

FORMAL

DEVILS BRIDGE STW

FINAL EFFLUENT

NATIONAL RIVERS AUTHORITY WATER RESOURCES ACT 1991

Application for consent to discharge
Schedule 10



The Consents Officer,
National Rivers Authority,
Welsh Region,
Plas-yr-Afon/Rivers House,
St Mellons Business Park,
Cardiff,
CF3 0LT

Official Use Only
Dist/Area Ref. *South West.*

Application No. *BP0230101*

Date Received:

16-5-93.

PLEASE REFER TO THE ATTACHED NOTES WHEN COMPLETING THE APPLICATION

I/We hereby apply for consent under the provisions of the Water Resources Act 1991 to make a discharge of effluent as described in this application and on the attached plan(s). I/We will bear the costs of any advertisement (see note 1).

I/We enclose a cheque for £ to cover the cost of this application (see note 2).

Signed *S. Lewis* Date *10.5.93*

Authorised on behalf of *DWR CYMRU CYF*

Have you made, or do you intend to make, an application to the Secretary of State for exemption from publicity? (See note 3.) YES/NO*

Has this application been made in response to the service of a relevant prohibition? YES/NO*

If yes please give reference number:

1a Full name and postal address of applicant. (See note 4.) Post Code: Daytime telephone number:	<i>DWR CYMRU WELSH WATER</i> <i>PLAS - Y - FFYNNON</i> <i>CAMBRIAN WAY</i> <i>BRECON</i> <i>POWYS</i> <i>LD3 7HP</i> <i>0874 623181</i> <i>SELWYN LEWIS</i>
1b Agent (if any) Full name and postal address Contact name and daytime telephone number	Note: if this box is completed, all correspondence will be sent to this address.

NOTE: The application should be accompanied by 3 copies of an adequate plan and details of any environmental impact assessment. Failure to do so may result in a delay in processing the application. (See note 5.)

*Delete as necessary

2a) Address or other sufficient description of land or premises to which this application relates.	DEVILS BRIDGE STW DEVILS BRIDGE NR ABERYSTWYTH
2b) National Grid Reference of point of discharge.	SN 7.38 7.70
2c) District Council area.	CEREDIGION
3 State the nature of the discharge. Tick one or more boxes as appropriate. (See note 6.)	Sewage effluent Storm/emergency sewage effluent Trade effluent Any other matter (inc. surface water). ☒ ☐ ☐ ☐
4 For sewage and trade effluent, and storm/emergency discharges, state:- a) Maximum quantity it is proposed to discharge in one day. (See note 7.) b) Highest rate at which it is proposed to operate the discharge. c) Periods during which the discharge will take place.	$P = 120 \quad G = 0.185 \quad I = 30\% P_G$ $(DWF = 29 \text{ m}^3/\text{d})$ $6 P_G + I = 140 \text{ m}^3/\text{day}$ 1.6 l/sec
5. For rainfall dependent discharges, state the area to be drained. (Roof areas and other impervious areas should be separately identified.)	m ²
6 Receiving medium Tick the category to which the proposed discharge(s) are to be made. TIDAL RIVER OR STREAM NON-TIDAL RIVER OR STREAM CANAL LAKE, LOCH OR POND (not discharging to a river or stream) ☐ ☒ ☐ ☐ INTO LAND ONTO LAND DIRECTLY INTO GROUNDWATER INTO LAND AND WATERCOURSE COASTAL WATER (see Note 8.) ☐ ☐ ☐ ☐ ☐ State name of watercourse, if known:- NANT LLETYS	

- 7 The Authority will normally require adequate provision for the taking of samples of the discharge. Please indicate the means proposed. (See note 9.)

At the outlet ☐ At a manhole or sampling chamber ☒ See plan ☐ Other ☐

If other, please give further details:—

- 8 Indicate proposed means of discharge:—

1. Pipe ☒ 2. Channel ☐ 3. Borehole ☐
4. Soakaway ☐ 5. Well ☐ 6. Sub-irrigation system ☐
7. Culvert ☐ 8. Soakaway & sub-irrigation system ☐ 9. Other ☐

If 9 please give further details:—

- 9 Give details as appropriate

- a) For pipes, channels, wells and boreholes, state diameter in millimetres or dimension(s) in metres.
b) For sub-irrigation systems, soakaway pits, wells and boreholes, state depth in metres and geological stratum, if known.
c) For boreholes, state details of lining:
Type of lining
Depth of lining
Depth of perforated lining
Depth of unperforated lining

a) 150 mm. diam.
b)
c)
: metres
: metres
: metres
: metres

- 10 Is there a foul sewer available to which the discharge could be made?

If yes give reason for not connecting.

Distance from nearest foul sewer.

YES/NO*

:

:

- 11 Give brief details of:

- a) Source of water supply (eg mains, well, borehole, etc.)
b) General purpose for which water is used (eg domestic, cooling, etc.)

a)

b)

12 Is consent required for a limited period? If yes give relevant dates	YES /NO*																				
13 On what date do you anticipate the discharge will begin to be made?	1st FEB. 1994																				
14 Does this proposal replace an existing discharge? If yes give details	YES /NO* RELOCATION OF OUTFALL FROM RECONSTRUCTED STW																				
15 Are there any existing consents for discharge from the premises? (see note 10.) If yes, give details, numbers, if known.	YES /NO* FINAL EFFLUENT BG 0004801																				
16 Please give details of the premises – tick as appropriate:– <table border="0"> <tr> <td>1. Single dwelling</td> <td>☐</td> <td>2. Multiple dwellings</td> <td>☐</td> </tr> <tr> <td>3. Licenced premises</td> <td>☐</td> <td>4. Vehicle parking area</td> <td>☐</td> </tr> <tr> <td>5. Industrial premises</td> <td>☐</td> <td>6. Fish farm</td> <td>☐</td> </tr> <tr> <td>7. Mineral workings</td> <td>☐</td> <td>8. WSPLC STW</td> <td>☒</td> </tr> <tr> <td>9. Water supply</td> <td>☐</td> <td>10. Other</td> <td>☐</td> </tr> </table> If other, please give further details.		1. Single dwelling	☐	2. Multiple dwellings	☐	3. Licenced premises	☐	4. Vehicle parking area	☐	5. Industrial premises	☐	6. Fish farm	☐	7. Mineral workings	☐	8. WSPLC STW	☒	9. Water supply	☐	10. Other	☐
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7. Mineral workings	☐	8. WSPLC STW	☒																		
9. Water supply	☐	10. Other	☐																		
17 IN THE CASE OF SUB-IRRIGATION SYSTEMS AND SOAKAWAYS																					
a) Is any part of the system within 10 metres of the site boundary? b) Is any part of the system within 10 metres of a watersource? c) Is the land in which the disposal system is to be constructed under-drained with land drains discharging to a watercourse or to be so under-drained? d) If the answer to either (b) or (c) is "YES" please state the name of the watercourse or sufficient information to identify it. e) Attach details of the percolation test carried out.	YES/NO* YES/NO* YES/NO* : Attached																				
18 FOR SEWAGE TREATMENT PLANTS																					
a) State the population served /population equivalent/ estimated population * b) Give details of the treatment plant to be used (see note 11.)	*All year *Summer 120 *Winter 50																				

*Delete as necessary

FOR TRADE EFFLUENT AND SEWAGE DISCHARGES
CONTAINING TRADE EFFLUENT

19 a) Describe the trade effluent and the process(es) from which it arises. (See note 12.)

b) Maximum temperature of the effluent as discharged °C

c) Does the effluent contain any of the following? *YES/NO

If yes, underline those present and give full details (including maximum, minimum and mean values) separately.

- | | |
|--|--|
| 1. Aldrin, dieldrin, endrin and isodrin | 25. Iron |
| 2. Arsenic | 26. Lead |
| 3. Atrazine | 27. Malathion |
| 4. Azinphos-ethyl | 28. Mercury and its compounds |
| 5. Azinphos-methyl | 29. Nickel |
| 6. Boron | 30. Parathion |
| 7. Cadmium and its compound | 31. Parathion-methyl |
| 8. Carbon tetrachloride | 32. PCSD's |
| 9. Chloroform | 33. Pentachlorophenol (PCP) |
| 10. Chromium | 34. Perchloroethylene |
| 11. Copper | 35. Permethrin |
| 12. Cyanide | 36. pH if outside the range 5.5 to 9.0 |
| 13. Cyfluthrin | 37. Polychlorinated biphenyls |
| 14. DDT | 38. Simazine |
| 15. 1, 2-Dichloroethane | 39. Sulcofuron |
| 16. Dichlorvos | 40. Tetrachloroethylene |
| 17. Dioxins | 41. Tributyltin compounds |
| 18. Endosulfan | 42. Trichlorobenzene |
| 19. Fenitrothion | 43. Trichloroethane |
| 20. Fenthion | 44. Trichloroethylene |
| 21. Flucifuron | 45. Trifluralin |
| 22. Hexachlorobenzene (HCB) | 46. Triphenyltin compounds |
| 23. Hexachlorobutadiene (HCBD) | 47. Vanadium |
| 24. Hexachlorocyclohexane
(lindane and related compounds) | 48. Zinc |

d) Give full details of any other significant chemical components contained in the effluent:—

20 FOR STORM AND EMERGENCY DISCHARGES AND SURFACE WATER SEWERS

State the type of discharge. Tick one or more boxes as appropriate.

Storm tanks	☐	Answer all except 23 & 26
Storm overflow from sewer	☐	Answer all except 23 & 26
Storm overflow from pumping station	☐	Answer all sections below
Emergency overflow from sewer	☐	Answer 20a, 21, 25, 27, 28
Emergency overflow from pumping station	☐	Answer all except 20b, 22
Surface Water	☐	Answer 25, 27
Other	☐	Answer as appropriate

If other, please give further details:--

21		
a) State dry weather flow to pumping station/in sewer	:	m^3/day
b) State flow at which storm discharge will commence	:	l/sec
22 Expected frequency of operation	:	per annum
23 State volume of storm tank(s).	:	m^3
24 State volume of wet well	:	m^3
25 What provisions have been made to raise alarms? (eg telemetry)		
26 What facilities have been provided to prevent the discharge of gross solids? (For screens, give bar spacing or aperture.)		
27 What provisions have been included to deal with		
a) power failure?		
b) mechanical breakdown?		
c) rising main failure?		
28 What facilities have been provided for flow measurements?		
29 Are there any other factors to be taken into account?		

Water Resources Act 1991
as amended by the Environment Act 1995
Consent to Discharge
Certificate of Holder



**ENVIRONMENT
AGENCY**

Part A

To: DWR CYMRU CYFYNGEDIG
CONSENTS REGULATION OFFICER
PLAS-Y-FFYNNON
CAMBRIAN WAY
BRECON LD3 7HP

The **Environment Agency** ("the Agency") hereby confirm that the above named person is a/the registered holder of consent BP0230101

Nature of Discharge(s); SEWAGE EFF/TREATED EFF/CONTINUOUS
at DEVILS BRIDGE STW

Note: This certificate should be kept with the consent document for future reference. If you transfer responsibility for the discharge to somebody else you must pass the consent to them and tell the Agency within 21 days. **Responsibility for the consent cannot be disclaimed by the holder but the registration of holder may be transferred to a successor.** To do this please complete the form below, then tear it off and return it to the address shown. If you fail to transfer the consent, even though you are no longer on the site, you may still be liable for prosecution for pollution. If you transfer the consent but do not tell us, you will be committing an offence. In case of any queries please contact your local Environment Agency office.

Part B Please complete in block capitals or type.

To:

Water Resources Act 1991: Notice of transfer of consent to discharge

Consent:

Name:

Address:

I/We* hereby serve notice on the Agency that I/we* am/are* no longer a/the* Holder of the above consent which will be/was* transferred to:

* delete as appropriate

Name(s) of new holder(s):

Address:

Post Code:

Date of Transfer to new Holder(s);

Signed:..... **Dated:**.....

Name (block capitals): **Position:**



Our ref: 2/EQ/BP0230101/AJJ/JAR
Your ref:

Date: As postmark

Dwr Cymru cyf
Plas Y Ffynnon
Cambrian Way
Brecon
Powys LD3 7HP



Dear Sirs

RE: WATER RESOURCES ACT 1991 SECTION 88 SCHEDULE 10
CONSENT TO DISCHARGE

Further to your application for the consent of the Authority to discharge under the provisions of Section 88 of the Water Resources Act 1991, I enclose the Authority's formal consent to discharge sewage effluent from Devil's Bridge STW, near Aberystwyth, Dyfed.

Under the present Scheme of Charging for Discharges to Controlled Waters an annual charge will be made for all consents to discharge, except where the discharge is of sewage effluent of five cubic metres or less per day. This charge is based on information derived from the conditions attached to the consent to discharge, as outlined in the enclosed leaflet. You will receive an annual bill in due course.

Where there is a change of ownership of the discharge, the Authority should be informed in writing in order that an apportioned charge may be raised.

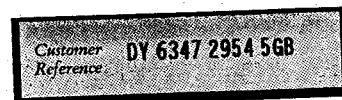
This discharge consent is issued under the provisions of the Water Resources Act 1991. It does not relieve the person to whom it is granted from any obligation, statutory or otherwise, to obtain any other consent, licence or permission that may also be required for the proposal.

If you are not satisfied with the conditions of this consent you may appeal against the decision to the Secretary of State for Wales at the Welsh Office, Cathays Park, Cardiff CF1 3NQ.

Yours faithfully,

H. J. Hughes
S J BROWN

Area Environmental Quality Manager



Enc

Please ask for: Mr Alan Jones, Lampeter Office - Tel: (01570) 422455



Am ragoriaeth



Awarded for excellence

Dr JOHN STONER Rheolwr Cyffredinol Rhanbarthol / Regional General Manager

Awdurdod Afonydd Cenedlaethol, Rhanbarth Cymru / National Rivers Authority, Welsh Region
Llys Afon, Hawthorn Rise, Hwlfordd, Dyfed, SA61 2BQ. Ffôn: (01437) 760081, Ffacs: (01437) 760881
Llys Afon, Hawthorn Rise, Haverfordwest, Dyfed, SA61 2BQ. Tel: (01437) 760081, Fax: (01437) 760881



*Awdurdod Afonydd Cenedlaethol
Rhanbarth Cymru*

*National Rivers Authority
Welsh Region*

Consent No.	BP0230101
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WATER RESOURCES ACT 1991

Under Section 88 and Schedule 10 of the Water Resources Act 1991 and all other enabling powers the National Rivers Authority hereby serves

C O N S E N T

page 1 of 6

To : Dwr Cymru Cyfyngedig
Of : Plas y Ffynnon, Cambrian Way, Brecon, Powys. LD3 7HP
For : A discharge of sewage effluent
To : Nant Lletys, a Tributary of the Afon Rheidol
From : Devils Bridge STW, near Aberystwyth, Dyfed.

CONDITIONS OF CONSENT

1. (i) The discharge shall not contain any poisonous, noxious or polluting matter or solid waste matter.
(ii) Provided that the discharge hereby consented is made in accordance with the following conditions of this consent, such discharge shall not be taken to be in breach of condition (i) above by reason of containing substances or having properties identified in and controlled by those conditions.
2. The discharge shall consist solely of biologically treated sewage effluent.
3. The discharge shall be made from an outlet at National Grid Reference SN 7370 7700 into the Nant Lletys.

Cont/d

Aelod Rhanbarthol o'r Bwrdd
Yr Athro Ron Edwards

Rheolwr Rhanbarth Cyffredinol
Dr John Stoner

Glan Teifi
Barley Mow

Llanbedr Pont Steffan

Dyfed SA48 7BY

Ffôn: Llanbedr Pont Steffan (0570) 422455

Ffôn: (0570) 422455

Regional Board Member
Professor Ron Edwards

Regional General Manager
Dr John Stoner

Glan Teifi
Barley Mow

Lampeter

Dyfed SA48 7BY

Tel: Lampeter (0570) 422455

Ffôn: (0570) 422455

WATER RESOURCES ACT 1991
Continuation Sheet

Consent No. BP0230101

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4. Flow measurement structures shall be provided and maintained to enable the daily volume and instantaneous flow rate of the discharge to be measured or determined as required.
5. A sample point at National Grid Reference SN 7395 7685 shall be constructed, maintained and appropriately labelled so that a representative sample of the sewage effluent discharged may be obtained. The discharger shall ensure that all constituents of the discharge pass through the said sampling point at all times and in any legal proceedings it shall, for the purposes of Section 10 of the Rivers (Prevention of Pollution) Act 1961, be presumed, until the contrary is shown that any sample of the sewage effluent taken at the said sampling point is a sample of what was discharging into controlled waters.
6. The volume of effluent discharged shall not exceed 140 cubic metres in any period of 24 consecutive hours. The rate of discharge shall not exceed 1.6 litres per second.
7. The volume of effluent discharged under dry weather flow conditions shall not exceed 29 cubic metres per day.

For the purpose of this consent dry weather flow shall mean the average daily flow to the treatment works during seven consecutive days without rain (excluding a period of which includes public holidays) following seven days during which the rainfall did not exceed 0.25 millimetres on any one day.

8. (a) Subject to paragraph 8(b) below, no sample of the discharge shall contain more than:
 - (i) 10 milligrams per litre of biochemical oxygen demand (measured after 5 days at 20°C with nitrification suppressed by the addition of allyl-thiourea).
 - (ii) 9 milligrams per litre of ammoniacal nitrogen (expressed as N).
 - (iii) 15 milligrams per litre of suspended solids (measured after drying at 105°C).

Cont/d

WATER RESOURCES ACT 1991
Continuation Sheet

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- (b) The limit for any of the relevant parameters set out in paragraph 8(a) may be exceeded where, in any series of samples of the discharge taken at regular but randomised intervals in any period of twelve consecutive months, as listed in Column 1 of the table at Annex 1 to this Consent, no more of the relevant number of samples, as listed in Column 2 of the said table, exceed the applicable limit for that relevant parameter.
9. As far as is reasonably practicable, the works shall be operated so as to prevent:
- (a) any matter being present in the effluent, other than matter specifically covered by numerical conditions in this consent, to such an extent as to cause the receiving waters, or any waters of which the receiving waters are a tributary, to be poisonous or injurious to fish in those waters, or to the spawning grounds, spawn or food of fish in those waters, or otherwise cause damage to the ecology of those waters; and
- (b) the treated effluent from having any other adverse environmental impact.
10. (a)1 No samples of the sewage effluent taken at a time when Sections 87(2) or 89(1) of the Water Resources Act 1991 apply, and the operation of the sewage treatment works is consequently adversely affected, shall be taken into account in deciding whether or not the conditions in paragraphs 8 & 9 of this consent have been complied with.
- (a)2 On each occasion that the sewage treatment works is not under normal operating conditions for the reasons in condition 10(a)1, the discharger shall use its best endeavours to mitigate any adverse effect and shall notify the Authority by telephone as soon as practicable and confirm in writing within 14 days of the occurrence of such conditions. That notification shall include a full description of the abnormal operating conditions and their impact on the operation of the works.
- (b)1 No samples of sewage effluent taken at a time when unusual weather conditions are adversely affecting the operation of the sewage treatment works, shall be taken into account in deciding whether or not the conditions in paragraph 8 of this consent have been complied with.

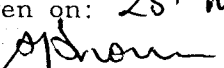
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WATER RESOURCES ACT 1991
Continuation Sheet

Consent No. BP0230101

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10. (b)2 For the purpose of this condition "unusual weather conditions" shall include:-
- (i) low ambient temperatures as evidenced by effluent temperatures of 5°C or less, or by the freezing of mechanical equipment in the works;
 - (ii) significant snow deposits;
 - (iii) tidal or fluvial flooding;
 - (iv) weather conditions causing unforeseen loss of power supply to the sewage treatment plant which could not be ameliorated by the reasonable provision and operation of standby generation facilities.
- (b)3 On any occasion where unusual weather conditions adversely affect the operation of the sewage treatment works, the discharger shall use its best endeavours to mitigate that adverse effect. The discharger shall notify the NRA by telephone as soon as unusual weather conditions are known to have adversely affected operations and shall confirm the circumstances in writing as soon as possible thereafter (and in any event within 14 days of the occurrence of such conditions). That notification shall include a full description of the unusual weather conditions and their impact on the operation of the works.
11. The discharger shall notify the Authority in writing if any known introduction or change, in respect of discharges from trade premises to the sewerage system, occurs that may increase or introduce into the effluent any "dangerous substance" included on Lists I, II, or Red List (set out in Annex 2 to this notice as updated by the Authority from time to time, and notified to the discharger in writing), or any other substance considered by the discharger as having or likely to have a significant effect on the receiving waters.
12. The conditions to which this consent is subject shall take effect from April 1st 1996, or from the date of commissioning of the works which ever is the earlier, unless otherwise agreed in writing with the NRA. The discharger shall give the Authority at least 28 days written notice before making the discharge.

This Consent is given on: 25th May 1995 on behalf of the Authority
by:  Area Environmental Quality Manager

During the period ending with the 24th May 1997 the terms of this Consent will not be altered without the written agreement of the person making the discharge.

ANNEX 1

page 5 of 6

TABLEColumn 1

Number of samples
taken in any period
of 12 months

Column 2

Maximum number of samples
permitted to exceed limit
for given determinand

4-7	1
8-16	2
17-28	3
29-40	4
41-53	5
54-67	6
68-81	7
82-95	8
96-110	9
111-125	10
126-140	11
141-155	12
156-171	13
172-187	14
188-203	15
204-219	16
220-235	17
236-251	18
252-268	19
269-284	20
285-300	21
301-317	22
318-334	23
335-350	24
351-365	25

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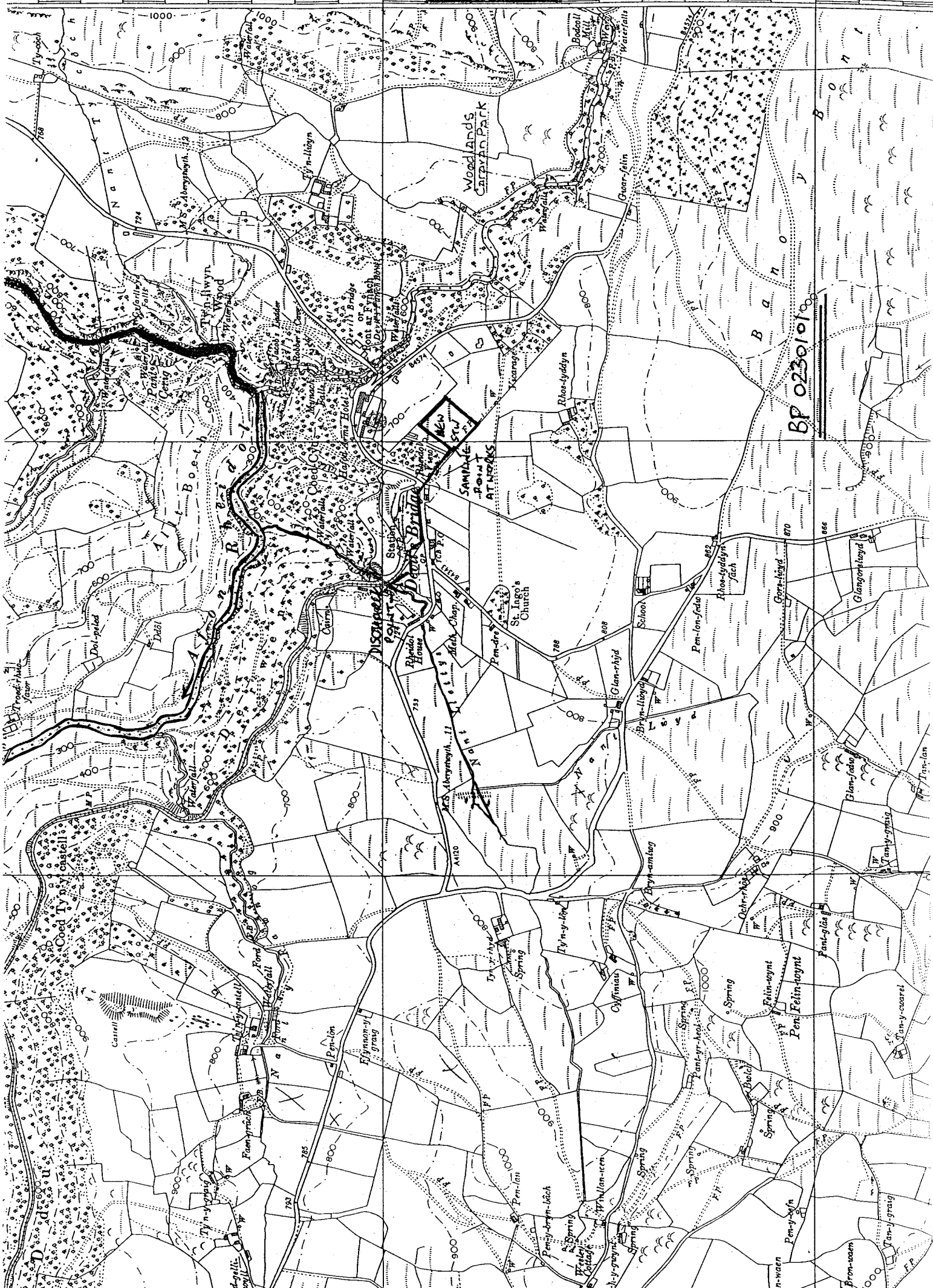
ANNEX 2

SUBSTANCE

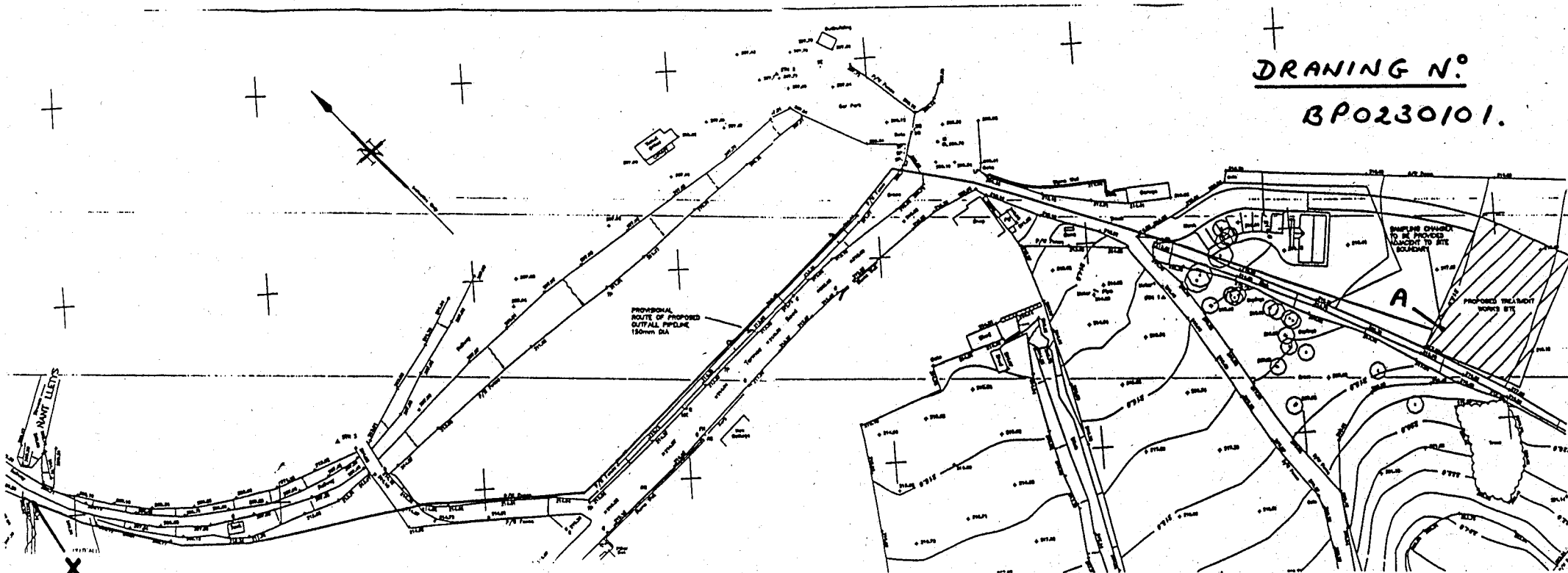
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Mercury
 Cadmium
 g-Hexachlorocyclohexane
 DDT
 Pentachlorophenol
 Hexachlorobenzene
 Hexachlorobutadiene
 Aldrin
 Dieldrin
 Endrin
 Polychlorinated Biphenyls
 Dichlorvos
 1,2 Dichloroethane
 Trichlorobenzene
 Atrazine
 Simazine
 Tributyltin compounds
 Triphenyltin compounds
 Trifluralin
 Fenitrothion
 Azinphos-methyl
 Malathion
 Endosulphan
 Carbon tetrachloride
 Chloroform
 Trichloroethylene
 Tetrachloroethylene
 Lead
 Chromium
 Zinc
 Copper
 Nickel
 Arsenic
 Iron
 pH
 Boron

Vanadium
 PCSDs
 Cyfluthrin
 Sulcofuron
 Flucofuron
 Permethrin
 Cyanide
 Azinphos-ethyl
 Fenthion
 Parathion
 Parathion-methyl
 Trichloroethane
 Dioxins
 Isodrin



DRAWING N°
BP0230101.



X
DISCHARGE
POINT
(UPSTREAM OF
RAILWAY CULVERT)

Dwr Cymru Welsh Water

Invertebrate Ecology Sampling Devil's Bridge

SH80011/D1/1
May 1999

Hyder 
Consulting

Dwr Cymru Welsh Water

Invertebrate Ecology Sampling Devil's Bridge

Author Mark Doughty

Checker Peter Sturgess

Approver Leslie Walker

SH80011 May 1999

This report has been prepared for in accordance with the terms and conditions of Dwr Cymru Welsh Water appointment for Dwr Cymru Welsh Water dated 17/05/99. Hyder Consulting Limited cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

1 Introduction

A request was made by Dwr Cymru to sample aquatic invertebrate diversity at the site of an existing discharge to the Nant Lletty located at Devil's Bridge, Mid Wales (NGR SN 7370 7700). The aim of the survey was to investigate whether the discharge was having any significant effect on water quality, as measured by aquatic invertebrate diversity. The approach adopted was based on a simple qualitative analysis of invertebrate families present.

2 Site Description

The watercourse which was sampled consists of a steep-sided man made channel constructed from stone. The substrate consists of slate stones of approx. size 50-200mm diameter. Flow was approx. 1 m/s. Water depth was approx. 10cm at time of sampling. A surface water drain is located approx. 3m downstream of the sewage discharge, although this was not discharging at the time of survey.

3 Sampling Methodology

Aquatic Invertebrate sampling was conducted on Thursday 6 May, after a period of dry weather lasting at least 3 days prior to sampling.

A kick sweep sampling technique was used to take 3 replicate samples at each of 2 sample points; one 10m upstream from the discharge point, and the other 10m downstream from the discharge point. The number of replicates was limited by the width of the watercourse at the sampling points. Each kick sample was 3 minutes in duration.

4 Results and Interpretation

A total of 15 families were present in the samples upstream of the outfall, compared with a total of 11 families in the downstream samples. There were also more individuals in the upstream samples.

The Biological Monitoring Working Party (BMWP) Score system (1981 version) was used to score the invertebrates present based on the varying degree of tolerances shown by families to organic pollution. Sensitive taxa are therefore awarded high scores and tolerant taxa low scores. Note that not all invertebrate families score in the scheme. The average pollution tolerance of the taxa (ASPT) was also calculated by dividing the BMWP score by the total number of scoring families.

Order Family	BMWP Score	u/s 1	u/s 2	u/s 3	d/s 1	d/s 2	d/s 3
Plecoptera							
Taeniopterygidae	10	✓	✓		✓	✓	✓
Perlodidae	10	✓		✓			
Chloroperlidae	10	✓	✓	✓		✓	✓
Ephemeroptera							
Heptageniidae	10	✓	✓	✓	✓	✓	✓
Leptophlebiidae	10			✓	✓		
Baetidae	4	✓	✓		✓	✓	
Trichoptera							
Rhyacophilidae	7		✓		✓		
Hydropsychidae	5		✓			✓	
Polycentropodidae	7		✓	✓			
Limnephilidae	7			✓			
Coleoptera							
Scirtidae	5	✓	✓	✓	✓		✓
Diptera							
Simuliidae	5	✓		✓		✓	
(Bibionidae)	NO SCORE	(✓)				(✓)	
(Empididae)	NO SCORE	(✓)	(✓)	(✓)			
Oligochaeta	1	✓	✓		✓		✓
Total Families (with scores)		13			10		
BMWP (replicates combined)		91			67		
ASPT (excluding non-scores)		7.00			6.70		

The results indicate that invertebrate diversity is relatively low at both sample points, although the upstream sample site had more diversity (15 compared to 11 families) and a greater number of individuals. There were also a number of

species at both sample points which are indicative of good water quality, particularly Plecopterans (stoneflies) and Ephemeropterans (mayflies), as would be expected for an unvegetated fast-flowing stream of this nature.

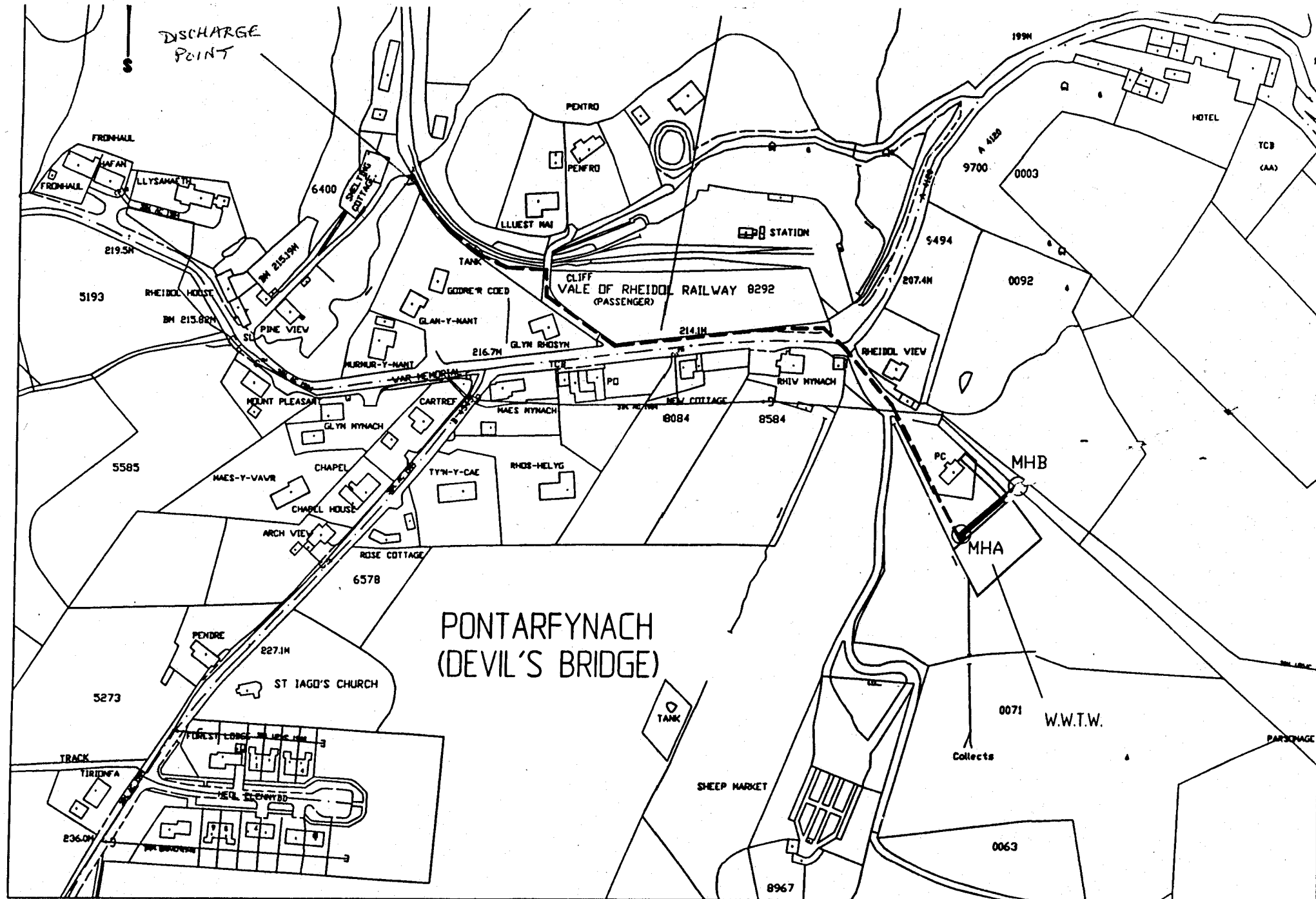
In addition to the difference in diversity, the BMWP score for the upstream sample site is slightly higher. However, the ASPT scores of both sample points are approximately the same, suggesting that the taxa at both points have similar pollution tolerances (i.e. similar kinds of indicator species are present, but simply in higher numbers in the upstream samples). This result would suggest that there is no significant difference in water quality between the two sites.

On balance, it would appear that the discharge point may be having a slight effect on invertebrate diversity. The significance of this difference, if any, is difficult to determine, as a certain amount of the discrepancy could be accounted for by natural variation within the ecosystem.

The Institute of Environmental Assessment (IEA, 1995) recommend that the threshold level at which it is appropriate to consider progressing from an initial scoping survey to a more detailed investigation of species present should take place is if the water quality invertebrate survey sample achieves one or more of the following: 26 or more families; BMWP score of ≥ 150 ; or ASPT score of ≥ 6.48 . The samples taken do not come close to these values in terms of number of families, or BMWP scores, indicating that the invertebrate fauna is therefore not considered to be notably diverse. In general the low scores are most likely to be the result of the habitat being a small, man-made channel, rather than a large natural river. The high ASPT scores indicate a good level of water quality at both sites.

5 Other Notes

No sewage fungus was noted at either of the sample points, or any other part of the watercourse, as far as it was possible to determine on the day of sampling.



SITE PLAN

DEVILS BRIDGE OUTFALL TO NANTWETYS

