



Office of Climate, Licensing & Resource Use

P.O. Box 3000

Johnstown Castle Estate

Co. Wexford

11th August, 2017

Our ref: 17202/17202-let-003/POT

Dear Sir/Madam,

Re: North Cork Co-op Creameries - EPA application

Registration No: P1051-01

Our previous submission on behalf of Kanturk and District Anglers, Kanturk, Co. Cork and dated the 3rd March 2017 refers;

As previously noted, our client has ongoing concern in relation to the behavior of the applicant in respect of run-off discharge to the local river.

Enclosed please find a number of reports and observations that are germane to the current EPA application and demonstrate a failure on the part of the applicant to exercise due care in relation to discharge into the Allow River.

The enclosures are as follows:

- Appendix A - Assessment of Biological Water Quality in the River Allow, Downstream of Kanturk, County Cork
- Appendix B - Photographic record of the current levels of discharge to the river at various locations
- Appendix C - Video record of the current level of discharge to the river at various positions

We would ask that these matters be closely scrutinised in considering the above application.

Yours sincerely,

A handwritten signature in blue ink, reading 'P. O. Toole' followed by a stylized surname.

Patrick O Toole MRIAI

encl.



Company number 355177 | VAT no IE6375177N

Appendix A - Assessment of Biological Water Quality in the River Allow. Downstream of Kanturk. County Cork

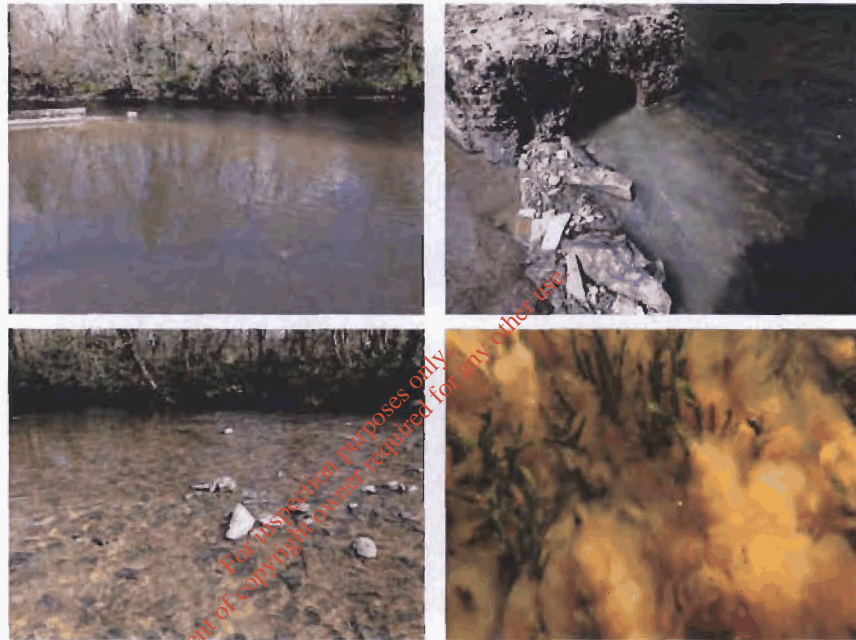
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Company number 355177 | VAT no. IE6375177N

Company Directors: Patrick O Toole & Mark Dignam | Registered address: 15 Fr. Mathew Quay, Cork, Ireland | AIT Architecture trading as Meltheal Design Partners

ASSESSMENT OF BIOLOGICAL WATER QUALITY IN THE RIVER ALLOW, DOWNSTREAM OF KANTURK, COUNTY CORK



13 May 2015

REPORT PREPARED FOR KANTURK & DISTRICT TROUT ANGLERS

by

Bill Quirke BSc, MSc, MCIEEM & Helena Twomey BA(Mod), PhD



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1 INTRODUCTION

Conservation Services, Ecological & Environmental Consultants have been commissioned by Kanturk & District Trout Anglers to carry out an assessment of biological water quality in the River Allow downstream of Kanturk, County Cork following observations of extensive 'sewage fungus' growths downstream of Kanturk.

The classic account of Hynes (1960) describes 'sewage fungus' as follows: "*A few species of micro-organisms form massive colonies in organically polluted water. These can be seen readily with the naked eye and are collectively referred to as 'Sewage fungus'. Only some of the organisms are, however, strictly speaking fungi; some are colonial bacteriaThis type of growth develops anywhere where there is a suitable supply of nutrients, and we are all familiar with it as the slimy growths in sink outflows and on drain covers. ...It forms ragged white, yellow, pink or brown masses on all solid objects in the river, and may even form a carpet over mud surfaces. ...It feeds on organic matter, particularly carbohydrates, but it also needs nitrogen ... It therefore thrives where there are amino-acids resulting from protein breakdown, especially where these are mixed with carbohydrates as occurs below sugar factories, breweries and dairies.*"

The section of the River Allow downstream of Kanturk forms part of the Blackwater (Cork/Waterford) River Special Area of Conservation (Site Code 002170). A range of aquatic species are listed as qualifying interests of the SAC and are therefore specifically protected within the SAC.

The following qualifying interest aquatic species occur in the River Allow: Freshwater Pearl Mussel, Salmon, Brook/River Lamprey & Sea Lamprey (King & Linnane 2004; NS2 2010). Though live mussels have been recorded washed up in this section of river after floods (Igoe pers. comm.), it is possible that a Freshwater Pearl Mussel population does not now exist in the Allow downstream of Kanturk. "*A comprehensive survey of lowest 3 km of the Allow*

River above its confluence with the Blackwater River was carried out in 2007... No living mussels were found, and it was noted that habitat was severely negatively impacted by chronic eutrophication and sedimentation " (NS2 2010). However, the species has been recorded in the main channel of the Blackwater River immediately downstream of the River Allow confluence (c.4km downstream of Kanturk) (NPWS 2012). Nevertheless the entire main channel of the Allow River (including the section downstream of Kanturk surveyed for the present report) and the main channel of the River Blackwater are classified as suitable FPM habitat in the SAC Conservation Objectives; the targets set in the Conservation Objectives for FPM therefore apply to these entire sections of river.

The Conservation Objectives of the SAC require that the habitats and species for which the Natura sites have been selected (i.e. the qualifying interests) be maintained or restored to favourable conservation status/ condition. The SAC Conservation Objectives specify a biological water quality requirement of at least Q4 for salmon and of at least Q4-5 for Fresh Water Pearl Mussels (NPWS 2012). In the context of the River Allow the Conservation Objectives therefore require a minimum biological water quality rating of Q4-5.

The Conservation Objectives of the SAC are legally binding under Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna – the 'Habitats Directive' which was transposed into Irish law by the European Communities (Natural Habitats) Regulations, SI 94/1997.

The following legislation also applies to the River Allow and the River Blackwater:

The Local Government (Water Pollution) Act, 1977 (and associated regulations)	Prohibits the entry of unlicensed polluting matter into waters
-------------------------------------------------------------------------------	----------------------------------------------------------------

European Communities Environmental Objectives (Surface Waters) Regulations 2009	Waters classified as less than good must be restored to at least good status within a prescribed timeframe. The environmental targets or goals and the programmes of measures to be included in river basin management plans must therefore reflect these requirements.
The Fisheries (Consolidation) Act, 1959 as amended by the Fisheries (Amendment) Act, 1962	Prohibits: <ol style="list-style-type: none"> 1. The entry of deleterious matter into waters. (Deleterious matter is defined as any substance that is liable to injure fish, their spawning grounds or their food, or to injure fish in their value as human food.) 2. Obstructing the passage of salmon, trout or eels or their smolts and fry 3. Injury or disturbance of the spawn or fry of salmon, trout or eels or to their spawning or nursery areas
Fisheries (Amendment) Act 1999	Requires the Regional Fisheries Board (now IFI) to have regard for the need for the conservation of fish and other species of fauna & flora habitat and biodiversity of inland fisheries and ecosystems. Under this Act the Regional Fisheries Board (now IFI) has the responsibility to protect and conserve all freshwater fisheries within its area of jurisdiction
The Freshwater Fish Directive 78/659/EEC as transposed into Irish law under E.C. (Quality of Salmonid Waters) Regulations 1988 (S.I. No. 293 of 1988)	Lays down standards for the quality of designated waters (including the River Blackwater) and requirements for monitoring.
The Wildlife Act 1976	Prohibits damage to protected species which includes certain freshwater aquatic species.
Water Framework Directive (2000/60/EC)	The Water Framework Directive requires the maintenance of good ecological quality in all surface waters.

Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage	The Environmental Liability Directive specifies that Member States should, inter alia, establish a civil liability regime whereby operators of specified activities which cause environmental damage are financially liable for remedying this damage. The Directive also aims to hold those responsible for certain activities which have caused an imminent threat of environmental damage liable for taking preventive actions.
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The importance of the River Allow as a fishery is indicated by the fact that the river (including the section downstream of Kanturk) has been the training ground for the Trout Anglers Federation of Ireland international teams, both adult and youths, in preparation for world and European fly fishing championships for the past 20 years, and has hosted all Ireland senior and youth championships in the past few years. This year the Five Nations International Championships is due to be held on the River Allow.

An EU LIFE + Project (Project partners Kanturk & District Trout Anglers, IRD Duhallow and Inland Fisheries Ireland) has specifically focused on improving the conservation status of the Special Area of Conservation and developing the Allow Fishery. The project has received financial aid from IRD Duhallow through Leader, from Inland Fisheries Ireland through the Salmon Conservation Fund, and from members of the Kanturk Anglers. (Kanturk & District Trout Anglers pers. comm.)

2 METHODOLOGY FOR INVERTEBRATE SAMPLING AND WATER QUALITY ASSESSMENT

The field assessment and biological sampling was carried out on 27 April 2015.

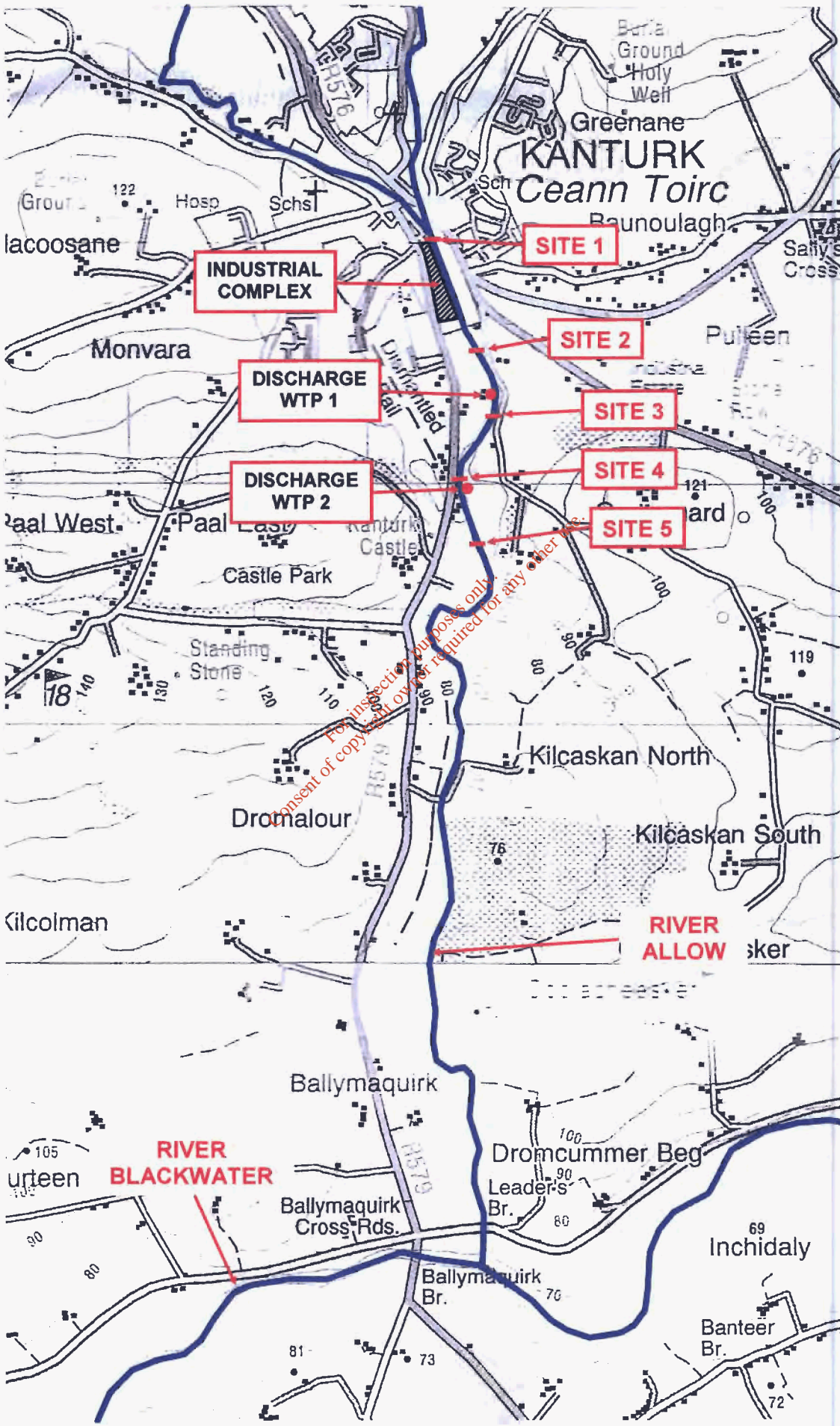
The objective of the biological water quality assessment was to determine the impact on water quality (if any) from:

1. The industrial complex on the west side of the river downstream of Kanturk Bridge.
2. The discharge on the west side of the river at Grid Ref. R 38539 02353 from the "Water Treatment Plant" marked on the online O.S. mapping (Discharge referred to in this report as WTP1).
3. The discharge on the east side of the river at Grid Ref. R 38386 01990 from the "Water Treatment Plant" marked on the online O.S. mapping (Discharge referred to in this report as WTP2).

Sampling Sites: Five sites were selected for biological water quality assessment at the following locations(See Map 1):

Site Number	Location	GRID REFERENCE (GPS)
1	Immediately upstream of the main industrial complex	R 38287 03006
2	Downstream of the main industrial complex	R 38465 02559
3	c.100 m downstream of WTP1.	R 38516 02291

MAP 1 LOCATION OF BIOLOGICAL WATER QUALITY ASSESSMENT SITES



3 RESULTS

3.1 WATER QUALITY ASSESSMENT

Biological water quality ratings are shown on Map 2.

SITE 1

The macroinvertebrate fauna recorded at the site merits a Q-rating of Q4-5 indicating unpolluted conditions and high WFD ecological quality.

INDICATOR GROUP	TAXON	Numbers 27 th April 2015
Group A - Very Pollution Sensitive	<i>Amphinemura</i> sp.	1
	<i>Isoperla grammatica</i>	8
	<i>Perla bipunctata</i>	2
	<i>Siphonoperla torrentium</i>	7
	<i>Ecdyonurus</i> sp.	11
	Heptageniidae (small/damaged)	10
	<i>Heptagenia</i> sp.	7
	<i>Rhythrogena</i> sp.	41
Group B - Moderately Pollution Sensitive	<i>Baetis muticus</i>	79
	Hydroptilidae	2
	Leptoceridae	2
	Limnephilidae	1
Group C - Moderately Pollution Tolerant	<i>Piscicola geometra</i>	1
	<i>Ancylus fluviatilis</i>	3
	<i>Potamopyrgus antipodarum</i>	1
	<i>Gammarus duebeni</i>	9
	Hydracarina	1
	<i>Baetis rhodani</i>	129
	<i>Caenis</i> sp.	10
	<i>Serratella ignita</i>	4
	<i>Hydropsyche</i> sp.	28
	<i>Polycentropus</i> sp.	1
	<i>Rhyacophila</i> sp.	3
	Chironomidae	39
	Simuliidae	4
	Elmidae	3
Group D - Very Pollution Tolerant	<i>Trocheta bykowskii</i>	1

INDICATOR GROUP	TAXON	Numbers 27 th April 2015
	<i>Glossiphonia sp.</i>	1
Group E - Most Pollution Tolerant	None Recorded	
Not assigned to an indicator group	Lumbriculidae	1
	Ceratopogonidae	4
	Muscidae	1

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SITE 2

The macroinvertebrate fauna recorded at the site merits a Q-rating of Q4 indicating unpolluted conditions and good WFD ecological quality.

INDICATOR GROUP	TAXON	Numbers 27 th April 2015
Group A - Very Pollution Sensitive	<i>Amphinemura</i> sp.	1
	<i>Brachyptera risi</i>	2
	<i>Isoperla grammatica</i>	3
	<i>Ecdyonurus</i> sp.	22
	Heptageniidae (small/damaged)	11
	<i>Heptagenia</i> sp.	4
	<i>Rhithrogena</i> sp.	20
Group B - Moderately Pollution Sensitive	<i>Baetis muticus</i>	13
	<i>Lepidostoma</i> sp.	1
	<i>Sericostoma</i> sp.	2
Group C - Moderately Pollution Tolerant	<i>Ancylus fluviatilis</i>	13
	<i>Potamopyrgus antipodarum</i>	2
	<i>Gammarus duebeni</i>	22
	<i>Baetis rhodani</i>	83
	<i>Caenis</i> sp.	6
	<i>Serratella ignita</i>	3
	<i>Hydropsyche</i> sp.	40
	<i>Polycentropus</i> sp.	1
	<i>Rhyacophila</i> sp.	7
	Chironomidae	38
	Simuliidae	4
	Elmidae	1
Group D - Very Pollution Tolerant	<i>Erpobdella octoculata</i>	1
	Erpobdellidae (small)	1
	<i>Glossiphonia</i> sp.	1
	<i>Trocheta bykowskii</i>	1
Group E - Most Pollution Tolerant	None Recorded	
Not assigned to an indicator group	Nematoda	2
	Ceratopogonidae	3

SITE 3

Dense overgrowth of 'sewage fungus' was recorded at the site. It is notable that only two individuals of a single very pollution sensitive taxon were recorded at this site, as compared with 63 individuals of six very pollution sensitive taxa at Site 2 c.250m upstream. The two Group A individuals are likely to be from drift from the less impacted portion of the river upstream of effluent WTP1. The macroinvertebrate fauna recorded at the site merits a Q-rating of Q3 indicating moderately polluted conditions and poor WFD ecological quality. However it is noted that the fauna are consistent with a recent serious decline in water quality, reflected in a major decline in the density of pollution sensitive taxa (as compared with 250m upstream); however the typical pollution sensitive species have not had time to increase in response to the dense overgrowth of 'sewage fungus'. If the conditions recorded on 27/4/15 were to persist, it seems likely that very pollution tolerant invertebrates would increase significantly in numbers, resulting in a further decline in Q-value.

INDICATOR GROUP	TAXON	Numbers 27 th April 2015
Group A - Very Pollution Sensitive	<i>Isoperla grammica</i>	2
Group B - Moderately Pollution Sensitive	<i>Baetis muticus</i>	5
Group C - Moderately Pollution Tolerant	<i>Ancylus fluviatilis</i>	2
	<i>Gammarus duebeni</i>	3
	<i>Baetis rhodani</i>	29
	<i>Caenis sp.</i>	13
	<i>Serratella ignita</i>	5
	<i>Hydropsyche sp.</i>	7
	<i>Polycentropus sp.</i>	2
	<i>Rhyacophila sp.</i>	1
	Chironomidae	32
	Simuliidae	1
	Elmidae	2
Group D - Very Pollution Tolerant	<i>Erpobdella octoculata</i>	3
Group E - Most Pollution Tolerant	Tubificidae	2

INDICATOR GROUP	TAXON	Numbers 27 th April 2015
Not assigned to an indicator group	Nematoda	2

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SITE 4

Dense overgrowth of 'sewage fungus' was recorded at the site. It is notable that no very pollution sensitive taxa were recorded at this site, as compared 63 individuals of six very pollution sensitive taxa at Site 2 c.800m upstream. The macroinvertebrate fauna recorded at the site merits a Q-rating of Q3 indicating moderately polluted conditions and poor WFD ecological quality. However as explained above for Site 3, if the conditions recorded on 27/4/15 were to persist, it seems likely that highly pollution tolerant invertebrates would increase significantly in numbers, resulting in a further decline in Q-value.

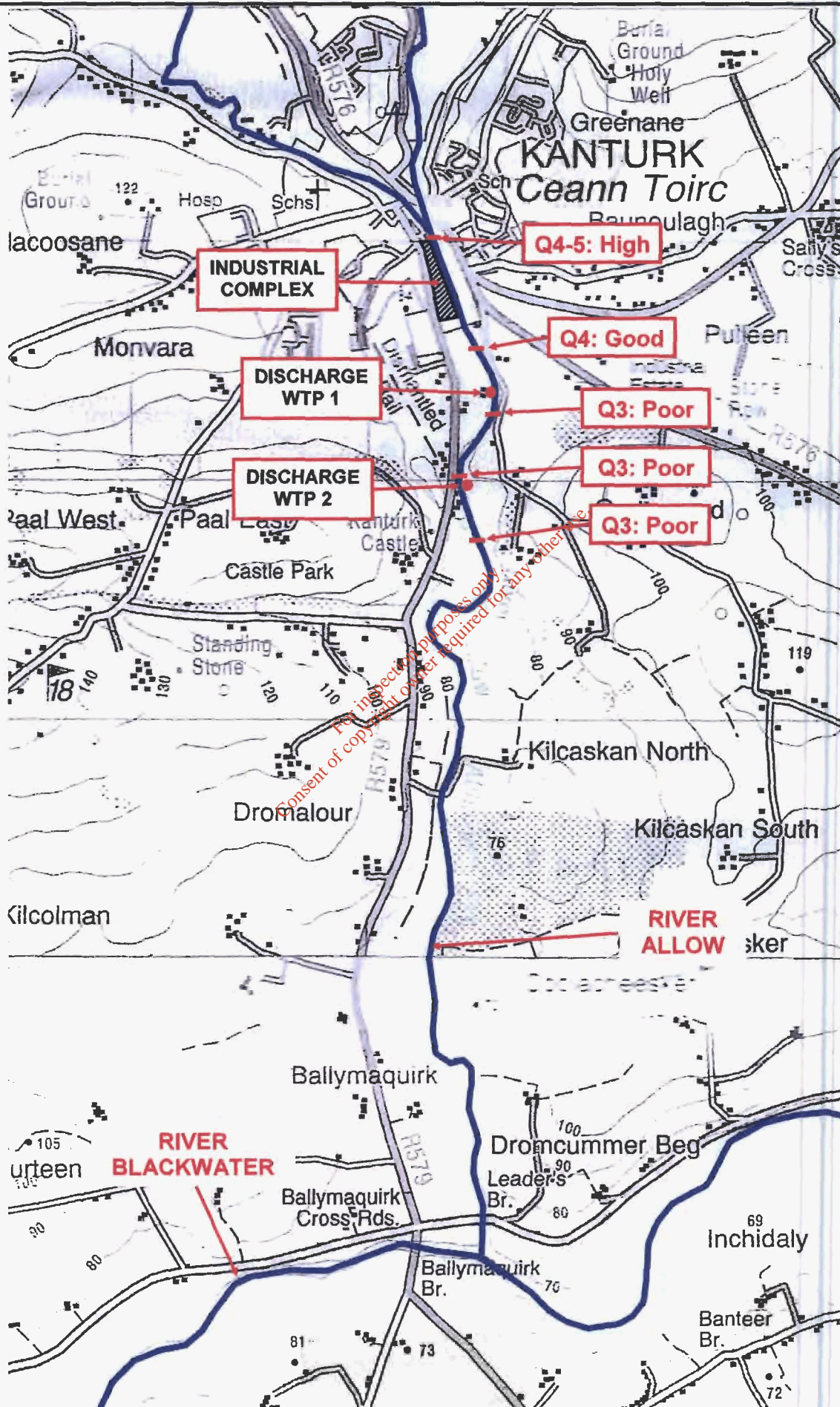
INDICATOR GROUP	TAXON	Numbers 27 th April 2015
Group A - Very Pollution Sensitive	None Recorded	
Group B - Moderately Pollution Sensitive	Hydroptilidae	1
Group C - Moderately Pollution Tolerant	<i>Gammarus duebeni</i>	9
	Hydracarina	1
	<i>Caenis</i> sp.	30
	<i>Hydropsyche</i> sp.	1
	<i>Polycentropus</i> sp.	5
	<i>Psychomyia pusilla</i>	4
	Chironomidae	42
Group D - Very Pollution Tolerant	<i>Glossiphonia complanata</i>	1
	<i>Helobdella stagnalis</i>	1
Group E - Most Pollution Tolerant	Tubificidae	2
Not assigned to an indicator group	Psychodidae	1
	Lumbriculidae	2

SITE 5

EPA additional qualifying criteria for Q-ratings above Q3 include “*Slime Growths (Sewage Fungus) Trace or None*” (McGarrigle *et al* 2002). Taking into account the 70% coverage by sewage fungus at the site, and relatively high densities of Group D leeches, the site merits a Q-rating of Q3.

INDICATOR GROUP	TAXON	Numbers 27 th April 2015
Group A - Very Pollution Sensitive	<i>Isoperla grammatica</i>	1
	<i>Ecdyonurus sp.</i>	1
	<i>Rhithrogena sp.</i>	3
Group B - Moderately Pollution Sensitive	<i>Baetis muticus</i>	1
Group C - Moderately Pollution Tolerant	<i>Ancylus fluviatilis</i>	12
	<i>Gammarus duebeni</i>	3
	Hydracarina	1
	<i>Baetis rhodani</i>	76
	<i>Caenis sp.</i>	9
	<i>Hydropsyche sp.</i>	15
	<i>Psychomyia pusilla</i>	2
	Chironomidae	34
	Simuliidae	2
	Elmidae	5
Group D - Very Pollution Tolerant	<i>Erpobdella octoculata</i>	22
	<i>Helobdella stagnalis</i>	2
Group E - Most Pollution Tolerant	Tubificidae	7
Not assigned to an indicator group	Enchytraeidae	3



MAP 2 Q-RATINGS AND WATER FRAMEWORK DIRECTIVE ECOLOGICAL QUALITY RATING AT BIOLOGICAL WATER QUALITY ASSESSMENT SITES





3.2 SURVEY OF EXTENT OF 'SEWAGE FUNGUS'

Locations where 'sewage fungus' assessment was carried out are shown on Map 3.





SITE A

Location	Immediately upstream of main industrial complex
Grid Reference	R 38287 03006
Description	"Sewage Fungus" absent.
	



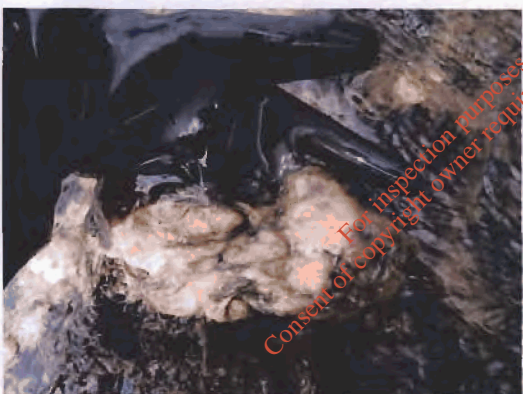

SITE B

Location	Immediately downstream of main industrial complex
Grid Reference	R 38465 02559
Description	"Sewage Fungus" absent
	


SITE C

Location	At and immediately downstream of effluent discharge WTP1
Grid Reference	R 38539 02353
Description	Turbid effluent discharge generating turbid plume in river.
	
	

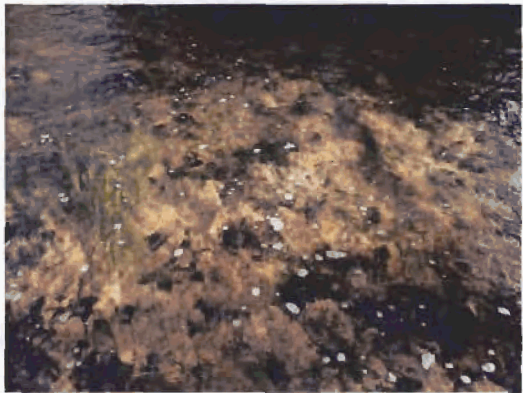

SITE D

Location	c.100m downstream of effluent discharge WTP1
Grid Reference	R 38516 02291
Description	Dense channel-wide growth of "Sewage Fungus"
	
	



SITE E

Location	c.450m downstream of effluent discharge WTP1
Grid Reference	R 38383 02003
Description	Continuing dense channel-wide growths of "Sewage Fungus"
	



SITE F

Location	c.700m downstream of effluent discharge WTP1
Grid Reference	R 38470 01727
Description	Continuing dense channel-wide growths of "Sewage Fungus"
	

SITE G

Location	c.1.7m downstream of effluent discharge WTP1
Grid Reference	R 38303 00695
Description	Continuing dense channel-wide growths of "Sewage Fungus"
	

SITE H

Location	c.4km downstream of effluent discharge WTP1. Just upstream of Leader's Bridge and confluence with River Blackwater
Grid Reference	R 38480 98945
Description	Continuing channel-wide growths of "Sewage Fungus"
	

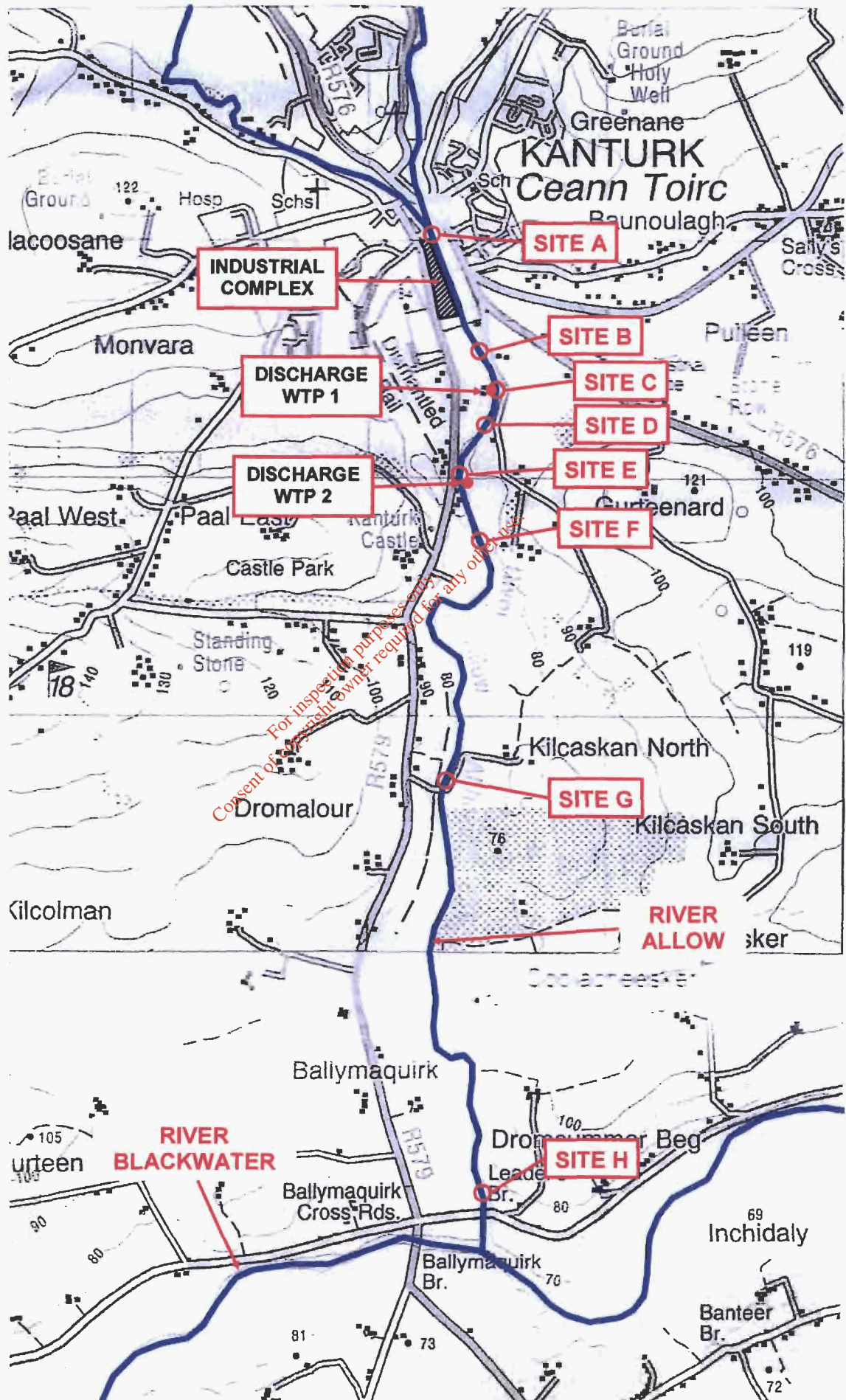
Photos and underwater video can be viewed by using browsers such as Chrome or Safari (not Internet Explorer) at the following link:

<https://picasaweb.google.com/108632998622282695987/AllowDownstreamKanturk27April2015?authuser=0&authkey=Gv1sRgCJTbpqfn4K-RcQ&feat=directlink>

To see them on the map, in Picasa Web Albums, click on "View Map"; to obtain satellite view click "Satellite"; click on the photo thumbnails to enlarge them.

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MAP 3 'SEWAGE FUNGUS' SURVEY LOCATIONS



4 SUMMARY & CONCLUSIONS

1. At the time of the present survey (27/4/15) a significant discolored and malodorous effluent was observed in the River Allow at Grid Reference R38539 02353 (WTP1). This effluent was creating a large turbid plume downstream. It was observed that whereas 'sewage fungus' was absent or at insignificant levels upstream of the effluent location, dense channel-wide overgrowths of 'sewage fungus' were present at all points observed in the River Allow in the c.4km from the discharge location to the confluence of the River Allow with the River Blackwater.
2. It is concluded that the overgrowth of 'sewage fungus' in the c.4km of channel is likely to be caused by effluent WTP1.
3. Biological water quality assessment carried out at five locations in the c.1.5km of channel downstream of Kanturk bridge.
4. At Site 1 which is upstream of any of the potential pollution sources under investigation, a Q-rating of Q4-5 indicating unpolluted conditions and 'High' Water Framework Directive Ecological Quality was recorded. The ecological quality at this site meets the water quality requirements set out in the SAC Conservation Objectives.
5. At Site 2 which is c.500m downstream of Site 1 and downstream of the industrial complex on the west bank of the river, the River Allow has a Q-rating of Q4 indicating 'Good' Water Framework Directive Ecological Quality, a decline from the 'High' rating at the site upstream. This does not meet the requirement for a 'High' rating specified in the SAC Conservation Objectives and some influx of polluting material between Site 1 and Site 2 is indicated.
6. The River Allow has a Q-rating of Q3 at Sites 3, 4 & 5 (c.100m, c.450m & c.700m respectively) downstream of WTP1 indicating 'Poor' Water

Framework Directive Ecological Quality and a decline from Q4 at Site 2 c.250m upstream of Site 3. A rating of Q3 does not meet the requirement for a 'High' rating specified in the SAC Conservation Objectives, nor does it meet the requirements for good ecological status set out in the Surface Water Regulations (2009). It is likely that if the blanket "sewage fungus" cover in this section of the river persists the Q-rating will be further reduced.

7. A Q3 biological water quality rating is not regarded as favourable for the survival of salmonid fish in the medium to long term.
8. Hynes (1960) states that growths of sewage fungus "*seem to be repellent to fishes and other animals, which disappear from the areas where they grow even when it can be shown that the water is neither toxic nor severely de-oxygenated.*"
9. In the present assessment it was noted that the density of macroinvertebrates was reduced to abnormally low levels at the sites with dense 'sewage fungus' cover. In addition to the apparent repellent effect of sewage fungus on fish, the invertebrate food in the affected section of river has also evidently been significantly reduced.
10. Hynes (1960) states: "*As the colonies (of sewage fungus) age and break up, or are torn away by floods, they form a light flocculent suspended matter which drifts away and settles further downstream. In this way ... it causes a blanketing of the river bed for a long distance, with corresponding effects on the plants and animals.*" In the present instance, when the dense blanket of sewage fungus growing in the lowest 4km section of the River Allow is dislodged, it will be transported and deposited over the habitat of existing populations of Freshwater Pearl Mussels in the main channel of the River Blackwater immediately downstream, with inevitable negative effects on this globally endangered species.

11. The River Allow downstream of Kanturk is designated as an SAC for the protection of a range of species, including Freshwater Pearl Mussel and Salmon. At the time of the present survey, over a distance of less than 750m, a river with ecological quality meeting the legal requirements for Salmon and the even more sensitive Freshwater Pearl Mussel was transformed to a river blanketed in unsightly sewage fungus, unsuitable for the survival of Freshwater Pearl Mussel or salmonid fish, and with a much depleted and impoverished invertebrate fauna, in which condition it remained for c.4km downstream. This is in breach of the Water Framework Directive, the Habitats Directive, and a range of national legislation dealing with water quality, freshwater fisheries and protection of endangered species. It is clearly important that the cause of this problem is rapidly identified and rectified, and that measures be put in place which will ensure that the problem cannot recur.

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5 REFERENCES

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Hynes, H.B.N. (1960) The biology of polluted waters. Liverpool University Press

King J. J. and Linnane S. M. (2004) The status and distribution of lamprey and shad in the Slaney and Munster Blackwater SACs. Irish Wildlife Manuals, No. 14. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

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NS-2 (2010) Freshwater Pearl Mussel Second Draft Allow Sub-Basin Management Plan.

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Appendix B - Photographic record of the current levels of discharge to the river at various locations

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Environmental Protection
Agency

14 AUG 2017

North Cork Co-OpDischarge into Allow River

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Discharge of milk at the Creamery Milk Intake Plant



17/04/2017

Same as slide 2



17/04/2017

Spillage of milk from Milk Intake Plant into Allow
River



17/04/2017

Same as slide 2



17/04/2017

Pipe from North Cork Co-Op opposite County Council Bring
Centre releasing steam and liquid into river and burning
vegetation.



24/04/2017

Same as slide No 6



24/04/2017

Same as previous slides



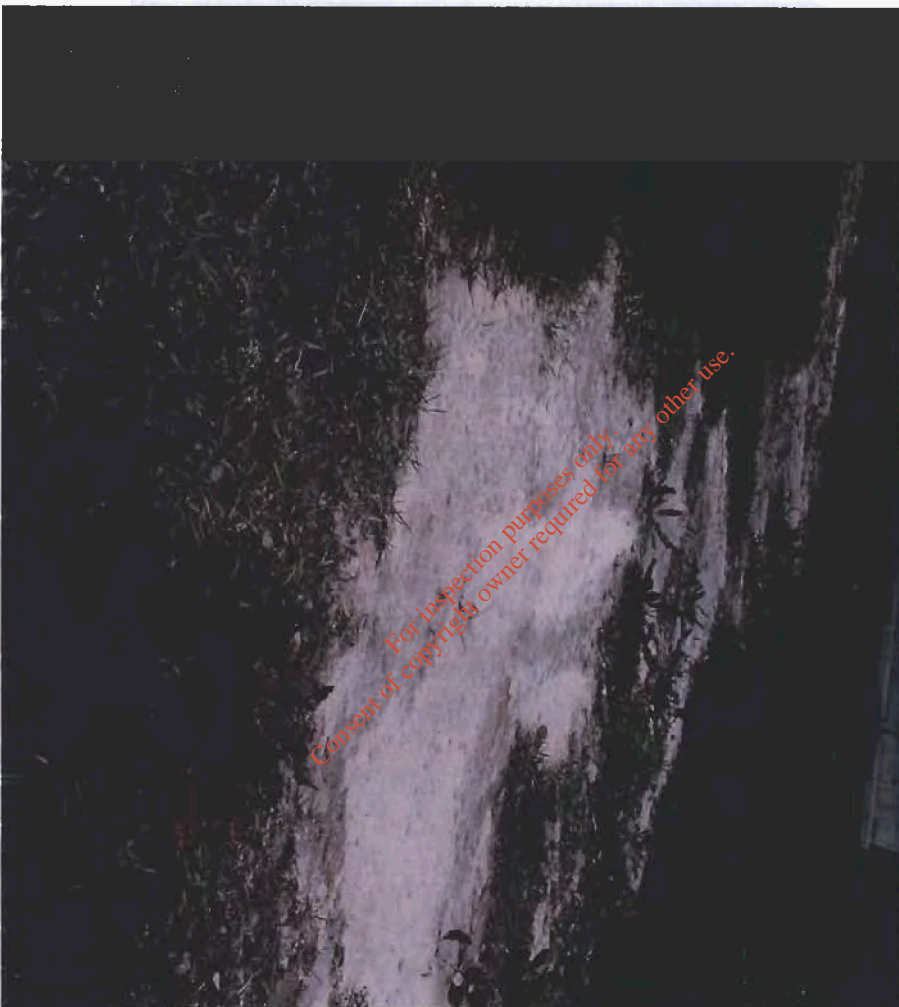
24/04/2017

Overflow from Creamery yard flowing down bankside into Allow
River. Discharge burning all vegetation in its path.



24/04/2017

Discharge run-off from overflowing tanks in North Cork Co-Op waste treatment plant, Bluepool Road. Discharge is in the southern field and flows eventually into Allow River.



05/04/2017

Same as slide 10



05/04/2017

Same as slide 10



05/04/2017

Same as slide 10



05/04/2017

Discharge running from North Cork Co-Op Waste Plant in the field at southern side of Plant. (Allow River at the other side of the fence). Discharge goes through the fence and into the Allow River.



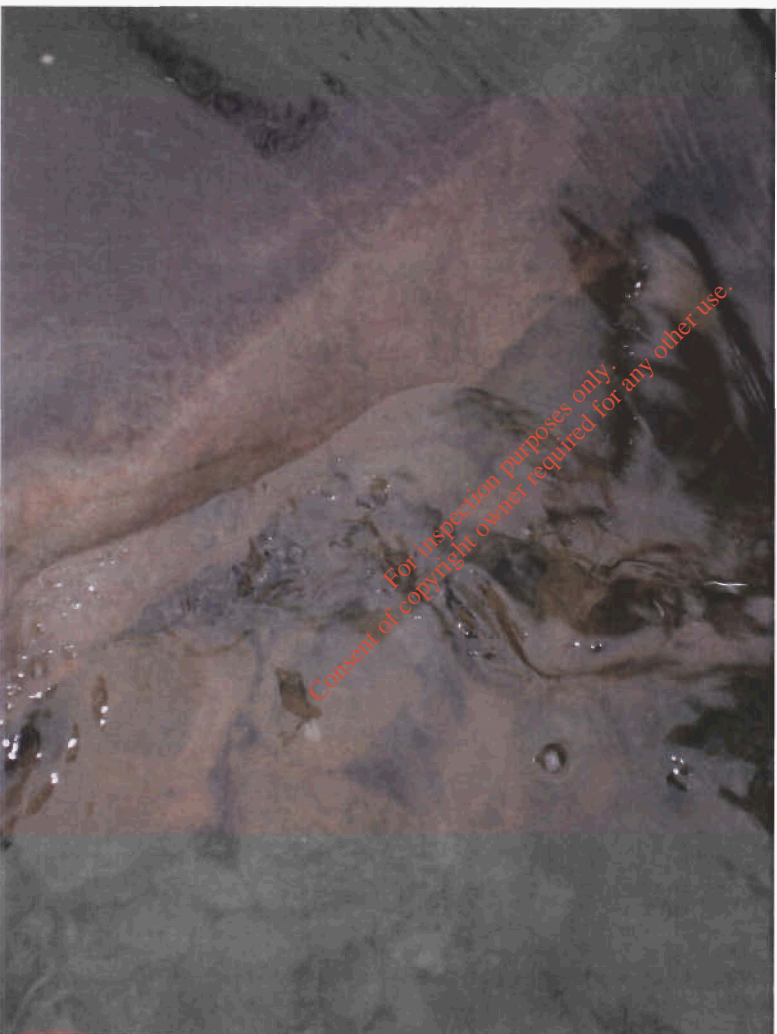
05/04/2017

Pipe running from North Cork Co-Op waste treatment Plant into Allow River.
Brown discharge being released.



05/04/2017

Discharge from the pipe at waste plant into River
Allow.



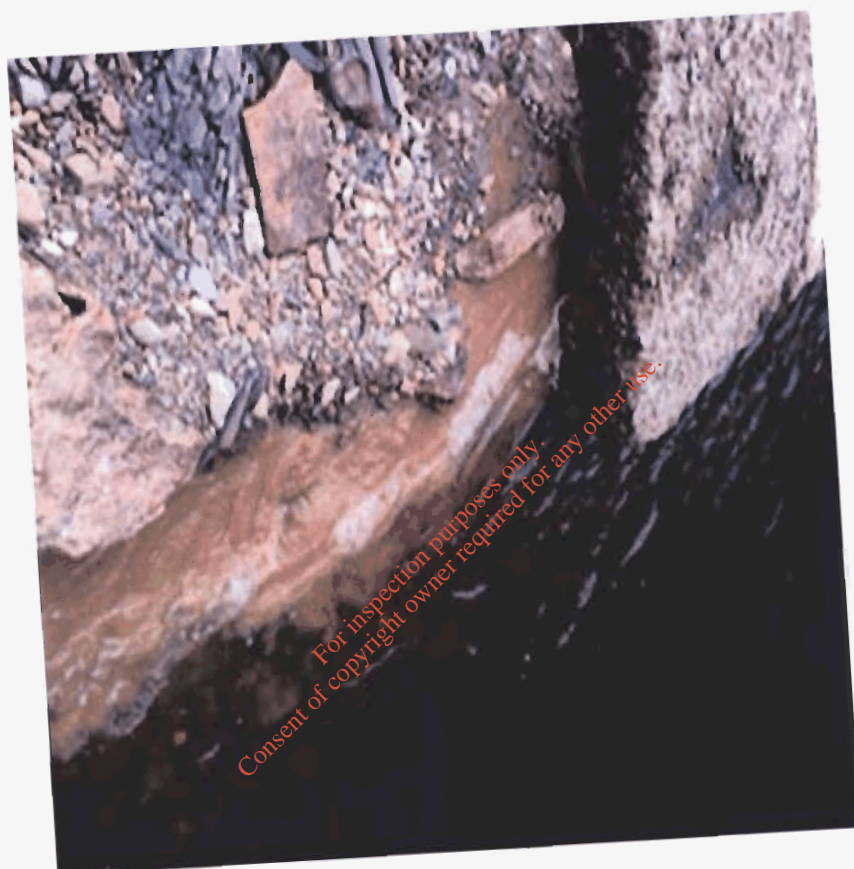
05/04/2017

Discharge from pipe at North Cork Co-Op wastewater plant into River Allow



29/06/2016

Same as previous slide



29/06/2016

River Allow at the North Cork Co-Op waste water plant with white foam floating on surface of the river.



02/07/2017

Same as previous slide



02/07/2017

Ranunculus weed covered in discharge from North Cork
water waste plant in river Allow.



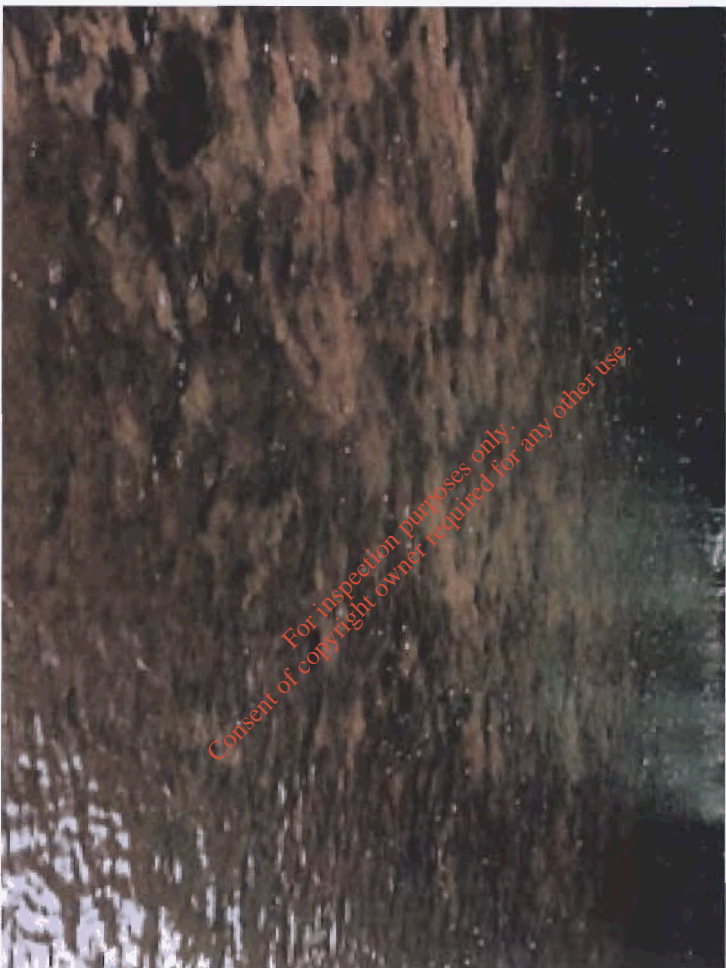
05/07/2017

Same as previous slide



05/07/2017

Bed of Allow River covered in discharge from North
Co-Op waste water plant.



05/07/2017

Same as previous slide



05/07/2017

Same as slide 23



05/07/2017

Same as slide 23



05/07/2017

Pipe at North Cork Co-Op waste water plant discharging into River Allow.



05/07/2017

Pool on River Allow downstream of North Cork Co-Op waste water plant with discharge clearly seen on surface and on bed of the river.



05/07/2017

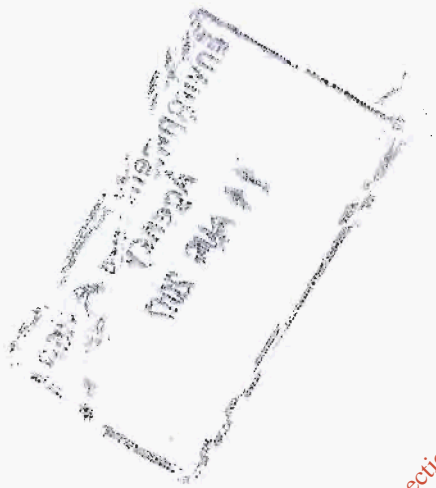
Appendix C - Video record of the current level of discharge to the river at various positions

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