present.

Qualitative sampling of benthic aquatic macroinvertebrates was undertaken at two sites: within the footprint of the works (Site 1) and at a control sites located upstream (Site 2) using kick-sampling (Toner *et al.*, 2005). Stone washings and sweeps were undertaken to ensure a representative sample of the fauna within the river was collected. All aquatic plants present at each site were also recorded. An underwater visual assessment of the river upstream of the works, at the works and downstream of the works was undertaken by snorkelling. Underwater photographs of the river were taken during the snorkelling survey.

3. RESULTS

The works undertaken for the Kilkenny Central Access Scheme to date have included instream and riparian works. The part of the river affected by the works has been blocked off, with floating plastic piping positioned across the river upstream and downstream of the works area. A boom was positioned across the river downstream of the works location within this area.

Two structures have been constructed within the river approximately 5m from the right bank. The right bank of the river has been denuded and covered with limestone aggregate. Bare soil also occurs in this area. The riverbed within the footprint of the works has been significantly altered. Stone (limestone) has been introduced to the river. Large piles of submerged stone were recorded at both the right and left sides of the river. On the right side of the channel, this stone extends for a distance of approximately 25m longitudinally (upstream to downstream) and over half way across the river (from the right bank). The coverage of newly introduced instream stone on the left side of the channel is approximately 10m longitudinally and 7m across. There was evidence that the bed of the river between these areas had been affected by the works i.e. stones had been introduced to the riverbed and had been subsequently removed.

The riverbed within the footprint of the works had a thick layer of deposited silt. This siltation was significant within the works area and completely covered the substrate in places. This siltation extended a considerable distance downstream. Indeed, an examination of the river approximately 700m downstream of the works indicated recent suspended solids pollution - the substrate in the River Nore immediately upstream of Lacken Weir had a heavy coat of silt.

No aquatic plant life was recorded at the proposed bridge crossing site (Site 1). All plant life has been covered, or removed. Previously recorded aquatic plant life at this location was floating sweet grass *Glyceria fluitans*, curly pondweed *Potamogeton crispus*, Waterweed *Elodea* sp., water starwort *Callitriche* sp., aquatic moss *Fontinalis* sp. and filamentous algae *Cladophora* sp. Aquatic flora at Site 2 upstream of Green's Bridge was the same as recorded in the July survey (Water crowfoot

Ranunculus sp., *Potamogeton* sp, Canadian pondweed *Elodea canadensis*, aquatic moss and filamentous algae).

The macroinvertebrates recorded during the current survey are listed in Table 1. No macroinvertebrate life was recorded in the river at Site 1. This is attributed to the recently introduced rock and excessive siltation.

A total of 21 macroinvertebrate families were recorded at the control site located upstream from the works (Site 2), with the community recorded being almost identical to the July survey. The benthic faunal community at Site 2 included snails (*Ancylus fluviatilis*, *Bithynia tentaculata*, *Potamopyrgus jenkensi*), Freshwater shrimp *Gammarus deubeni*, and beetles (*Potamonectes depressus elegans*). Less pollution sensitive taxa were limited to the cased Trichopterans *Sericostoma personatum* and *Agapetus fuscipes*. The macroinvertebrate community at this location included pollution sensitive larvae of the mayfly *Ecdyonurus* sp. and the stonefly *Perla bipunctata*.

The River Nore within the works area and downstream, at least as far as Lacken Weir, has been adversely affected by the recent instream works at the crossing point of the Kilkenny Central Access scheme. Within the works area, the riverbed has been completely changed with the introduction of limestone. The habitat quality of the river downstream of the works area has been seriously degraded as silt has covered the substrate in close proximity to the works, and is deeply embedded within the substrate to within 700m downstream. In advance of the instream works the river at Site 1 supported 17 families of macroinvertebrates. In the most recent survey no macroinvertebrates were recorded at this location despite extensive searching. Macroinvertebrate habitat has been obliterated as a result of the instream works within the footprint of the development. There are also no aquatic plants present at the bridge Crossing site.

Table 1 Results of the macroinvertebrate sampling on the River Nore in Kilkenny during June 2014.

Taxa	Pollution sensitivity group	Functional group	Site 1 (bridge site)	Site 2 Upstream control site)
LEECHES (Hirudinea)				
Family Glossiphonia				
<i>Glossiphonia complanata</i>	D	Predator		*
Family Erpobdellidae				
<i>Erpobdella octoculata</i>	D	Predator		**
SNAILS (Mollusca, Gastropoda)				
Family Planorbidae				
Keeled ramshorn snail <i>Planorbis carinatus</i>	C	Scraper		
Family Ancyliidae				
River limpet <i>Ancylus fluviatilis</i>	C	Scraper		****
Family Hydrobiidae				
Common Bithynia <i>Bithynia tentaculata</i>	C	Shredder		****
<i>Potamopyrgus jenkinsi</i>	C	Shredder		****
Family Lymnaeidae				
<i>Lymnea peregra</i>	C	Shredder		*
MUSSELS (Mollusca, Lamellibranchiata)				
Family Sphaeriidae				
Pea Mussels <i>Pisidium</i> sp.	D	Filtering collector		*
CRUSTACEANS (Crustacea)				
Family Gammaridae				
Freshwater shrimp <i>Gammarus deubeni</i>	C	Shredder		*****
Family Asellidae				
Hog louse <i>Asellus aquaticus</i>	D	Shredder		**
MAYFLIES (Uniramia, Ephemeroptera)				
Family Heptagenidae				
<i>Ecdyonurus</i> sp.	A	Scraper & gathering collector		**
Family Baetidae				
<i>Baetis rhodani</i>	C	Gathering collector		*****
Family Ephemerellidae				
<i>Ephemerella</i> sp.	C	Gathering collector		****
STONEFLIES (Order Plecoptera)				
(Perlidae)				
Large pale stonefly <i>Perla bipunctata</i>	A	Shredder		*
CASELESS CADDIS FLIES (Trichoptera)				
Family Hydropsychidae				
<i>Hydropsyche</i> sp.	C	Filtering collector		****
Family Polycentropodidae				
<i>Polycentropus kingi</i>	C	Filtering collector		**
Family Rhyacophilidae				
<i>Rhyacophila dorsalis</i>	C	Predator		*
CASED CADDIS FLIES (Tricoptera)				
Family Sericostomatidae				
Black caperer <i>Sericostoma personatum</i>	B	Shredder		****
Family Lepidostomatidae				

Taxa	Pollution sensitivity group	Functional group	Site 1 (bridge site)	Site 2 Upstream control site)
Little black caddisfly <i>Agapetus fuscipes</i>	B	Scraper		****
TRUE FLIES (Diptera)				
Family Chironomidae				
Green chironomid	C	Filtering collector		**
<i>Chironomus</i> sp.	E	Filtering collector		
Family Tipulidae	C	Shredder		
<i>Dicranota</i> sp.	C	Shredder		**
BEETLES (Coleoptera)				
Family Elmidae				
<i>Elmis</i> sp.	C	Predator		***
Family Gyrinidae	C	Predator		
Family Dytiscidae (Sub-family Hydroporinae)				
<i>Potamonectes depressus elegans</i>	C	Predator		*
BUGS (Hemiptera)				
Family Corixidae	C	Predator		*

*Present (1 or 2 individuals), **Scarce/Few (<1%), ***Small Numbers (<5%), ****Fair Numbers (5-10%), *****Common (10-20%), *****Numerous (25-50%), *****Dominant (50-75%), *****Excessive (>75%).

REFERENCES

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PLATES



Plate 1 Biological sampling in the River Nore upstream of Green's Bridge at the Control site (Site 2).



Plate 2 The River Nore at the location of the new bridge. Two structures have been constructed within the river. The riverbed in this part of the river has been significantly altered.



Plate 3 Bare aggregates and soil on the right bank of the river.



Plate 4 Boom positioned across the river downstream of the works.



Plate 5 No aquatic plant life was recorded within the footprint of the development during the snorkelling survey.



Plate 6 Underwater view of the River Nore at the new bridge crossing point. All aquatic life has been covered, or removed. Substrate in the River Nore at the crossing point of the new bridge currently comprises introduced stone and a layer of deposited silt.



Plate 7 View of the centre of the River Nore at the crossing point. There was evidence that the bed of the river beyond the existing piles of stone had been affected by the works i.e. stones had been introduced to the riverbed in other areas between same, and had been removed.



Plate 8 A large pile of stones occurs in the river at both the left and right side of the river at the crossing point.



Plate 9 Larvae of the pollution sensitive stonefly *Perla bipunctata* was recorded in riffled habitat upstream of Green's Bridge (Control site).



Plate 10 The River Nore supports a diverse macroinvertebrate community at the Control site. Larvae of the cased caddisfly *Agapetus fuscipes* (Group B: less pollution sensitive indicator) can be seen attached to the overturned rock.



Plate 11 The European eel *Anguilla anguilla* was recorded in the river at Site 2. Suitable habitat for this endangered species occurs in the river within the study area.



Plate 12 Substrate of the River Nore immediately upstream of Lacken Weir. This photo indicates recent Suspended Solids pollution. This part of the river is approximately 700m downstream of the crossing point.