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**Appendix 16.2**  
**Macroinvertebrate Fauna**  
**and Q-value Analysis**

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## Macroinvertebrate Data

**Table A16-2a** lists macroinvertebrate fauna collected from kick sampling conducted in 2020, 2021 and 2022, covering the River Boyne (Slane Bridge) (2020, 2021) and Thurstianstown Stream (2022). **Table A16-2b** provides macroinvertebrate data for the Mattock (Mooretown) Stream (2020-2022). Physical habitat data is presented along with resultant Q-values, indicative of biological water quality conditions.

**Table A16-2a: Macroinvertebrate Data – River Boyne and Thurstianstown Stream**

	EPA Quality Group	Boyne (Slane Br.)	Boyne (Slane Br.)	Thurstianstown Stream
Surveyor		LC	LC	LW
Date		12/08/2020	10/08/2021	19/03/2022
X (ITM)		696312	696312	694991
Y (ITM)		773668	773668	772653
Width (m)		50.0	50.0	1.5
Depth (m)		0.55	0.60	0.15-0.25
Habitat		Glide	Glide	Run riffle
Shade		Light	Mod.	High
Dominant Substrate		Cobble (30%), gravel (30%), sand (30-40%)		Cobble (60%); pebble (40%)
Siltation		None	None	High
Flow Velocity		Fast	Fast	Slow-Mod.
Discharge		High	High	Average
Macrophyte cover %		10%	12%	0%
Filamentous algae %		2%	0%	0%
<b>MAY FLIES (Ephemeroptera)</b>				
<i>Ephemera danica</i>	A	F	C	
<i>Serratella ignita</i>	C	F	F	
Baetidae	C		F	+
<b>STONE FLIES (Plecoptera)</b>				
<i>Leuctra</i> spp.	B	F		
<b>CADDIS FLIES (Trichoptera)</b>				
Goeridae	B		F	
<i>Sericostoma personatum</i>	B	C	C	
Leptoceridae	B	F		
Odontoceridae	B		F	
Glossosomatidae	C			C
Polycentropidae	C			+
Limnephilidae	C			+/F
<b>TRUE FLIES (Diptera)</b>				
Chironomidae	C	F	F	F
Tipulidae	C	F		
<b>WATER BEETLES (Coleoptera)</b>				
Elmidae	C	F	F	+/F
Dytiscidae	C	C	F	
Haliplidae	C	F	C	
<b>F/W SHRIMPS (Crustacea)</b>				
<i>Gammarus duebeni</i>	C	N	F	D/E
<b>SNAILS (Mollusca)</b>				
Ancylidae	D	F		
<i>Lymnaea peregra</i>	D		F	
<i>Lymnaea stagnalis</i>	D	F		
Sphaeridae	D		F	
<b>LEECHES (Hirudinea)</b>				
<i>Erpobdella octoculata</i>	D	F		
<b>WORMS (Annelida)</b>				
Oligochaetae (Tubificid)	E		F	
		Q3-4	Q4	Q3
Q Value Status		Moderate	Good	Poor

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Table A16-2b: Macroinvertebrate Data – River Mattock (Mooretown) Stream

	EPA Quality Group	Mattock (Mooretown) Stream (d/s N2 culvert)		
		LC	LC	LW
Surveyor		LC	LC	LW
Date		12/08/2020	10/08/2021	19/03/2022
X (ITM)		697233	697233	697237
Y (ITM)		775302	775302	775302
Width (m)		2.5	3.0	2.2
Depth (m)		0.05	0.10	0.06
Habitat		Riffle-Run	Riffle-Run	Riffle-Run
Shade		Heavy	High/Mod.	High/Mod.
Dominant Substrate		Cobble (50%); Gravel (50%) with layer of silt		
Siltation		V. high	V. high	V. high
Flow Velocity		Slow	Slow	Slow/Mod.
Discharge		<Average	Low	Average
Macrophyte cover %		<1%	<1%	0%
Filamentous Algae %		0%	0%	0%
<b>MAY FLIES (Ephemeroptera)</b>				
<i>Rhithrogenia semicolorata</i>	A			+
<i>Serratella ignita</i>	C		F	
Baetidae	C	C	F	C/N
<b>CADDIS FLIES (Trichoptera)</b>				
Glossosomatidae	C		F	F
<b>TRUE FLIES (Diptera)</b>				
Chironomidae	C	C	C	C
Simuliidae	C	F		F/C
Dicranota	C			
Ceratopoginae	C	F	F	
<b>WATER BEETLES (Coleoptera)</b>				
Elmidae	C	F	F	
<b>F/W SHRIMPS (Crustacea)</b>				
<i>Gammarus duebeni</i>	C	D	N	N
<i>Asellus aquaticus</i>	D		F	+
<b>SNAILS (Mollusca)</b>				
Ancylidae	D	F		+
Sphaeriidae	D			+
<b>LEECHES (Hirudinea)</b>				
Erpobdellidae	D		F	F
<i>Glossiphonia complanata</i>	D			+
<b>WORMS (Annelida)</b>				
Oligochaetae (Tubificid)	E	F	C	F/C
<b>Q-value</b>		<b>Q3</b>	<b>Q2-3</b>	<b>Q3</b>
<b>Q Value Status</b>		<b>Poor</b>	<b>Poor</b>	<b>Poor</b>

+ = Present (one or two); F = Few (1-5%); C = Common (6-20%); N = Numerous (21-50%); D = Dominant (51-75%); E = Excessive (>75%)

## Fisheries Data

Table A16-2c below provides a summary of WFD fish survey data from the Boyne catchment. Table A16-2d shows IFI electrofishing results from the Stonyford River as part of a fisheries enhancement project.

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Table A16-2c: WFD Fish Survey Data (2009-2016)

River	Boyne	Blackwater (Kells)	Athboy	Blackwater (Kells)
EPA Station Name	Boyne Br	Just u/s Lough Ramor	Br nr Clonleason Hse	Bridges in Carricknaveagh & Killikere
Location	1.5km north of Edenderry	Near Virginia	Site A	Site 1
EPA River Station Code	RS07B040200	RS07B010800	RS07A010100	RS07B010450 and RS07B010500
Survey Type	Boat based	Bank based (40m)	Bank based (40m)	10min handset - wadeable sites
Density of fish (no./m <sup>2</sup> )	2009 0.073 ~ 0.001 0.049 ~ ~ ~ ~ 0.007 0.002 0.005 0.003 ~ ~ 0.005 ~ ~ 0.096	2013 0.329 0.273 0.056 0.041 0.034 0.007 ~ 0.017 0.007 0.002 0.002 ~ ~ 0.005 ~ ~ 0.096	2012 0.123 0.024 0.009 0.038 0.017 0.028 0.009 ~ ~ ~ ~ ~ ~ 0.005 ~ ~ 0.170	2016 0.079 ~ 0.079 ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ 0.025 0.017 0.113 ~ ~ 0.005 0.221
Brown trout	0.089	0.212	0.047	0.160
O+ trout	~	0.143	0.009	0.052
1++ trout	0.089	0.069	0.038	0.108
Salmon	~	0.010	0.017	0.008
O+ salmon	~	0.003	0.004	0.008
1++ salmon	~	0.008	0.013	0.016
Lamprey	~	~	~	~
European Eel	~	0.01	~	~
Minnow	~	0.031	~	~
Stoneloach	0.002	~	~	0.135
Roach	~	0.013	~	0.017
Perch	~	0.008	~	0.009
3-spined stickleback	0.004	~	~	0.009
Gudgeon	~	0.038	~	~
All Fish	0.057	0.328	0.072	0.004
WFD Status	G M M	M M M	G G P	P B* M M
Comment	Brown trout the most commonly encountered species	Trout (3 age classes) and salmon (2 age classes) both surveys	Brown trout the most abundant species, followed by salmon.	Roach (5 age classes) and trout (4 age classes) common; no salmon.

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Table A16-2d: Stonyford River – IFI electrofishing data 2013-2018

River	Stonyford River				
Location	Just SW of Clonmellon, Co. Westmeath				
OPW Drainage Channel	C1/32/33				
Nearest EPA RS	RS07D060030				
RWB status (2013-2018)	Moderate (Q3-4)				
	2013	2014	2016	2017	2018
Brown trout	90	119	178	107	150
Salmon	0	26	2	0	0
Lamprey	21	12	6	6	59
European Eel	0	0	2	1	3
Roach	100	44	13	42	3
Pike	1	0	0	0	0
3-spined stickleback	44	26	28	58	153
Total Fish No.	257	228	229	214	368