



Bridgend Waste Treatment Centre PPC Application

12th June 2002

Form IPPC 1 Part A – application for a permit, variation, transfer or surrender**For Environment Agency use only**

Date received

Fee received: Yes ☒ No ☐

Amount received

Name assigned to Installation

14.06.03

☒

£9,555.00

BRIDGEND WASTE MANAGEMENT CENTRE

**ENVIRONMENT
AGENCY****Application for a permit, variation, transfer
or surrender****Integrated Pollution Prevention and Control**

Pollution Prevention and Control Act 1999

Pollution Prevention and Control (England and Wales) Regulations 2000

For Part A(1) Installations

Introduction to Part A**When to use this form**

Use this form if you are sending an application to the Environment Agency under the Pollution Prevention and Control (England and Wales) Regulations 2000 ('the PPC Regulations').

The form is to be used for applications made in respect of both 'installations' and 'mobile plant' (and in the rest of the form, the term 'installation' also covers 'mobile plant' where appropriate).

Before you start to fill in this form

Please read the notes we have produced to help you with your application, called *Part A (1) Installations: Guide for Applicants*. You will also need to read the relevant Technical Guidance to which the Guide refers.

The Guide contains a list of other documents you may need to refer to when you are preparing your application, and explains some of the technical terms we use.

In particular, you should make sure that you refer to the explanation of "installation" in the Guide. For example, there may be two or more operators in a single installation. Each operator will need a permit, each obtained by a separate application. Your applications will principally relate to the part of the installation under your control, but will also need to include some information on the rest of the installation. This will help us to assess the operation of the whole installation. The term "installation", when used in this application form (and elsewhere) may refer to either the whole or part of the installation, depending on the nature of the information we are seeking to obtain.

Which parts of the form to fill in

The form is in six parts but we usually only send you the parts you need to fill in. Everyone has to fill in Part A, and complete and sign Part F at the end of their application. The other parts you need to fill in depends on the type of application you are making:

- To apply for a new permit – fill in Parts A and B then Part F.
- To vary an existing permit – fill in Parts A and C then Part F.
- To transfer all or part of an existing permit to someone else – fill in Parts A and D then Part F. This should be a joint application by the transferor and the transferee.
- To surrender all or part of an existing permit – fill in Parts A and E then Part F.

Other documents we need to see

There are a number of other documents you will need to send us with your application. Each time a request for documents is made in the application form you will need to record a document reference number for the document or documents that you are submitting in the box provided on the form for this purpose.

Please also mark the document(s) clearly with this reference number and either the application reference number if you know it or your existing permit number. If you do not have either of these, please use the name of the installation.

If you know your Application Reference Number, please enter it into the box below:

BM0893

Using continuation sheets

In the case of questions required to be answered on the application form itself, please use a continuation sheet if you need extra space, but please indicate clearly on the form that you have done so by stating a document reference number for that continuation sheet. Please also mark the continuation sheet itself clearly with the information referred to above.

If you need help and advice

We have made the application form as straightforward as possible, but please get in touch with us if you need any advice on how to set out the information we need.

Please get in touch with us on 0845 933 3111.

A1 About your application

A1.1 What type of application are you making?

- ☒ new permit
☐ variation of an existing permit
☐ transfer of an existing permit
☐ surrender of an existing permit

A1.2 Name of the installation

BRIDGEND WASTE MANAGEMENT CENTRE

Please tell us if this name is:

- ☐ already agreed with the Agency; or
☐ one that you are proposing.

A1.3 Please give the address of the site of the installation.

Street address etc.	FACTORY LANE		
Locality	PENCOED		
Post town	BRIDGEND		
County	MID GLAM.	Post Code	

Ordnance Survey national grid reference 10 characters, for example SJ 1234 5678

SS 7540 7990

A1.4 Give details of any existing permit(s) for the installation.

Please give details of any applicable IPC authorisations, LAMP authorisations, waste management licences or water discharge consents.

Permit number(s), type(s) and date(s) of issue:

371/2001 TRADE EFFLUENT DISCHARGE 05/03/01

SITE WASTE MANAGEMENT 12/05/95
LICENCE N°3 - OGWR LICENCE
BOROUGH COUNCIL

A1.5 Do you consider that the installation meets the criteria for a "low impact installation" as defined by the Environment Agency?

(Please note that this definition does not apply to installations containing activities that are defined in the PEC Regulations by reference to a numerical threshold.)

No ☒

Yes ☐

A2 Authorised contacts

It will help us to have someone who we can contact directly with any questions about your application. The person you name should have the authority to act on your behalf.

A2.1 Who can we contact about your application?

This could be an agent rather than the operator.

Name

ADRIAN BELCHAM

Position

CAMBIO PARTNER (AGENT)

Address

Street address etc.	RHYD LANAU	
Locality	BETTWS	
Post town	ABERGAVENNY	
County	Gwent	Post Code NP7 7LH

Phone number 01873 850822

Fax number 01873 859923

Email address ab@cambio-uk.com

A2.2 Operational contact

If different to the above, please identify the person we should contact to discuss operational matters on an ongoing basis.

Name

JAVAD FAROOQ

Position

REGIONAL OPERATIONS MANAGER

Address

Street address etc.	PO BOX 82A	
Locality	ALEXANDRA GATE	
Post town	ROVER WAY	
County	CARDIFF	Post Code CF24 2SD

Phone number 02920 316300

Fax number 02920 316317

Email address javad.farooq@wuple.co.uk

A3 About the operator

Please provide the information requested below about the operator, which means:

- for applications for a new permit – the person who it is proposed will have control over the installation in accordance with the permit (if granted);
- for applications for a variation, transfer or surrender – the person who currently has control over the installation in accordance with the permit.

If you are applying for a transfer, we will ask for more information relating to the proposed new operator (transferee) in Part D.

A3 About the operator *continued*

Legal status of operator

A3.1 Is the operator an individual, a group of individuals, a partnership or a company/corporate body?

- ☐ Individual (sole trader) or group of individuals go to question A3.2.
☐ Partnership go to question A3.3.
☒ Company or corporate body go to question A3.5.

Individual applicants

A3.2 Please give us the following details. Where more than one person is applying (other than as a partnership) we need details of each person.

Continue on separate sheets if necessary.

Full name

Date of birth

Trading/business name (if any)

Business address

Street address etc.		
Locality		
Post town		
County		Post Code

Contact numbers

Phone number
Fax number
Email address

Now go to question A4. What to do next.

Applications from partnerships

A3.3 Who is applying?

We can only issue permits to named individuals, not to a partnership name. We therefore need details of each person in the partnership.

Continue on separate sheets if necessary.

Person

Full Name

Date of Birth

Principal place of business

Street address etc.		
Locality		
Post town		
County		Post Code

A3 About the operator *continued*

Contact numbers

Phone number
Fax number
Email address

Person

Full Name

Date of Birth

Principal place of business

Street address etc.		
Locality		
Post town		
County		Post Code

Contact numbers

Phone number
Fax number
Email address

Person

Full Name

Date of Birth

Principal place of business

Street address etc.		
Locality		
Post town		
County		Post Code

Contact numbers

Phone number
Fax number
Email address

A3.4 Please give us the following details about the partnership.

Name of partnership (if there is one)

Principal place of business

Street address etc.		
Locality		
Post town		
County		Post Code

A3 About the operator continued**Contact numbers**

Phone number

Fax number

Email address

Now go to question A4, What to do next.

Companies or other corporate applicants**A3.5 Please give us the following details.**

Full name of company or corporate body

UNITED UTILITIES INDUSTRIAL LTD.

Trading/business name (if different)

AS ABOVE

Registered office address

Street address etc.	104 DACTON AVENUE BIRCHWOOD PARK	
Locality		
Post town	WARRINGTON	
County	CHESHIRE	Post Code WA3 6YF

Principal office address (if different)

Street address etc.	PO BOX 82A ALEXANDRA GATE	
Locality	ROVER WAY	
Post town	CARDIFF	
County		Post Code CF24 2SD

Company registration number

4204293

Date of formation of company

24/04/01

- For applications from companies, please provide a copy of the certificate of incorporation and any certificates of subsequent name changes.

Document reference number

01/BWTC/21

- For applications from other corporate bodies, please provide evidence of status.

Document reference number

A3 About the operator continued**A3.6 Is the operator a subsidiary of a holding company within the meaning of Section 736 of the Companies Act 1985?**No ☐Yes ☒ name of ultimate holding company

UNITED UTILITIES PLC

Registered office address

Street address etc.	DAWSON HOUSE GREAT SANKEY	
Locality	WARRINGTON	
Post town		
County		Post Code WA5 3LW

Principal office address (if different)

Street address etc.	AS ABOVE	
Locality		
Post town		
County		Post Code

Company registration number

366678

A4 What to do next

Now you need to fill in the other Parts of this form we sent you.

If you are applying for

- A new permit – fill in Part B then go to Part F,
- A variation – fill in Part C then go to Part F,
- A transfer – fill in Part D then go to Part F,
- A surrender – fill in Part E then go to Part F.



**ENVIRONMENT
AGENCY**

For Environment Agency use only

Application reference

BM0893

Use this part of the form if you are applying for a new permit

B1 About the installation

Please fill in the installation table below with details of all the activities and operators at the whole installation, even if you are applying for a permit in respect of only part of the installation.

In column 1 *Activities in "the stationary technical unit"* please identify all activities listed in Schedule 1 to the PPC Regulations that are proposed to be carried out in the "stationary technical unit" of the installation.

For *Directly associated activities* please identify any directly associated activities proposed to be carried out on the same site which:

- have a technical connection with the activities in the stationary technical unit, and
- could have an effect on pollution.

In column 2 *Schedule 1 references* please quote the Section number, Part A(1) or A(2) or B, then paragraph and sub-paragraph number as shown in Part 1 of Schedule 1 to the PPC Regulations for each activity listed in column 1.

In column 3 *Operator* write the name of the operator for each activity (if you are the operator yourself, write "Applicant").

B1.1 Installation table for new permit application

COLUMN 1

Activities in the "stationary technical unit"

LIQUID WASTE RECEIPT, TREATMENT AND DISCHARGE FACILITY

COLUMN 2

Schedule 1 refs

5.3 A1 c (ii)

COLUMN 3

Operator

APPLICANT

Directly associated activities

EXISTING LIQUID WASTE SEWER DISCHARGE FACILITY

N/A

APPLICANT

B1 About the installation *continued*

B1.2 Why is the application being made?

- ☒ the installation is new,
- ☐ It is an existing installation and you are applying in accordance with the timetable in Schedule 3 of the PPC Regulations,
- ☐ It is an existing installation and you have the agreement of the Environment Agency to make this application now. *Please attach proof of this agreement, such as a letter from the Agency,*
- Document reference number for proof
- ☐ it is an existing installation for which a 'substantial change' is proposed,
- ☐ It is for a mobile plant being moved to a new location.

B1.3 Site maps and reports

Please provide:

- a site report describing the condition of the site of that part of the installation in respect of which you are applying for a permit, and, in particular, identifying any substance in, on or under the land which may constitute a pollution risk.

Document reference number for the report

01/BWTC/01

- suitable maps or plans showing the location of the site of the installation, the location and nature of the various activities on that site and the area of the site covered by the site report

Document reference number for the maps or plans

01/BWTC/02

B2 Your proposed techniques

Please provide written information about the aspects of your installation listed below. We need this information, and that which you give in response to B3 and B4, to determine whether you will operate the installation in a way which meets all the environmental requirements of the PPC Regulations.

In each case you should:

- address all of the issues set out in the section of the relevant technical guidance identified in brackets,
- justify your proposals against any indicative requirements contained in the guidance and,
- provide any other information about the installation which you think is relevant to that issue.

Information required:

B2.1 Provide details of your proposed management techniques (section 2.1 of the relevant technical guidance).

Document reference number: 01/BWTC/03

B2.2 Identify the raw and auxiliary materials, other substances and water that you propose to use (section 2.2 of the relevant technical guidance).

Document reference number: 01/BWTC/04

B2 Your proposed techniques *cont*

B2.3 Describe the proposed installation activities and the proposed techniques and measures to prevent and reduce waste arisings and emissions of substances and heat (including during periods of start-up or shut-down, momentary stoppage, leak or malfunction) (section 2.3 of the relevant technical guidance).

Document reference number: 01/BWTC/05

B2.4 Identify if there may be a discharge of any List I or List II substance and if any are identified, explain how the requirements of the Groundwater Regulations 1998 have been addressed (section 2.4 of the relevant technical guidance).

Document reference number: 01/BWTC/06

B2.5 Characterise and quantify each waste stream from the installation and describe the proposed measures for waste management, storage and handling (section 2.5 of the relevant technical guidance).

Document reference number: 01/BWTC/07

B2.6 Describe how each waste stream is proposed to be recovered or disposed of and, if you propose any disposal, explain why recovery is technically and economically impossible and describe the measures planned to avoid or reduce any impact on the environment (section 2.6 of the relevant technical guidance).

Document reference number: 01/BWTC/07

B2.7.1 Provide a breakdown of the proposed energy consumption and generation by source and end-use (section 2.7.1 of the relevant technical guidance).

Document reference number: 01/BWTC/08

B2.7.2 Describe the proposed basic measures for improvement of energy efficiency (section 2.7.2 of the relevant technical guidance).

Document reference number: 01/BWTC/08

B2.7.3 Are you, or will you be, subject to a Climate Change Levy Agreement?

No ☒ Describe the proposed sector specific measures for improvement of energy efficiency (section 2.7.3 of the relevant technical guidance).

Document reference number:

01/BWTC/08

Yes ☐ Please give:

- the (expected) date of entry into the agreement

- documentary evidence to demonstrate participation in the agreement

Document reference number:

B2.8 Describe the documented system proposed to be used to identify, assess and minimise the environmental risks and hazards of accidents and their consequences (section 2.8 of the relevant technical guidance).

Document reference number: 01/BWTC/09

B2 Your proposed techniques cont.

B2.9 Describe the main sources of noise and vibration (including infrequent sources); the nearest noise sensitive locations and relevant environmental noise measurement surveys which have been undertaken; and the proposed techniques and measures for control of noise (section 2.9 of the relevant technical guidance).

Document reference number: 01/BWTC/10

B2.10 Describe the proposed measures for monitoring emissions including any environmental monitoring, and the frequency, measurement methodology and evaluation procedure proposed (section 2.10 of the relevant technical guidance).

Document reference number: 01/BWTC/11

B2.11 Describe the proposed measures upon definitive cessation of activities, to avoid any pollution risk and return the site of the installation to a satisfactory state (including relevant measures for the design and construction of the installation) (section 2.11 of the relevant technical guidance).

Document reference number: 01/BWTC/12

B2.12 Where you are not the only operator of the installation, describe the proposed techniques and measures (including those to be undertaken jointly by yourself and other operators) for ensuring satisfactory operation of the whole installation (section 2.12 of the relevant technical guidance).

Document reference number: N/A.

B3 Your proposed emissions

Please provide written information about the emissions which will result from the techniques you described in response to the questions in section B2.

You should:

- address all of the issues set out in the section of the relevant technical guidance identified in brackets,
- justify your proposals against any benchmark emission levels contained in the guidance and,
- provide any other information about the installation which you think is relevant to that issue.

Information required:

B3.1 Describe the nature, quantities and sources of foreseeable emissions (section 3.1 of the relevant technical guidance).

Document reference number: 01/BWTC/13

B4 Impact on the environment

Please provide written information about the impact your emissions may have on the environment as listed below. In each case you should:

- address all of the issues set out in the section of the relevant technical guidance identified in brackets,
- justify your proposals against any indicative requirements contained in the guidance and,
- provide any other information about the installation which you think is relevant to that issue.

B4 Impact on the environment cont.

Information required:

B4.1 Provide an assessment of the potential significant environmental effects (including transboundary effects) of the foreseeable emissions (section 4.1 of the relevant technical guidance).

Document reference number: 01/BWTC/14

B4.2 Explain how the information provided in other parts of the application also demonstrates that the relevant objectives set out in the Waste Management Licensing Regulations 1994 have been addressed (in applicable cases), or provide additional information (section 4.2 of the relevant technical guidance).

Document reference number: 01/BWTC/15

B4.3 Provide an assessment of whether the installation is likely to have a significant effect on a European Site in Great Britain and, if it is, provide an assessment of the implications of the installation for that site, for the purposes of the Conservation (Natural Habitats etc.) Regulations 1994 (section 4.3 of the relevant technical guidance).

Document reference number: 01/BWTC/16

B5 Environmental statements

B5.1 Has the development of the installation (or any subsequent change or extension of the development) required an environmental statement under Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment?

No ☒

Yes ☐ please supply a copy of the environmental statement submitted and details of any decision made.

Document reference number:

B6 Statutory consultees

We will use the information in this section to identify who we must consult about your proposals.

B6.1 In which local authority area is the installation located?

If premises are on a boundary please give names of all relevant authorities.

Borough or district council or unitary authority

BRIDGEND COUNTY BOROUGH COUNCIL
VALE OF GLAMORGAN COUNCIL

Please give the county council unless there is a unitary authority

BRIDGEND COUNTY BOROUGH
COUNCIL

B6.2 In which health authority area is the installation located?

If premises are on a boundary please give names of all relevant authorities.

BRO TAF HEALTH AUTHORITY

B6 Statutory consultees continued

B6.3 Could the installation involve the release of any substance into a sewer vested in a sewerage undertaker?

No ☐

Yes ☒ please name the sewerage undertaker

WELSH WATER

B6.4 Are there any sites of special scientific interest (SSSIs) which are within 2 kilometres of the installation?

No ☐

Yes ☒ please give names of the sites

COED Y MWSTWR

B6.5 Are there any other SSSIs which may be affected by emissions from the installation?

No ☒

Yes ☐ please give names of the sites

B6.6 Are there any European sites, as defined by regulation 10 of the Conservation (Natural Habitats etc.) Regulations 1994, which may be affected by emissions from the installation?

No ☒

Yes ☐ please give names of the sites

B6.7 Could the installation involve the release of any substance into a harbour managed by a harbour authority?

No ☒

Yes ☐ please name the harbour authority

B6.8 Could the installation involve the release of any substance directly into relevant territorial waters or coastal waters within the sea fisheries district of a local fisheries committee?

No ☒

Yes ☐ please name the local fisheries committee

B6.9 Is the installation on a site for which:

☐ a nuclear site licence is required under section 1 of the Nuclear Installations Act 1965?

☐ a major accident prevention policy document is required under Regulation 5 of the Control of Major Accident Hazards Regulations 1999 or a safety report is required under Regulation 7 of those regulations?

B7 Specified waste management activities

B7.1 Are you applying to operate any 'specified waste management activities'?

No ☐ go to 'B8 What to do next'

Yes ☒ please give details

THE DISPOSAL OF WASTE FALLING WITHIN SECTION 5.3 OF SCHEDULE 1 OF THE POLLUTION PREVENTION AND CONTROL REGULATIONS.

Planning status

B7.2 Which of the following applies to the specified waste management activities identified in B7.1?

We cannot issue a permit unless one of the following applies. We will need to see a copy of the relevant documents.

☒ You have planning permission.

Document reference number

01/BWTC/17

☐ You have a certificate of lawful existing use or development.

Document reference number

☐ You have an established use certificate.

Document reference number

☐ The General Permitted Development Order 1995 applies.

please give details

☐ Planning permission is not required - please say why and enclose written confirmation from the planning authority.

Document reference number

If you have submitted an application for planning permission which has not yet been determined, please provide a copy of the application.

Document reference number

B7 Specified waste management activities *continued*

Fit and proper person

We need to make sure that whoever holds the permit is a 'fit and proper person' in relation to any specified waste management activities. This includes consideration of relevant offences, technical competence and financial provision.

Relevant offences

B7.3 Has the operator, or any other 'relevant person', been convicted of any 'relevant offence'?

A 'relevant person' includes each partner, director, manager, company secretary or any similar officer or can be an employee.

No ☒ go to question B7.4

Yes ☐ please give full information

Document reference number for this information

The details we need are listed below.

- Full name of company or individual convicted
- If an individual has been convicted please state their position at time of offence
- Name of court
- Date of conviction
- Offence and penalty imposed
- Date of any outstanding appeal lodged against conviction
- Any additional information which the operator would like us to take into account in determining whether they are a 'fit and proper person'. For example, why the offence happened, and what has been done to prevent a similar event occurring.

Technical competence

B7.4 Are the specified waste management activities covered by the WAMITAB (Waste Management Industry Training Advisory Board) award scheme?

No ☐ go to question B7.6

Yes ☒ go to question B7.5

WAMITAB sites

B7.5 Who will provide the technically competent management of the specified waste management activities?

Please give details for each person and provide a copy of the WAMITAB certificate.

Responsible person

Full Name: MATTHEW JONES

Position: TECHNICAL SALES

Level of WAMITAB certificate: TMS 4

Date: 12/03/01

Document reference number for copy of certificate

01/BWTC/18

Responsible person

Full Name: JAVAD FAROOQ

Position: REGIONAL OPERATIONS MANAGER

Level of WAMITAB certificate: TMS 4

Date: 25/08/00

Document reference number for copy of certificate

01/BWTC/18

Responsible person

Full Name: REGIONAL COTC STAFF POOL

Position: VARIOUS

Level of WAMITAB certificate: VARIOUS

Date: VARIOUS

Document reference number for copy of certificate

01/BWTC/18

Responsible person

Full Name:

Position:

Level of WAMITAB certificate:

Date:

Document reference number for copy of certificate

Now go to question B7.7.

B7 Specified waste management activities *continued*

Non-WAMITAB sites

B7.6 Who will be responsible for managing the specified waste management activities?

Please give details for each person.

For each person named below, we:

- need to see a statement of qualifying experience,
- will want to carry out our own assessment.

Responsible person

Full Name:

Position:

Document reference number for statement

Responsible person

Full Name:

Position:

Document reference number for statement

Responsible person

Full Name:

Position:

Document reference number for statement

Management of other installations

B7.7 Are any of these 'Responsible people' already providing the technically competent management at other IPPC installations or at sites licensed under Part II of the Environmental Protection Act 1990?

No ☐ go to question B7.8.

Yes ☒ please use a separate sheet to give details of these people. For each person we need to know the:

- site/installation name and address,
- licence/permit reference number.

Document reference number for this information.

01/BWTC/18

Financial provision

B7.8 If known, how does the operator intend to make financial provision for the specified waste management activities?

- ☐ Renewable bonds
- ☐ Bonds
- ☐ Bank guarantee
- ☐ Parent company guarantee please include one copy of the parent company's audited trading accounts for the last three years (or for the period of trading if less than three years). These should be no more than 18 months out of date.

Document reference number for accounts

- ☐ Escrow account
- ☐ Trust fund
- ☐ Insurance captive
- ☐ Lump sum
- ☐ Other please specify

PARENT COMPANY "UMBRELLA BOND"
FOR ALL ULLI WASTE MANAGEMENT SITES

Expenditure plan

B7.9 Please provide a plan of the estimated expenditure for each phase of the specified waste management activities.

The plan should include the likely costs of:

- monitoring,
- restoration – landfill only,
- aftercare – landfill only,
- clearing the installation (including drainage systems) of all wastes – non-landfill,
- remedial action in the event of the failure of pollution control systems.

We recognise that this plan may need to be revised before the issue of the final permit.

Document reference number for expenditure plan

01/BWTC/19.

B8 What to do next

Now please fill in Part F and sign and date the application.

Application reference

BM0593

F1 Fees and charges

F1.1 Type of application

F1.2 Type of installation

F1.3 Invoice address

F1.4 Components

F1.5 Calculation of fee

For Environment Agency use only

Fee received: Amount **£ 9,555.00**

Date received 14.06.02

Received by

LEWIS & CLARK

F2 Commercial confidentiality and national security

F2.1 Is there any information in the application that you wish to justify being kept from the public register on the grounds of commercial confidentiality?

No ☒

Yes ☐ please give full information

Document reference number for this information

F2.2 If there is any information in the application that you believe should be kept from the public register on the grounds of national security please attach:

- full information on separate sheets,
- a copy of the application to the Secretary of State for a Direction on the issue of national security.

Do not write anything about national security on this form, nor give reference numbers to the relevant information/documents submitted.

F3 Data protection notice

The information you give will be used by the Environment Agency to process your application. It will be placed on the relevant public register(s), and used to monitor compliance with licence/permit conditions, or to process renewal applications.

We may also use and/or disclose any of the information you give us in order to:

- offer/provide you with our literature/services relating to environmental matters;
- consult with the public, public bodies and other organisations (for example Health and Safety Executive, local authorities, emergency services, MAFF) on environmental issues;
- carry out statistical analysis, research and development on environmental issues;
- provide public register information to enquirers;
- investigate possible breaches of environmental law and take any resulting action;
- prevent breaches of environmental law;
- assess customer service satisfaction and improve our service.

We may pass on the information to agents/representatives who we ask to do any of these things on our behalf.

Individuals have a right to see the information we hold about them. We will correct it if it is inaccurate.

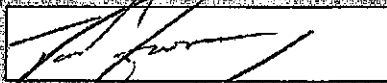
F3 Data protection notice cont.

Data Protection Declaration

This Section must be signed by one of the people signing the declaration in Section F6.

I have read the data protection notice above and confirm that I have brought it to the attention of every individual named on this form.

Signature



Name:

SAUAD FAROOQ

Date:

17-6-02

F4 Non-technical summary

Please provide a non-technical summary of your responses to all questions in Parts A to E of the application form.

Document reference number for non-technical summary

01/BWTC/20

F5 Any other information

Is there any other information that you wish to submit in support of your application?

No ☒

Yes ☐ please give a brief summary here and provide reference numbers for supporting documents.

F6 Signatures and declaration

It is an offence under Regulation 32 of the PPG Regulations to:

- make a statement which you know to be false or misleading in a material particular,
- recklessly make a statement which is false or misleading in a material particular.

for the purpose of obtaining a permit (for yourself or anyone else) or seeking the variation, transfer or surrender of a permit.

If you make a false statement:

- we may prosecute you, and
- if you are convicted, you are liable to a fine or imprisonment (or both).

Declaration

I/we certify that the information in this application is correct.

I/we apply:

- ☒ for a permit.
- ☐ to vary an existing permit.
- ☐ for a transfer of an existing permit.
(current operator(s) and proposed transferee(s) must sign below)
- ☐ to surrender an existing permit.

In respect of the particulars described in this application (including supporting documentation I/we have supplied).

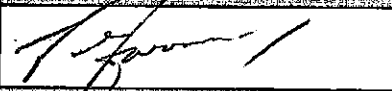
Signature(s) of current operator

Please note that each individual operator must sign the declaration themselves, even if an agent is acting on their behalf.

For applications from:

- more than one person – all persons should sign below.
- a company or other corporate body – an authorised person should sign below.

Signature:



Name: SAJAD FAROOQ

Position: REGIONAL OPS MNG.

Date: 17-6-02

Signature:



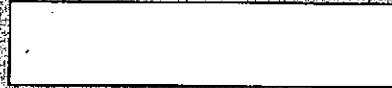
Name:

Position:

Date:

F6 Signatures and declaration cont.

Signature:



Name:

Position:

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Signature(s) of proposed transferee

Signature:



Name:

Position:

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Name:

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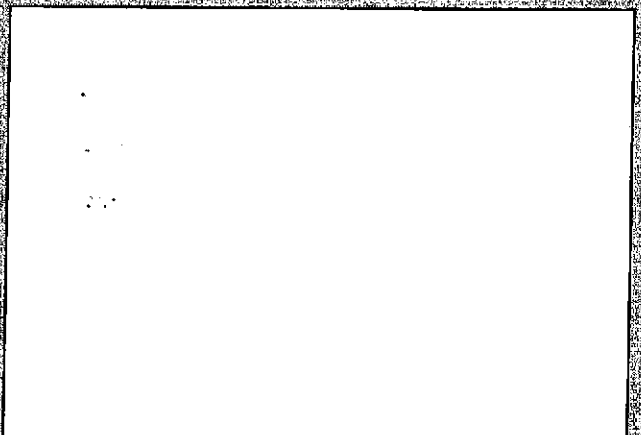


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Date:

Now please return this form, together with all supporting information and correct payment, to the address below:



Please submit the original application plus the appropriate number of copies. You can use the table on the back of this form to calculate the number of copies needed.

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Reason Required	Application for Permit	Application for Variation with Substantial Change ("yes" to question C1.4)	Application for: (a) Variation with no Substantial Change ("no" to question C1.4) (b) Transfer (c) Surrender
Original for Agency determination	1	1	1
Copy for Agency public register	1	1	1
Copy for Food Standards Agency	1	1	0
Copy for Local Authority public register	2		
Copy for Local Authority as statutory consultee	2		0
Copy for Health Authority	1		0
Copy for Sewerage Undertaker	1		0
Copy for English Nature			0
Copy for Countryside Council for Wales	1		0
Copy for Scottish Natural Heritage			0
Copy for Harbour Authority			0
Copy for Local Fisheries Committee			0
Copy for Health and Safety Executive			0
Copy for Planning Authority	1		0
Copy for Secretary of State for Wales	1		0
Total submission	1 original plus 11 copies	1 original plus 1 copies	1 original plus 0 copies

APPLICATION REF.	DOCUMENT DESCRIPTION	DOC. REF.
1 F4	NON TECHNICAL SUMMARY	01/BWTC/20
2 B1.3	SITE CONDITION REPORT	01/BWTC/01
3 B1.3	SITE MAPS / PLANS	01/BWTC/02
4 B2.1	MANAGEMENT TECHNIQUES	01/BWTC/03
5 B2.2	MATERIALS INPUTS	01/BWTC/04
6 B2.3	MAIN ACTIVITIES & ABATEMENT	01/BWTC/05
7 B2.4	EMISSIONS TO GROUNDWATER	01/BWTC/06
8 B2.5 & B2.6	WASTE MANAGEMENT	01/BWTC/07
9 B2.7	ENERGY MANAGEMENT	01/BWTC/08
10 B2.8	EMERGENCY PLANNING	01/BWTC/09
11 B2.9	NOISE & VIBRATION	01/BWTC/10
12 B2.10	EMISSIONS & ENVIRONMENTAL MONITORING	01/BWTC/11
13 B2.11	DECOMMISSIONING	01/BWTC/12
14 B3	EMISSIONS INVENTORY	01/BWTC/13
15 B4.1	IMPACT ASSESSMENT	01/BWTC/14
16 B4.2	WML OBJECTIVES	01/BWTC/15
17 B4.3	EUROPEAN SITES	01/BWTC/16
18 B7.2	PLANNING STATUS	01/BWTC/17
19 B7.5	WAMITAB CERTIFICATES	01/BWTC/18
20 B7.9	EXPENDITURE PLAN	01/BWTC/19
21 A3.5	WML CERTIFICATE OF INCORPORATION	01/BWTC/21
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Emissions monitoring and containment The liquid effluent and sludge waste constitute the principle emissions from the process. There are not expected to be any significant air emissions. The operation consumes approximately 111 tonnes of process chemicals, 1200m3 of water and 62,500 kwh of electricity per annum. Plant design, together with the waste types treated and the operational procedures employed mean that noise and odour are unlikely to constitute a nuisance issue. Comprehensive monitoring programmes have been developed to ensure that the noise and odour as well as the main liquid and solid emissions are adequately controlled. The risk of accidental release of pollutants to land or sewer has been assessed as part of the plant design process. <u>The whole site, including the tanker marshalling area, is contained during operational hours by means of concrete bunds and valve isolated surface drainage systems.</u> Any spillages of wastes or process chemicals will therefore be contained within the facility and can be safely recovered and disposed without risk of land or groundwater contamination or out of specification discharges to the sewer system. To ensure that pollution risk is contained throughout the whole working life of the facility, a decommissioning pack will be maintained. It will include information relating to the site assessment, details of drainage and potential sources of pollution, plus records of all incidents. The intention is that at decommissioning, the project team will have sufficient information to safely and comprehensively dismantle the facility without associated pollution impacts.	01/BWTC/03, 01/BWTC/06- 12
Environmental Impacts and Controls Key environmental receptors considered within the application include local residential properties, the river Ewenny and Heol y Geifr stream, land and groundwater in the vicinity of the site, and the nearest sites of conservation interest including Merthyr Mawr Warrens, Coed y Mwstwr and Tan y Lan woodlands, and the Moor Farm site of interest. Due consideration of the risk and likely consequences of such impacts have been assessed and in each case the conclusion is one of minimal risk. In some cases such conclusions have been reached on the basis of a lack of means of impact eg the woodland areas are simply too far away to be affected by any effluent discharge from the site. In other cases the site controls mean that the scope for impact has been controlled within acceptable bounds eg the plant design and daily checks relating to the control of noise and odour from site.	01/BWTC/13- 16
Planning Status The facility has been granted full planning permission by Bridgend County Borough Council with conditions relating primarily to access and visual impact.	01/BWTC/17
Waste management competency The case has been made for United Utilities Industrial Ltd and the personnel involved in operating the site to be considered competent within the terms of the waste management licensing legislation. All responsible personnel are trained in accordance with the specified competency requirements. In addition company details of financial provision and expenditure plans linked to on-going pollution prevention and control have been included.	01/BWTC/18- 19

F4 NON-TECHNICAL SUMMARY

This short summary describes the key aspects of the proposed operation and highlights the principal potential environmental impacts and the proposed control measures. It follows the format of the application and cross references the main supporting documents which should be consulted for further details.

Applicant United Utilities Industrial Ltd (hereafter referred to as UUI) 104 Dalton Avenue Birchwood Science Park Warrington WA3 6YF	
Location The proposed Bridgend Waste Management Centre is situated at grid reference SS 954799 just to the east of the A473 near junction 35 of the M4 motorway. The site currently comprises a receipt facility for non hazardous liquid waste from industrial and domestic sources that is discharged directly to the main sewer leading to the Pen y Bont sewage treatment works under consent from Welsh Water. The site is leased and operated by UUI, owned by Welsh Water and was formerly the site of a sewage treatment works. A site survey has been carried out as part of this application process.	01/BWTC/02 & 01/BWTC/02
Process summary The current application relates to the construction of a new facility to deal with a variety of liquid special wastes that will undergo treatment prior to discharge to the sewer within the same discharge standards as the existing waste streams. Both the new and existing processes are considered as a single installation for the purposes of this application. The facility will be tightly controlled by a site operations team, supported by UUI process chemists and regional management. A site operational plan forms the basis of the company standards and procedures that define the management techniques used to ensure that wastes are safely received processed and discharged to sewer. The incoming waste is subject to detailed sampling and analysis on receipt at the facility to confirm acceptability and treatment requirements. It is also subject to analysis prior to discharge to the sewer to ensure that treatment has been effective and that the waste is within the discharge consent requirements. Treatment of waste is by a combination of physical and chemical processes that result in the recovery of oil, the production of a liquid phase that meets the discharge consent requirements and a sludge which contains many of the more serious pollutants and is collected for disposal as special waste.	01/BWTC/03-05 & 01/BWTC/13



**UNITED UTILITIES
BRIDGEND WASTE TREATMENT CENTRE
OFF COYCHURCH ROAD, PENCOED**

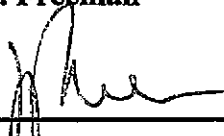
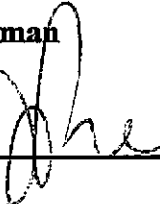
**SITE REPORT
R712B/02/1932 (FINAL)**

**A REPORT PREPARED BY
CELTIC Technologies Limited**

JUNE 2002

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Client:	United Utilities
Report Number:	R712B/02/1932
Report Title:	Baseline Site Investigation Report Bridgend Waste Treatment Centre, Off Coychurch Road, Pencoed.
Report Status:	Final
Author(s):	Dr. J. Freeman
(Signature & Date)	 14/6/02
Project Manager:	Dr. J. Freeman
(Signature & Date)	 14/6/02
QA Approved:	A. Goddard
(Signature & Date)	 14/6/02

This report has been prepared by CELTIC Technologies Limited with reasonable skill, care and diligence and taking account of the contract terms and conditions and manpower and resources devoted to it in agreement with the client. CELTIC Technologies Limited disclaims any responsibility to the client and others in respect of any matters outside the scope of the above.

This report has been prepared based on the information received during the timescale available and all potential contamination, constraints or liabilities associated with the site may not necessarily have been revealed. CELTIC Technologies Limited have used due skill and care in the design and execution of the site investigation to identify ground conditions at the site. However, because of the infinitely variable nature of the ground, conditions can only be defined precisely at the exploratory borehole positions, whilst at intermediate positions they can only be inferred.

The report is only valid when it is used in its entirety.

This report is confidential to the client and CELTIC Technologies Limited accepts no responsibility to third parties to whom the report, or any part thereof, is made known. Any such party using any information contained within the report does so at their own risk.

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APPENDICES

APPENDIX A FIGURES

Drawing N°	Title
D712B/02/A1	Site Location
D712B/02/A2	Site Layout and Exploratory Locations

APPENDIX B PLATES

APPENDIX C TRIAL PIT AND BOREHOLE LOGS

APPENDIX D CHEMICAL ANALYSIS RESULTS

APPENDIX E HISTORICAL MAPS

APPENDIX F INFORMATION SOURCES

APPENDIX G PREVIOUS REPORTS

EXECUTIVE SUMMARY

Introduction	CELTIC Technologies Limited has been commissioned by United Utilities (UU) to provide a Site Report on the UU land at Bridgend Waste Treatment Centre, Off Coychurch Road, Pencoed, Vale of Galmorgan. The Site Report has been produced in line with United Utilities Scope of Works "Bridgend Waste Treatment Centre – Site Survey linked to IPPC Application – Notes for Contractor". The site has received domestic sewage and industrial effluent for over 50 years and currently operates as a discharge point for domestic sewage to the Pen Y Bont Sewer, and as a pre-treatment centre (via biological aeration) for industrial effluent prior to discharge to the sewer. United Utilities intend to construct further industrial effluent treatment plant on the site.
Objectives of the Assessment	This assessment describes the current (baseline) condition of the site as part of United Utilities IPPC application for a permit to continue to operate the site under the PPC regime.
Site Investigation Details	Description of Site Condition Evaluation The site overlies a sequence of drift deposits, which predominantly comprise fluvio-glacial gravels. The gravels contain a shallow groundwater body that is likely to be in hydraulic continuity with adjacent surface water receptors (including the River Ewenny). The site lies within the total catchment source protection zone of Schwyll Spring and as a result the shallow groundwater beneath the site is identified as the principal receptor. The pathway by which the Schwyll Spring could be impacted is via shallow groundwater entering the river, and subsequent recharge from the river to groundwater. Description of Site Investigation and Laboratory Analysis Four boreholes and five trial pits were advanced during the site investigation. Eight soil samples and four groundwater samples were collected and analysed for a range of determinands that were selected to reflect the range of industrial effluents likely to be received by the site during operation under IPPC.
Summary of Findings	The site investigation encountered a thin horizon of made ground over a sequence of gravels. Soil gas analysis detected elevated VOC concentrations in the made ground. Chemical analyses of soil samples generally recorded low concentrations of potential contaminants. Groundwater analyses also generally recorded low metal concentrations and low organic compound concentrations. Up to 4,100 cfu/100ml Total Coliforms and 11.1 mg/l non-ionic detergents were recorded. Low concentrations of organo-chloride pesticides were recorded in BH1 (9.5 ng/l p,p-DDT, 11.2 ng/l Triallate and 14.4 ng/l Trifluralin) and BH2 (11.6 ng/l Trifluralin). Both boreholes were installed on the southern boundary of the site. Data summary tables illustrating the range of concentrations recorded are presented in Section 5 of this report.
Data Interpretation	Shallow groundwater is identified as the priority receptor at the site by virtue of the site's location in the Total Catchment source protection zone (Zone III) of the Schwyll Spring. Migration of any contaminants released at the site to groundwater is likely to be rapid due to the relatively shallow depth of groundwater and thin cover of overlying alluvium which provides relatively little attenuation capacity. Four permanent groundwater monitoring wells have been installed at the site to enable groundwater to be monitored during the operation of the plant.
Conclusions	Baseline data on soil gas composition and soil and groundwater chemistry has been collected at the Bridgend Waste Treatment Centre. Shallow groundwater is identified as the priority receptor and pathway at the site.

1.0 INTRODUCTION

1.1 General

CELTIC Technologies Limited has been commissioned by United Utilities (UU) to provide a Site Report for the Bridgend Waste Treatment Centre (Bridgend WTC) as part of their IPPC application. The works have been undertaken in line with a scope of works provided by UU "Bridgend Waste Treatment Centre – Site Survey linked to IPPC Application – Notes for Contractor". The scope of works is included in Appendix F.

In accordance with the scope of works and the Environment Agency guidance document "IPPC Guide for Applicants" (Version 2, December 2000), the objectives of this report are:

- i) To review the historical and current uses of the site to identify the potential for areas of contamination to exist.
- ii) To review information on the sites environmental setting.
- iii) To develop a conceptual site model.
- iv) To determine the current concentrations and distribution of contaminants of concern in soil, soil vapour and groundwater at the site.

1.2 Report Format

This report contains information on the following items:

- Section 2 *Site Introduction* - a description of the site and a review of the site's historic and current use.
- Section 3 *Objectives of the Assessment* – a description of links to the IPPC process, of the general approach followed and the types of contaminants considered.
- Section 4 *Site Investigation Details* - a description of the site condition evaluation, the site investigation and the laboratory analysis undertaken at the site.
- Section 5 *Summary of Findings* - the results of the investigation.
- Section 6 *Data Interpretation* – a description of the identified baseline conditions of the site.
- Section 7 *Conclusions*.
- Section 8 *References*.
- Section 9 *Glossary*.

Site drawings and plans are presented in Appendix A, with photographic plates in Appendix B. Trial pit and borehole logs are presented in Appendix C. Laboratory chemical analysis reports are presented in Appendix D. Selected historical maps are presented in Appendix E, information from third parties is presented in Appendix F and previous reports are presented in Appendix G.

1.3 Information Sources

The following information sources were contacted during the preparation of this report.

- **United Utilities**, P.O. Box 284, Alexandra Gate, Rover Way, Cardiff CF24 2SD. Contact Mr Simon Longley. Telephone 02920 316300
- **Environment Agency Wales**, Abacus House, St Mellons Business Park, St Mellons, Cardiff CF3 0LT. Contact : Mr Dave Johnston (Area Contaminated Land Officer), Mr Simon Neal (Principal Hydrogeologist). Telephone: 029 20770088, Fax: 029 20798383
- **British Geological Survey**, National Geological Records Centre, British Geological Survey, Keyworth, Nottingham. Telephone 0115 9363100.
- **Envirocheck**, Landmark Information Group Ltd., 7 Abbey Court, eagle Way, Sowton, Exeter EX2 7HY. Telephone 01392 441700.

2.0 SITE INTRODUCTION

2.1 Site Details

2.1.1 Site Location

The site is situated off Coychurch Road, Pencoed, Vale of Galmorgan, approximately 4 km south-west of Pencoed town centre, at National Grid Reference 295300, 179900 as shown on Drawing No. D712B/02/A1 (Appendix A).

2.1.2 Site Description

The site is roughly square in shape and covers an area of approximately 0.5 hectares. The site slopes in a shallow gradient towards the south. The site is currently used as a waste treatment centre, receiving tankered domestic sewage and liquid industrial waste. Domestic sewage is discharged into the Pen Y Bont Sewer and industrial effluent receives basic treatment prior to discharge to the sewer. Photographs illustrating the current layout of the site are presented in Appendix B.

The layout of the site is shown in Drawing No. D712B/02/A2. Plant currently present on site comprises:

- A single storey building located close to the northern site boundary that houses an office, welfare facilities and chemical testing facilities for the incoming waste streams.
- An engineered concrete hard standing covering the eastern half of the site which provides access for tankers to the discharge points located along the western boundary (domestic sewerage) and in the south-western corner (industrial effluent) of the hard standing. This area is served by drainage channels which feed into a sump located in the south-eastern corner of the hard standing, from where rainfall and spills are over-pumped into the discharge pipework and Pen Y Bont Sewer.
- Holding tanks and aerating tanks (all contained within engineered bunds) located in the south-western corner of the hard standing, used for preliminary treatment of the industrial waste streams.
- Discharge pipe work, and associated discharge points, which runs along the western boundary of the hard standing to a chamber on the northern site boundary and then into Pen Y Bont Sewer (which runs immediately to the north of the site). All pipework is below ground.
- The western half of the site is largely disused, except for an area on the western site boundary that is currently used for storage of unused tanks. The western half of the site is grass covered with the exception of two small areas of concrete located close to the southern site boundary, which formerly comprised the foundations of historical sewage treatment beds.

United Utilities is intending to expand these facilities by construction of a new industrial liquid waste storage and treatment facility to be located in the currently disused south-west corner of the site. The proposed position of the new plant is illustrated in Drawing No. D712B/02/A2, Appendix A. Further details of the new plant are included in Section 2.3.

All boundaries of the site are constructed from chainlink fencing that prevents unauthorised access to the site.

2.2 Site History

2.2.1 Historical Development

The history of the site is based on historic Ordnance Survey plans (Appendix E). The historic land use of the site and adjacent areas is summarised in Table 1.

Information held on the public register at the Environment Agency Office, Swansea, indicates that the current site layout was developed in the mid-1990s and since then the site layout has remained largely unchanged.

Table 1 - Summary of Land Use History

Date*	Information Source	Land Use of Significance within existing site boundary	Adjacent Land Use of Significance
1919	<i>OS map</i> Scale 1:2,500 D712B/01-F1	The site area is undeveloped.	Agricultural land surrounds the site and a farmhouse is located approximately 250 m to the north-west.
1951	<i>OS map</i> Scale 1:10,000 D712B/01-F2	A sewage works has been developed and plant on-site comprises three circular treatment beds in the southern half of the site and several small ancillary buildings in the northern part of the site.	The sewage works also occupies the land immediately to the south-east of the site. Surrounding land remains under agricultural use.
1972	<i>OS map</i> Scale 1:10,560 D712B/01-F3	No significant change. The sewage works is still present on site and plant can be seen to comprise the three circular treatment beds in the southern half of the site, filter beds on the south-western site boundary and other structures in the northern part of the site, possibly tanks.	Sewage works plant located to the south-east of the site comprises filter beds, a pond and other structures, possibly tanks. Surrounding land remains under agricultural use. The farm buildings to the north-east of the site have expanded with the construction of 4 new buildings along the farm access road.

Notes: Maps in bold italics are presented in Appendix F. Dates relate to OS mapping and document publishing dates.

2.2.2 Historical Contaminative Site Uses

The site has received both domestic and industrial effluent for at least 50 years. The site formed part of a sewage works from sometime between 1919 and 1951 until the 1990's. During this time it is believed that discharge of treated effluent was via a pipe to the River Ewenny to the south of the site. In the mid-1990's the site was redeveloped to its current configuration as a discharge point for tankered domestic sewage to Pen Y Bont Sewer and as a pre-treatment centre for industrial wastes prior to discharge to the sewer.

In the mid-1990's, when the site was redeveloped to its current configuration, the Welsh Water Industrial Services received a licence to operate the site. The waste streams permitted by the licence and the contaminants potentially associated with the sites use as a sewage works are summarised in Table 2.

As part of the site's on-going use as a waste treatment centre, the site is inspected on a monthly basis by the Environment Agency. Details of these inspections are held on the public record at the Environment Agency Office, Swansea and were viewed by CELTIC as part of this site assessment. In general, the site appears to have maintained a satisfactory level of house-keeping with occasional instructions to clear partially blocked surface drains in the hard standing and repair cracks in the hard standing in order to maintain its integrity.

Table 2 – Summary of Historical Contaminative Site Uses

Process / Structure	Location	Process Description	Potential Contaminants
Filter Beds (present on the site pre-1990's)	In the southern part of the site	Liquid effluent is allowed to percolate through a granular medium that provides a substrate for a microbial film.	Contaminants may include organic compounds, metals, micro-organism and methane.
Treatment Tanks (present on the site post-1990's)	In the southern part of the site	Treatment is achieved via sedimentation and biological aeration. From the information received it is believed that no treatment chemicals or fuels have been stored at the site.	The licence permitted the site to accept: Phenols, oxygen containing compounds, other organic compounds, finished products and manufacturing scrap, latex and rubber solutions, pharmaceuticals and cosmetics, mixed organic and inorganic compounds, industrial effluent treatment sludge, dyestuffs waste, paint waste, cellulose waste, soap and detergents, animal processing wastes, food processing wastes and glue wastes. The site was not permitted to accept: Special waste, radioactive substances, percussives and explosives, free flammable solvents or waste in drums.

2.3 Proposed Future Operation of the Site

The current IPPC application, of which this baseline report forms a component part, is to cover the existing waste treatment facility on-site and a proposed new plant which will be located in the currently disused south-western corner of the site.

CELTIC understands that the proposed new plant comprises nine tanks (each of 65 m³ capacity), sumps, sludge pumps, oil-water separator, centrifuge system and flotation plant. The plant will be constructed on a concrete raft founded at approximately 1.2 m bgl. This plant will be used to treat tankered industrial effluent by screening, dilution, mixing, blending, settlement, flotation, concentration, chemical dosing and pH correction in order to achieve consent levels prior to discharge in to the Pen Y Bont Sewer.

Sludge 'cake' will be a by-product of this treatment system and will be removed from site by a waste contractor for off-site disposal. The range of chemicals/contaminants that may

be present in a typical waste stream to be received by the site and their anticipated environmental behaviour are summarised in Table 3. The proposed treatment chemicals to be used in the new plant are summarised in Table 4 along with their anticipated environmental behaviour.

Likely areas of contamination are identified as:

- Adjacent to tanks, discharge points and pipelines resulting from accidental spills and leaks.

Table 3 – Summary of Potential Waste Streams

Potential Waste Stream	Anticipated Environmental Behaviour				
	Soil Phase	Dissolved Phase	NAPL -	Vapour Phase	Biodegradation Potential*
Hydrocarbons (Petrol / diesel / kerosene, crude, vegetable, synthetic and mineral oils, fats and greases, paraffin wax)	✓	✓	✓	✗	H
Detergents (anionic, cationic and amphoteric)	✓	✓	✗	✗	M
Anti-foaming agents	✓	✓	✗	✗	M
Anti-corrosion agents	✓	✓	✗	✗	L
Bactericides, fungicides	✓	✓	✗	✗	L
Hydrogen Sulphide	✗	✗	✗	✓	M
Paint, pigments and emulsifiers	✓	✓	✓	✓	M
Dyes	✓	✓	✗	✗	L
Ethylene Glycol (anti-freeze)	✓	✓	✓	✗	M
General food wastes (dairy, abattoir, sugars, starches, proteins, casein, lactose, animal waste, gelatine, brewery etc.)	✓	✓	✗	✗	H
Metals (aluminium, iron, steel, titanium, nickel, zinc, cadmium, chromium, copper, nickel, lead, tin, silver, cyanide)	✓	✓	✗	✗	L
Phenols	✓	✓	✗	✗	L
Pharmaceutical wastes	✓	✓	✗	✓	M
Saline solutions	✓	✓	✗	✗	M
Latex solutions	✓	✗	✗	✗	L
Activated polymers	✓	✓	✗	✗	M
Ferric chloride	✓	✓	✗	✗	L
Ferric sulphate	✓	✓	✗	✗	L
Sulphuric acid	✓	✓	✗	✗	L
Sodium bisulphate	✓	✓	✗	✗	L
Ammoniacal Nitrogen	✓	✓	✗	✗	M

Notes: This data has been compiled from data contained in the Department of the Environment Industry Profile Series and information presented in the Hazardous Substances Data Bank.

*Biodegradation Potential is assessed qualitatively as H = High, M = Medium, L = Low.

Table 4 – Summary of Proposed Treatment Chemicals

Chemical Application	Chemical Description	Potential Environmental Behaviour
Nalco 77171 – Flocculant Water Treatment	Anionic high molecular weight polyacrylamide copolymer dispersed in hydrocarbon solvent. Not classified as hazardous*.	May be degraded by abiotic and biological degradation, does not bioaccumulate, emulsifiable in water however likely to form NAPL in the subsurface (relative density 1.03 g/cm ³), can cause mild irritation via direct contact.
Nalco 1454 - Flocculant Water Treatment	Water, ploymer, inorganic salts. Not classified as hazardous*. pH 4.0.	Not expected to be readily biodegradable, no bioaccumulation expected, toxic to aquatic organisms, soluble in water, causes moderate irritation via direct contact.
Nalco 77168 -	Anionic high molecular polyacrylate dispersed in hydrocarbon solvent. Not classified as hazardous*.	Readily eliminated via abiotic and biological degradation, emulsifiable in water however likely to form NAPL in the subsurface (relative density 1.03 g/cm ³), can cause mild irritation via direct contact.

Notes. * European Directive 88/379/EEC

2.4 Previous Investigations

CELTIC is aware of two previous investigations.

The British Geological Survey records a borehole advanced at the Coychurch Sewage Works in 1984 that encountered a sequence of alluvial and fluvio-glacial deposits to a depth of 8.45 m bgl where a conglomerate of the Mercia Mudstone Group marginal facies was encountered. The borehole was located in the south-eastern part of the sewage works, outside the current site boundary. The borehole log is presented in Appendix F.

A survey of surface soils at the site was carried out under instruction from Ogwr Borough Council in 1995. The information available to CELTIC includes 8 soil analyses for metals although no record of the sampling locations. Information from the report is reproduced in Appendix G.

3.0 OBJECTIVES OF THE ASSESSMENT

3.1 Links to the IPPC Process

PPC Regulations require site operators to submit a site report that describes the condition of the site as part of an IPPC permit application. This site report has been compiled as part of United Utilities IPPC application for the Bridgend Waste Treatment Centre.

3.2 Description of the General Approach

In order to complete this site report the following tasks have been undertaken:

- Desk study information (presented in Section 4) has been reviewed and a provisional conceptual model developed in order to determine the appropriate sources and pathways to target in the site investigation.
- A site investigation was conducted with the aim of sampling soil, soil vapour and groundwater beneath the site in order to establish the current concentrations and distribution of contaminants at the site.

3.3 Type of Contaminants Considered

The contaminants considered comprise the potential waste streams to be accepted by the waste treatment centre as outlined in Table 3 above. The analyses undertaken to quantify existing concentrations of these contaminant are described in Section 4.

4.0 SITE INVESTIGATION DETAILS

4.1 Description of Site Condition Evaluation

4.1.1 Geology

The geology of the site is summarised in Table 5. The information presented is based on British Geological Survey (BGS) published 1:50,000 geological map sheet 262⁽⁶⁾, together with an assessment of other available geological information including a BGS borehole, the record of which is included in Appendix F.

Table 5 - Summary of Site Geology

Geological Unit and Lithology	Thickness and Available Information
<i>Made Ground</i> Recent deposits comprising waste products from sewage treatment and re-deposited natural materials.	Average thickness likely to vary up to approximately 1 m.
<i>Drift Deposits</i> Alluvial and fluvio-glacial sand, gravel and clay deposits.	A BGS borehole encountered 8.45 m of drift at the site comprising clay (interpreted as alluvium), peat and sand and gravel (interpreted as fluvio-glacial deposits).
<i>Mercia Mudstone</i> Comprises breccias and conglomerates.	Encountered in a BGS borehole at the site at 8.45 m bgl. Information from the geological map indicates that the Mercia Mudstone unconformably overlies the Carboniferous Limestone and may be up to 85 m in thickness.
<i>Carboniferous Limestone</i> Comprises a sequence of limestones with occasional mudstones.	The geological map of the area indicates the Carboniferous Limestone is likely to underlie the Mercia Mudstone at depth beneath the site. Thickness of the limestone strata is likely to be over 500 m.

4.1.2 Hydrogeology

The hydrogeology of the site is summarised in Table 6. The information presented is based on the Environment Agency Groundwater Vulnerability Map 36⁽⁵⁾, other information received from the Environment Agency (Simon Neal, pers. comm.), together with an assessment of other available geological information.

The site lies within the surface water catchment of Schwyll Spring. Surface water and shallow ground water beneath the site feed the local watercourses, mainly the River Ewenny located approximately 200 m to the south-east of the site, which in turn feed groundwater in the Carboniferous Limestone that is the source for the Schwyll Spring. The spring is located approximately 8 km to the south-west of the site and is used by Welsh Water as a stand-by groundwater abstraction point.

Table 6 - Summary of Site Hydrogeology

Geological Unit	Aquifer Classification	Aquifer Characteristics	SPZ	Groundwater Abstractions
<i>Made Ground</i>	Not classified	Highly variable permeability and porosity.	No	None recorded within 1km
<i>Drift alluvial deposits</i>	Minor Aquifer	Soil classification 'H1' type, soils which readily transmit liquid discharges because they are either shallow, or susceptible to rapid by-pass flow directly to rock, gravel or groundwater.	Yes Zone III	None recorded within 1km
<i>Mercia Mudstone</i>	Minor Aquifer	Important for local supplies and supplying base flow in rivers.	Yes Zone III	None recorded within 1km
<i>Carboniferous Limestone</i>	Major Aquifer	Rapid groundwater flow via joints and fractures.	Yes Zone III	None recorded within 1 km

Notes: SPZ = Source Protection Zone

4.1.3 Hydrology

The hydrology of the site is summarised in Table 7 below. The information presented is based on the site inspection and information held by Envirocheck (presented in Appendix F).

Table 7 - Summary of Site Hydrology

Feature	Distance from Site	Flow	Classification	Abstraction	Discharge
<i>Surface Runoff – Hard Standing</i>	N/A	Drains to Pen Y Bont Sewer	N/A	N/A	N/A
<i>Surface Runoff – Rest of Site</i>	N/A	Drains to ground	N/A	N/A	N/A
<i>Unnamed Streams</i>	150 m west	South-westwards into the Nant Heol Y Gefir	N/A	None indicated by Envirocheck.	None indicated by Envirocheck.
<i>Nant Heol Y Gefir</i>	150 m north	South-westwards into the River Ewenny	N/A	None indicated by Envirocheck.	1 for unspecified discharges 431 m north of the site.
<i>River Ewenny</i>	200 m south-east The site is located within the zone of a predicted 100 year flood event of the river	South-westwards	Chemical – Good Biological – Good	1 for Spray Irrigation 318 m east of the site.	None indicated by Envirocheck.

Notes: Based on information obtained from Envirocheck and the Environment Agency Website.

4.1.4 Site of Special Scientific Interest

A summary of SSSI sites located within 1 km of the site is presented in Table 8.

Table 8 – Summary of SSSI's

SSSI	Distance from Site
<i>Coedymwstwr Woodlands</i> – Designated for Biological importance	716 m north

4.1.5 Other Information

A summary of relevant environmental information not presented in previous sections of this report is provided in Table 9.

Table 9 - Information Summary Table

Information Source	Summary of Information
EnviroCheck	Pollution Incidents to Controlled Waters 9 pollution incident have been recorded within 1 km of the site. The nearest incident to the site was the release of crude sewage to controlled waters 140 m to the north-east of the site in 1991. It is not known whether this incident is related to the site's former use as a sewage works. Landfills, Registered Waste Treatment or Disposal Sites Since 1995 the site has operated under a waste management license originally granted by Ogwr Borough Council. The license is reproduced in Appendix F. There are no landfills or registered sites within 1 km of the site. Integrated Pollution Control (IPC) and Radioactive Substances (RAS) There are no IPC authorisations or RSA permissions within 1 km of the site.

4.1.6 Site Observations

The site is situated in the broad, low-lying, valley floor of the River Ewenny. Approximately 40% of the site is covered by a concrete hard standing which is generally in good condition; any cracks in the surface appear to have been regularly repaired. Runoff from the surface of the hard standing (spillages and rainfall) is intercepted by the site drainage which drains to a sump in the south-east corner of the site from where it is automatically over pumped into the site discharge pipework that feeds into the Pen Y Bont Sewer.

The remainder of the site surface is grass covered except for two small areas in the south-west corner of the site which are covered by concrete foundations of historical plant. Surface runoff from these areas drains to ground.

The land use adjacent to the site is agricultural (grazing). The adjacent land slopes shallowly to the River Ewenny located to the south-east of the site.

4.1.7 Identified Receptors

Following assessment of the desk study information the following principal receptors are identified:

- Shallow groundwater *in the alluvium or fluvio-glacial deposits; important for surface water base flow.*
- Deeper groundwater *in the solid geology via recharge from the River Ewenny (Limestone Major aquifer).*
- Groundwater abstractions, *Schwyll Spring.*
- Surface watercourses, *River Ewenny, Nant Heol Y Gefir and un-named streams.*
- Current site workers, *United Utilities personnel and sub-contractors.*
- Construction workers *for current and future re-developments.*
- Buildings and services, *current and future.*
- Adjacent properties and livestock *at risk from vapours or dissolved phase migration (farmland).*

4.2 Description of the Site Investigation

4.2.1 Details of and Reasoning for Sampling Strategy

The desk study information presented above has established the following:

- The site is situated in a sensitive environmental setting – the Total Catchment Source Protection Zone of the Schwyll Spring.
- The principal receptor at risk from release of contaminants at the site is identified as shallow groundwater that is expected to be in hydraulic continuity with surface watercourses to the south and west of the site.
- The principal sources of contaminants at the site are the incoming domestic sewage and industrial effluent waste streams, and treatment chemicals, which may be released to the subsurface via accidental spillage or leakage from existing and proposed plant.

Accordingly, an intrusive investigation has been conducted at the site with the following objectives:

- To confirm the geology and hydrogeology of the site.
- To install groundwater monitoring wells to sample groundwater around the existing plant (including the treatment tanks, concrete hard standing and discharge pipework) and the location of the proposed new plant.
- To sample soils to establish the nature and extent of any pre-existing contamination associated with the sites past use as a sewage works and waste treatment centre.

- To sample soils beneath the footprint of the proposed new plant to determine the current contaminant status of the strata.
- To conduct leaching tests on selected soil samples to establish the mobility of any detected contaminants.

In designing the investigation, consideration was given to the existing and proposed location of plant and likely direction of groundwater flow. In line with advice contained within the Environment Agency guidance document "IPPC Guide for Applicants" (Version 2, December 2000), exploratory locations were not located within areas specifically constructed to intercept or contain spills such as the bunded areas and areas of hard standing.

4.2.2 Sampling Methods

The site investigative works were carried out between 28th May and 30th May 2002.

The site works are summarised in Table 10. Exploratory locations are presented on Drawing No. D712B/01/A2, Appendix A and the samples collected are summarised in Table 11.

Table 10 - Summary of Site Works

Site Activity	N°	Comments
Service Location	N/A	Prior and during intrusive works, a CAT and genny was used to locate below ground services. Hand dug pits to 1.2 m bgl were advanced in areas of intrusive investigation to check for services.
Trial Pits	5	Five trial pits were excavated by hand to a maximum depth of 1.5 m bgl.
Cable Percussion Boreholes	4	Boreholes were advanced to 10 m bgl. All boreholes were installed with groundwater monitoring wells. Well construction varied depending on ground conditions encountered during borehole advancement and generally comprised slotted well screen surrounded by gravel pack and sealed to the surface with bentonite. In general, monitoring wells were designed to intercept any LNAPL or DNAPL present. Soil gas monitoring pipes were installed in the made ground. A seal of bentonite was installed to the surface, which was completed with concrete and a water-tight flush-fitting well cover.
Solid Sampling and Analysis	8	During site works, 8 solid samples were obtained from boreholes and trial pits, to allow quantification of potential contamination at the site. Two solid samples were selected for leachability testing (NRA Method) with subsequent leachate analysed for a range of determinands.
Liquid Sampling and Analysis	4	After borehole installations were complete, each was monitored and purged of at least three volumes of water prior to sampling.
Borehole Monitoring	4	Boreholes were monitored for methane, carbon dioxide, oxygen, vapour phase hydrocarbons, LNAPL, DNAPL and standing water level.
Topographical Surveying	N/A	Following completion of site works the position was obtained for all the exploratory locations.

4.2.3 Samples Collected

The number, location and type of samples collected are summarised in Table 11.

Table 11 – Summary of Samples Collected

Sample Location	Sample Description	Sample Rationale
TP2 1.5 m bgl	Alluvial Silt/Clay	Contaminant status beneath footprint of new plant
TP3 1.3 m bgl	Alluvial Silt/Clay	Contaminant status beneath footprint of new plant
TP4 0.5 m bgl	Made Ground	Establish variation in made ground chemistry
TP5 0.5 m bgl	Made Ground	Establish variation in made ground chemistry
BH2 0.5 m bgl	Made Ground	Establish variation in made ground chemistry
BH3 1.5 m bgl	Alluvial Silt/Clay	Contaminant status beneath footprint of new plant
BH4 0.5 m bgl	Made Ground	Establish variation in made ground chemistry
BH4 1.5 m bgl	Alluvial Silt/Clay	Contaminant status beneath founding of new plant
BH1	Groundwater	Groundwater contaminant status
BH2	Groundwater	Groundwater contaminant status
BH3	Groundwater	Groundwater contaminant status
BH4	Groundwater	Groundwater contaminant status

4.2.4 Sample Handling, Shipment and Storage Details

All chemical testing was undertaken by Severn Trent Laboratories or their approved sub-contractors where appropriate. Samples were collected in appropriate containers and submitted to the laboratory on a daily basis. If appropriate, samples were stored in a chilled environment prior to analysis.

4.3 Description of Laboratory Analysis

4.3.1 Test Parameters

The current and proposed plant are designed to receive a wide range of waste streams as outlined in Table 2 and Table 3, and as a result a comprehensive suite of chemical analyses have been undertaken on the solid and liquid samples collected during the site investigation in order to capture all likely contaminants. The analytical suites scheduled and potential contaminants targetted are summarised in Table 12.

Table 12 – Summary of Chemical Testing

Analysis Undertaken	Targeted Waste Stream	Environmental Medium Tested			
		Soil	Ground -water	Leachate	Soil Vapour
TPH*	Water Flocculant Treatment Chemicals, Petrol/diesel/kerosene,	✓	✓	✓	✗
NVM	Fats and greases	✓	✓	✓	✗
Detergents	Detergents	✓	✓	✓	✗
Volatile Organic Compounds	Anti-foaming agents, Phenols?, Latex	✓	✓	✗	✓
Semi-Volatile Organic Compounds including 10 Tentatively Identified Compounds	Anti-corrosion agents, Anti-foaming agents, Pharmaceutical Wastes, Paints, Bactericides, Fungicides, Pigments, Emulsifiers, Dyes,	✓	✓	✓	✗
Ethylene Glycol	Antifreeze	✓	✓	✓	✗
pH	Hydrogen Sulphide, Caustic, Sulphuric acid	✓	✓	✓	✗
Metals	Aluminium, iron, steel, titanium, nickel, zinc, cadmium, chromium, copper, nickel, lead, tin, silver	✓	✓	✓	✗
Total and Soluble Sulphate	Hydrogen Sulphide	✓	✓	✓	✗
Sulphide	Hydrogen Sulphide	✓	✓	✓	✗
Total Cyanide	Cyanide	✓	✓	✓	✗
Ammonia	Ammoniacal Nitrogen	✓	✓	✓	✗
Bromide	Sewage	✗	✓	✗	✗
Chloride	Sewage	✗	✓	✗	✗
Poly-Chlorinated Biphenols	Possible constituent of oils.	✓	✓	✓	✗
Total Coliforms, Faecal Streptococci	Sewage	✓	✓	✗	✗
Organo-Phosphate Pesticides	Farm Wastes, Bactericides, Fungicides	✓	✓	✓	✗
Organo-Chloride Pesticides	Farm Wastes, Bactericides, Fungicides	✓	✓	✓	✗
Asbestos	Demolition of historical site buildings	✓	✗	✗	✗
Methane	Sewage	✗	✗	✗	✓
Not Tested	General food wastes (dairy, abattoir, sugars, starches, proteins, casein, lactose, animal waste, gelatine, brewery etc.)	✗	✗	✗	✗

Notes: * All TPH analysis was by GC-FID.

4.3.2 Sample Preparation and Analysis

All chemical testing was undertaken by Severn Trent Laboratories or their approved sub-contractors where appropriate. Details of the analytical methods used and their reporting limits, along with a statement of the quality procedures adopted by the laboratory, are presented in Appendix D. Laboratory QA/QC data is presented with the analytical results in Appendix D.

4.3.3 Limitations / Constraints on Laboratory Analysis

The site, both currently and in the future, receives a wide range industrial effluents that are complex mixtures of chemical compounds, the precise composition of which is unknown. Accurate tailoring of the laboratory analysis to the incoming waste streams is, therefore, not possible.

CELTIC has, therefore, adopted an approach of analysing a broad suite of chemicals which are likely to be present in the incoming waste streams and which will act as markers for any release of contaminants to the sub-surface during the operation of the plant. Analysis of Tentatively Identified Compounds was also undertaken by GC-MS to identify semi-volatile organic compounds that are not included at standard target compounds. Therefore, the absence of a compound can be used to provide an indication of the contaminant status of the site in addition to the positive identification of a compound.

5.0 SUMMARY OF SITE INVESTIGATION FINDINGS

5.1 On-Site Observations - Ground Conditions

Trial pit and borehole logs of all excavations undertaken at the site are presented in Appendix C. General ground conditions encountered at the site are summarised in Table 13.

Table 13 - Summary of Ground Conditions Encountered

Geological Unit	Description	Depths Encountered
Made Ground	Generally comprises gravelly clay with brick rubble and ash.	Generally less than 1 m in thickness.
Alluvial deposits	Generally comprises slightly gravelly silt/clay, one thin (0.2m) peat horizon encountered on the southern site boundary.	Generally encountered from 0.3 to 2.9 m bgl.
Fluvio-Glacial Deposits	Sandy gravel with cobbles, underlain by clay.	Gravel from 1.6 to 9.6 m bgl. Clay from 9.3 to a maximum proved depth of 10 m bgl.

5.2 In-Situ Testing Results

5.2.1 Groundwater Monitoring

The boreholes were monitored for groundwater level and the possible presence of NAPL on the 30th May 2002 using a Geotechnical Instruments Oil-Water Interface Meter. The monitoring data is summarised in Table 14.

Table 14 – Summary of Groundwater Monitoring Data

Borehole N°	Depth to Groundwater (m bgl)	LNAPL / DNAPL
BH1	2.05	UD
BH2	2.50	UD
BH3	2.09	UD
BH4	2.24	UD

Notes: UD – Undetected

Based on the monitoring data groundwater flow in the drift deposits is expected to be towards the south-east.

5.2.2 Gas Monitoring Results

Gas monitoring was carried out on the 30th May 2002, on all monitoring wells. Monitoring of oxygen (O₂), carbon dioxide (CO₂), methane (CH₄) and volatile organic compounds (VOCs) was carried out using a LMX Landfill Gas Analyser and a Microtip Photo Ionisation Detector. Prior to use the Microtip instrument was calibrated to span gas of 100 ppm Isobutylene. Monitoring results are presented in Table 15.

Table 15 - Summary of Gas Monitoring Results

Borehole	O ₂ % by vol	CO ₂ % by vol	CH ₄ % by vol	VOC ppm*
BH1 (s)	17.3	0.5	0.0	18.8
BH1 (d)	19.1	0.0	0.0	3.0
BH2 (s)	16.9	1.2	0.0	26.7
BH2 (d)	19.4	0.0	0.0	1.6
BH3 (s)	18.4	0.0	0.0	61.1
BH3 (d)	19.7	0.0	0.0	1.5
BH4 (s)	19.2	0.0	0.0	4.6
BH4 (d)	19.8	0.0	0.0	0.8

Note: VOCs expressed as Isobutylene equivalent. (s) = measurement from shallow monitoring pipe generally installed within the made ground. (d) = measurement from groundwater monitoring well installed through fluvio-glacial aquifer.

5.3 Laboratory Test Data

5.3.1 Soil Analysis

Eight solid samples were obtained from trial pits and boreholes. Samples were analysed for a range of determinants, the results of which are summarised in Table 16.

Table 16 - Summary of Chemical Analysis of Soil Samples

Determinant	No. of Samples Analysed	Concentration (mg/kg)		
		Min	Max	Mean
pH (units)	8	7.2	8.2	7.6
Mercury	8	<0.05	0.14	0.05
Arsenic	8	1.87	23.39	9.80
Aluminium	8	4,190	9,300	6,963
Selenium	8	<0.05	0.4	1
Titanium	8	<5	110	44
Silver	8	<5	<5	<5
Tin	8	<15	<15	<15
Iron	8	7,930	33,900	18,382
Cadmium	8	<0.5	<1.7	<1.7
Chromium	8	8	15	12
Copper	8	7	154	51
Lead	8	14	79	15
Nickel	8	6	17	10
Zinc	8	34	151	74

Determinant	No. of Samples Analysed	Concentration (mg/kg)		
		Min	Max	Mean
Table 16 continued				
Manganese	8	138	605	332
TPH	8	<55	<55	<55
Total VOCs*	4	LDL	0.0466	0.0174
Benzene	4	<0.001	ND	ND
Toluene	4	<0.001	0.0017	0.0011
Ethylbenzene	4	<0.001	0.0053	0.0020
Xylenes	4	<0.001	0.0218	0.008
Total SVOCs *	4	<0.001	0.0026	<0.001
Total PAH	4	LDL	LDL	LDL
OPP	4	LDL	LDL	LDL
OCP	4	LDL	LDL	LDL
PCBs	4	LDL	LDL	LDL
Ethylene Glycol	4	<100	<100	<100
Ammonia	4	8.6	17.6	13.9
Total Cyanide	4	<2	<2	<2
Sulphate	4	<10	234.3	59
Elemental Sulphur	4	<25	<25	<25
Total Colliforms (cfu/g)	4	<10	180	73
Faecal Streptococci (cfu/g)	4	<10	10	<10
Asbestos	4	Not Detected		

Notes: For statistical purposes, where a compound recorded less than the analytical limit of detection, a value of zero has been used. All concentrations expressed in mg/kg unless noted otherwise. LDL – all individual compounds below detection limit. *Total VOCs and SVOCs are summations of all the VOC and SVOC data (excluding the BTEX compounds for the Total VOCs) and have been included as an indication of the general contaminant status of the sample, please refer to the Appendix D for concentrations of individual VOCs and SVOCs. OPP – Organo-Phosphate Pesticides, OCP – Organo-Chloride Pesticides.

5.3.2 Leachate Analysis

Leachability testing (NRA method) was carried out on two selected solid samples with the subsequent leachate analysed for a range of determinands, the results of which results are summarised in Table 17.

Table 17 – Summary of Leachate Analysis

Determinant	TP2 1.5 m bgl	TP3 1.3 m bgl
pH (units)	5.9	5.7
Mercury	<0.0001	<0.0001
Arsenic	<0.001	<0.001
Aluminium	1.5	1.1
Selenium	0.001	<0.001
Titanium	<0.1	<0.1
Silver	<0.03	<0.03
Tin	<0.1	<0.1
Iron	0.88	0.77
Cadmium	0.001	0.001
Chromium	<0.005	<0.005
Copper	0.013	0.013
Lead	0.015	0.015
Nickel	<0.005	<0.005
Zinc	0.034	0.05
Manganese	<0.05	<0.05
TPH	LDL	LDL
NVM	84	9
Total SVOCs	0.0079	0.0056
OPP (ng/l)	LDL	68
OCP	LDL	30.9 ng/l Triallate 38 ng/l Trifluralin
PCBs	LDL	LDL
Ethylene Glycol	<20	<20
Ammonia	<0.3	0.4
Total Cyanide	<0.1	<0.1
Sulphate	185	110
Detergents	<0.3	<0.3

Note: all data in mg/l unless noted otherwise. Total SVOCs is a summation of all the SVOC data and has been included as an indication of the general contaminant status of the sample, please refer to the Appendix D for concentrations of individual SVOCs. OPP – Organo-Phosphate Pesticides, OCP – Organo-Chloride Pesticides.

5.3.3 Groundwater Analysis

Groundwater samples were recovered on 30th May 2002, and were analysed for a range of determinands. The results of the chemical analyses are summarised in Table 18.

Table 18 – Summary of Chemical Analysis of Groundwater Samples

Determinant	No. of Samples Analysed	Concentration (mg/l)		
		Min	Max	Mean
pH (units)	4	6.7	7.3	7.1
Mercury	4	0.0001	0.0011	0.0004
Arsenic	4	<0.001	0.061	0.016
Aluminium	4	0.2	16.8	4.8
Selenium	4	0.001	0.005	0.003
Titanium	4	<0.1	<0.1	<0.1
Silver	4	<0.02	<0.03	<0.03
Tin	4	<0.01	<0.01	<0.01
Iron	4	0.12	16.4	4.85
Cadmium	4	<0.001	0.003	0.001
Chromium	4	<0.005	0.016	<0.005
Copper	4	<0.02	0.082	0.032
Lead	4	<0.01	0.19	0.06
Nickel	4	<0.007	0.065	0.028
Zinc	4	0.04	0.18	0.08
Manganese	4	0.32	4.5	1.6
Chloride	4	26	36	31
TPH	4	LDL	LDL	LDL
NVM	4	10	98.3	38
Total VOCs *	4	LDL	0.002	LDL
Benzene	4	<0.001	<0.001	<0.001
Toluene	4	0.0044	0.0206	0.0108
Ethylbenzene	4	<0.001	<0.001	<0.001
Xylenes	4	<0.001	<0.001	<0.001
Total SVOCs *	4	LDL	0.0016	LDL
Detergents - anionic	4	<0.3	<0.3	<0.3
Detergents – non-ionic	4	<0.5	11.1	4.8
OPP	4	LDL	LDL	LDL
OCP**	4	LDL	9.5 ng/l p,p-DDT 11.2 ng/l Triallate 14.4 ng/l Trifluralin	LDL
PCBs	4			
Ethylene Glycol	2	<20	<20	<20

Determinant	No. of Samples Analysed	Concentration (mg/l)		
		Min	Max	Mean
Table 18 continued				
Ammonium	4	0.4	0.7	0.525
Total Cyanide	4	<0.1	<0.1	<0.1
Sulphate	4	11	49	26
Sulphide	4	<0.01	<0.01	<0.01
Calcium	4	69	147	95
Magnesium	4	7.2	15.3	10.6
Sodium	4	17.8	29	25.4
Potassium	4	5	24.8	10.7
Total Colliforms (cfu/100ml)	4	110	4,100	1,788
Faecal Streptococci (cfu/100ml)	4	0	1,800	465

Notes: For statistical purposes, where a compound recorded less than the analytical limit of detection, a value of zero has been used. Concentrations in mg/l unless otherwise noted. LDL = all individual compounds below detection limit. *Total VOCs and SVOCs are summations of all the VOC and SVOC data (excluding the BTEX compounds for the Total VOCs) and have been included as an indication of the general contaminant status of the sample, please refer to the Appendix D for concentrations of individual VOCs and SVOCs. OPP – Organo-Phosphate Pesticides, OCP – Organo-Chloride Pesticides. OCPs recorded above detection were in the samples from BH1 and BH2.

5.4 Laboratory QA/QC Data

QA/QC data is reported with the certificates of analysis. All analyses were within QA/QC limits with the exception of certain PCB congeners and pesticide compounds in groundwater and leachate analyses. Because of the QA/QC breach these data are reported as indicative concentrations, which suggest that these compounds are below the analytical limit of detection.

6.0 DATA INTERPRETATION

6.1 Baseline Conditions of the Site

The site operates as a discharge point for tankered domestic sewage to the Pen Y Bont Sewer and as a pre-treatment centre for tankered industrial effluent prior to discharge to the sewer.

The site is covered by a relatively thin (<1m) layer of made ground which overlies a sequence of alluvial clays and discontinuous peat layers, which in turn are underlain by gravels. Groundwater is present at relatively shallow depth (approximately 2 m bgl) in the superficial deposits and is likely to be in hydraulic continuity with adjacent surface water receptors, which include the River Ewenny. The site is located within the total catchment (Zone III) source protection zone of the Schwyll Spring.

Analysis of environmental media at the site has detected elevated VOC concentrations in the made ground although no significant soil or groundwater contaminant sources were identified by the chemical analyses.

Soil analyses detected some elevated metal concentrations (i.e. up to 23 mg/kg arsenic) in the made ground, which reflects the presence of ash. Samples of the natural ground generally recorded low concentrations of metals and organic compounds were at concentrations close to or below detection limits.

Groundwater analyses also generally recorded low metal concentrations and low organic compound concentrations. Up to 4,100 cfu/100ml Total Colliforms and 11.1 mg/l non-ionic detergents were recorded. Low concentrations of organo-chloride pesticides were recorded in BH1 (9.5 ng/l p,p-DDT, 11.2 ng/l Triallate and 14.4 ng/l Trifuralin) and BH2 (11.6 ng/l Trifuralin). Both boreholes were installed on the southern boundary of the site.

6.2 Assessment of Risk to Sensitive Receptors

The priority sensitive receptor that has been identified at the site is shallow groundwater which provides a pathway for contaminant migration to the Welsh Water stand-by abstraction point at Schwyll Spring.

Migration of any contaminants released at the site to groundwater is likely to be rapid due to the relatively shallow depth of groundwater and thin cover of overlying alluvium, which provides relatively little attenuation capacity.

Four permanent groundwater and soil gas monitoring wells have been installed through the gravel aquifer at the site to enable groundwater chemistry and soil gases to be monitored during the operation of the plant.

6.3 Main Limitations / Constraints on the Findings

The site, both currently and in the future, receives a wide range industrial effluents that are complex mixtures of chemical compounds, the precise composition of which is unknown.

CELTIC has, therefore, adopted an approach of analysing a broad suite of chemicals which are likely to be present in the incoming waste streams and which will act as markers for any release of contaminants to the sub-surface during the operation of the plant. Analysis of Tentatively Identified Compounds was also undertaken by GC-MS to identify semi-volatile organic compounds that are not included at standard target compounds. Therefore, the absence of a compound can be used to provide an indication of the contaminant status of the site in addition to the positive identification of a compound.

Laboratory QA/QC data were breached for some PCB congeners and pesticide analyses. Indicative concentrations for these compounds are less than the analytical detection limits.

7.0 CONCLUSION

The site at Bridgend was used as a sewage treatment works from sometime between 1919 and 1951 when it was redeveloped as a waste treatment centre. As a result, the site has received domestic sewage and industrial waste for over 50 years. Proposed expansion of the industrial effluent treatment facilities, together with changes in UK legislation, have prompted the need for an IPPC licence for continued operation of the site. Following a desk study and site investigation, the following conclusions regarding the current, baseline, condition of the site have been drawn.

- The site overlies a permeable drift deposits that contain shallow groundwater.
- The site is located within the total catchment source protection zone of Schywl Spring.
- Chemical analyses have been undertaken on soil and groundwater samples for a wide range of determinands. The data is summarised in Section 5 and provides a baseline data for comparative purposes following decommissioning of the site.
- Four groundwater wells have been installed at the site to enable groundwater chemistry to be monitored during operation of the waste treatment centre.
- Analysis of environmental media at the site has detected elevated VOC concentrations in the made ground although no significant soil or groundwater contaminant sources were identified.
- Soil analyses detected some elevated metal concentrations (i.e. up to 23 mg/kg arsenic) in the made ground, which reflects the presence of ash. Samples of the natural ground generally recorded low concentrations of metals and organic compounds were at concentrations close to or below detection limits.
- Groundwater analyses also generally recorded low metal concentrations and low organic compound concentrations. Up to 4,100 cfu/100ml Total Colliforms and 11.1 non-ionic detergents were recorded. Low concentrations of organo-chloride pesticides were recorded in BH1 (9.5 ng/l p,p-DDT, 11.2 ng/l Triallate and 14.4 ng/l Trifuralin) and BH2 (11.6 ng/l Trifuralin).

8.0 REFERENCES

1. Code of Practice for Investigation of Potentially Contaminated Sites, BS 10175:2001.
2. Department of the Environment (1994). Contaminated Land Research Reports (Various), DoE Publications Unit.
3. Environmental Protection Act 1990, Part IIA Contaminated Land. Introduced by s57 of the Environment Act 1995.
4. British Geological Survey 1:50,000 Solid Edition Mapping Sheet 262.
5. Environment Agency (1996). Policy and Practise for the Protection of Groundwater, Groundwater Vulnerability Map Sheet 36.
6. ICRCL Guidance Note 59/83, (Second Edition 1987). Guidance on the Assessment and Redevelopment of Contaminated Land.

9.0 GLOSSARY

Aquifer	Strata which both contain groundwater and allow water to flow through them in significant quantities.
Cable Percussion Borehole	A method of soil boring using a tripod rig and percussion cutting tools to advance the bore vertically through the ground. Allows solid samples to be obtained and can be used for the installation of monitoring wells.
Porosity	The amount of water a rock or strata can hold in its pore space. A porous rock or strata has a high porosity.
Made Ground	A deposit of soil, rock or waste products originating from human activity. Made ground may comprise heterogeneous or homogeneous deposits of waste materials, re-worked natural deposits, engineered fill materials or construction materials for example.
Permeability	Permeability relates to how fast water will flow through rock or strata.
Saturated Zone	Zone below the water table.

Abbreviations

bgl	Below ground level
BGS	British Geological Survey
BTEX	Benzene, toluene, ethylbenzene and xylenes
CELTIC	CELTIC Technologies Limited
EA	Environment Agency
GC-FID	Gas chromatography – flame ionisation detector
m	Metres
NAPL	Non Aqueous Phase Liquid
N/A	Not applicable
OS	Ordnance Survey
PPE	Personal Protective Equipment
SSSI	Sites of Special Scientific Interest

APPENDICES

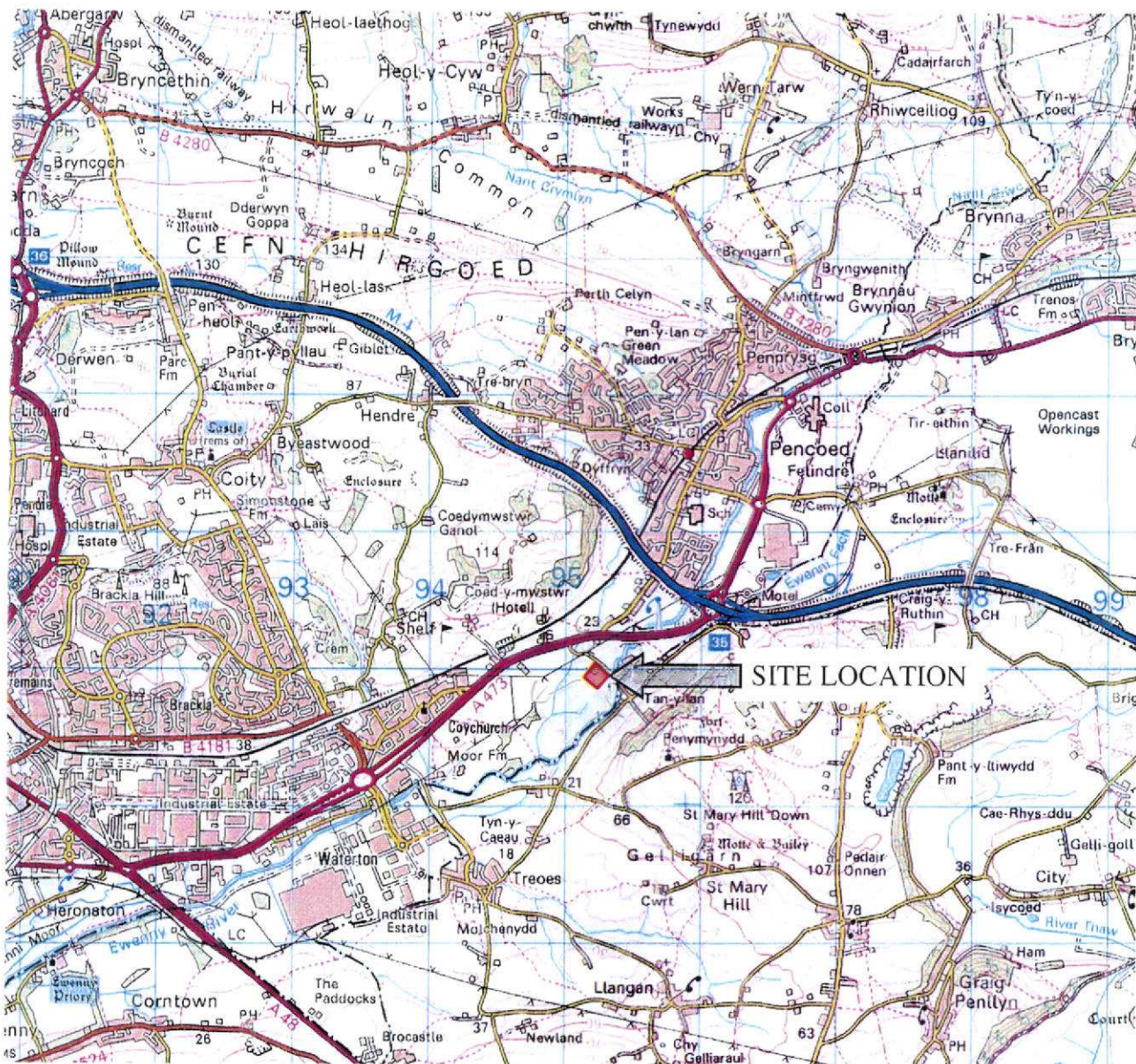
APPENDIX A FIGURES

D712B/01/A1

Site Location

D712B/01/A2

Site Layout and Exploratory Locations



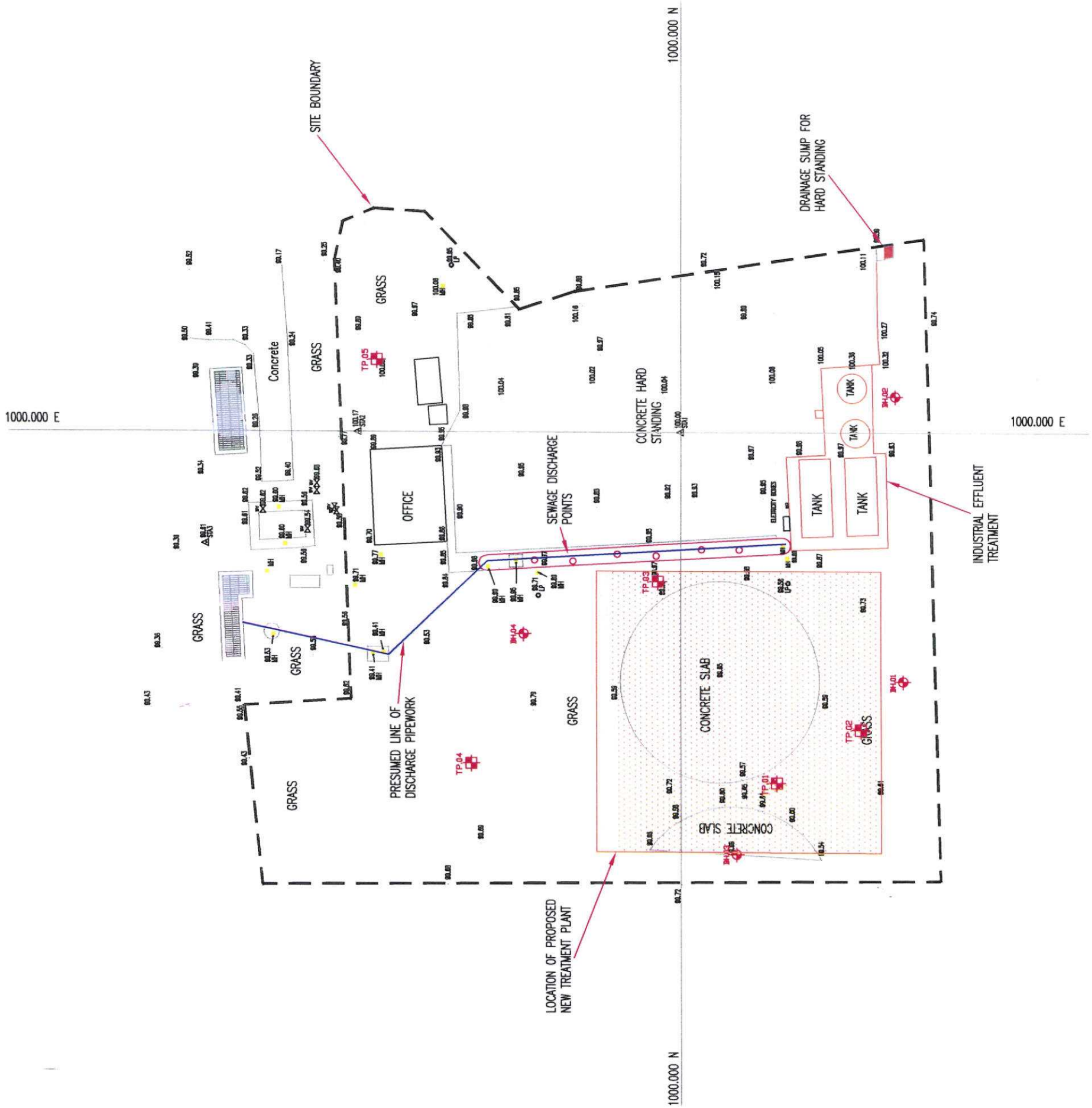
Reproduced from the Ordnance Survey's 1:50,000 map of 2000 with the permission of the Controller of Her Majesty's Stationary Office.

Date: June 2002	Scale: NTS	Title: Location of Bridgend Waste Treatment Centre	
 CELTIC TECHNOLOGIES		Client: United Utilities	
		Project: Bridgend WTC	Job No.: C712B
		Figure : Drawing D712B/01/A1	

KEY

TP.04 TRIAL PIT

BH.01 BOREHOLE



DRAFT

REV	COMMENT	DATE
A	ISSUED FOR COMMENT	



CELTIC Technologies Ltd.
Cambrian Buildings
Mount Stuart Square
Cardiff
CF10 5QQ
Tel. (029) 2045 5544
Fax. (029) 2045 5533

Client
UNITED UTILITIES

Project
BRIDGEND WTC

Title
SITE LAYOUT AND
EXPLORATORY LOCATIONS

Originator	Checked	Date	Authorised	Date
Original Scale 1: 500			Rev A	Page A3
Drawing Number	D712/A-FIG2			

APPENDIX B PLATES

APPENDIX C TRIAL PIT AND BOREHOLE LOGS



Borehole Log

BH 01

Level (AOD):	98.45m
Borehole Diameter:	200mm
Well Diameter:	50mm
Screen Position :	0.50 - 1.50m 2.50 - 10.00m

WATER		SAMPLING DATA		DESCRIPTION OF STRATA		DEPTH	LEGEND	LVL
STK	WELL	TYPE	DEPTH (m)	SAMPLE REF	DESCRIPTION	(mbgl)		(mAOD)
					TOPSOIL. Brown sandy clay with occasional gravel.	0.35		98.10
					MADE GROUND. Orange brown very sandy slightly gravelly clay. Gravel is medium angular ash. No odour.	0.55		97.90
					Brown sandy slightly gravelly silty CLAY with roots.	0.90		97.55
					Grey sandy slightly gravelly silty CLAY with orange mottling. Gravel of subrounded coarse sandstone. No odour.	1.60		96.85
					Orange brown clayey sandy GRAVEL of fine to coarse subangular sandstone.			
						3.00		95.45
					Brown sandy GRAVEL and COBBLES of fine subrounded sandstone.			

Continued to next sheet

	Undisturbed		Surface Finish		Plain Pipe
	Disturbed		Bentonite Seal		Slotted Section
B	Bulk		Filter Pack		
W	Water		Arisings		
	Water Strike				
	Water Level				

Level is to local datum.



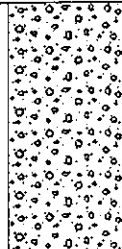
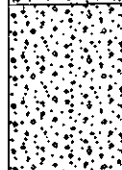
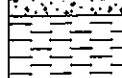
Borehole Log

BH 01

Project No: C712B
Location: Bridgend
Client: United Utilities
Start Date: 28 May 2002

Contractor: GTD Drilling
Engineer: R Davies
Plant: Dando 150
Easting:
Northing:

Level (AOD): 98.45m
Borehole Diameter: 200mm
Well Diameter: 50mm
Screen Position :

WATER		SAMPLING DATA			DESCRIPTION OF STRATA			
STK	WELL	TYPE	DEPTH (m)	SAMPLE REF	DESCRIPTION	DEPTH (mbgl)	LEGEND	LVL (mAOD)
			8		Brown sandy GRAVEL and COBBLES of fine subrounded sandstone.	8.50		89.95
			9		Grey brown coarse SAND and GRAVEL.	9.60		88.85
			10		Stiff to very stiff reddish brown CLAY.	10.00		88.45
					End of Borehole			
			11					
			12					
			13					

○	Undisturbed		Surface Finish		Plain Pipe
●	Disturbed		Bentonite Seal		Slotted Section
B	Bulk		Filter Pack		
W	Water		Arisings		
	Water Strike				
	Water Level				

REMARKS:



CELTIC
TECHNOLOGIES

Borehole Log BH 02

Project No: C712B
Location: Bridgend
Client: United Utilities
Start Date: 28 May 2002

Contractor: GTD Drilling
Engineer: R Davies
Plant: Dando 150
Easting:
Northing:

Level (AOD): 98.45m
Borehole Diameter: 200mm
Well Diameter: 50mm
Screen Position : 0.50 - 1.50m
2.50 - 9.50m

WATER		SAMPLING DATA			DESCRIPTION OF STRATA		
STK	WELL	TYPE	DEPTH (m)	SAMPLE REF	DESCRIPTION	DEPTH (mbgl)	LVL (mAOD)
			0.50	BH 02/0.50	TOPSOIL.	0.15	98.30
					MADE GROUND. Black slightly clayey sandy gravel of ash.	0.20	98.25
					MADE GROUND. Brown sandy very gravelly clay. Gravel is brick rubble. No odour.	0.50	97.95
					MADE GROUND. Black slightly clayey sandy gravel of ash.	1.00	97.45
					MADE GROUND. Black slightly clayey sandy gravel of ash.	1.20	97.25
					Black spongy pseudo fibrous PEAT. Organic odour.	1.60	96.85
					Soft grey very sandy silty CLAY. Slight organic odour.		
					Firm grey brown sandy very gravelly silty CLAY. No odour.	2.50	95.95
					Orange brown sandy GRAVEL of fine to coarse subrounded sandstone.	3.00	95.45
					Orange brown cobbly SAND and GRAVEL of subrounded sandstone.		

Continued to next sheet

KEY:

- | | | |
|---------------|------------------|-----------------|
| ○ Undisturbed | ■ Surface Finish | Plain Pipe |
| ● Disturbed | ■ Bentonite Seal | Slotted Section |
| B Bulk | ● Filter Pack | |
| W Water | /// Arisings | |
| Water Strike | | |
| Water Level | | |

REMARKS:

Level is to local datum



Borehole Log

BH 02

Contractor: GTD Drilling
Engineer: R Davies
Plant: Dando 150
Easting:
Northing:

Level (AOD): 98.45m
Borehole Diameter: 200mm
Well Diameter: 50mm
Screen Position :

WATER		SAMPLING DATA			DESCRIPTION OF STRATA		DEPTH	LEGEND	LVL
STK	WELL	TYPE	DEPTH (m)	SAMPLE REF	DESCRIPTION	(mbgl)		(mAOD)	
					Orange brown cobbly SAND and GRAVEL of subrounded sandstone.				
			8						
			9						
					Stiff red brown CLAY.	9.30		89.15	
						9.80		88.65	
			10		End of Borehole				
			11						
			12						
			13						

○	Undisturbed		Surface Finish		Plain Pipe
●	Disturbed		Bentonite Seal		Slotted Section
B	Bulk		Filter Pack		
W	Water		Arisings		
	Water Strike				
	Water Level				

REMARKS:

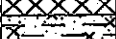
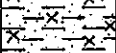
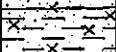


Borehole Log

BH 03

Contractor: GTD Drilling
Engineer: R Davies
Plant: Dando 150
Easting:
Northing:

Level (AOD):	98.46m
Borehole Diameter:	200mm
Well Diameter:	50mm
Screen Position :	0.25 - 0.50m 2.00 - 10.00m

WATER		SAMPLING DATA		DESCRIPTION OF STRATA		
STK	WELL	TYPE	DEPTH (m)	SAMPLE REF	DESCRIPTION	DEPTH (mbgl) LEGEND LVL (mAOD)
					Concrete.	0.10  98.36
					Hardcore sub-base.	0.30  98.16
					MADE GROUND. Brown sandy gravelly silty clay. Gravel of ash. No odour.	0.55  97.91
					Soft to firm orange brown sandy silty CLAY. No odour.	1.05  97.41
			1.50	BH 03/1.50	Firm grey with orange mottling sandy silty CLAY slightly gravelly below 1.4m bgl. No odour.	1.80  96.66
					Orange brown sandy cobbly GRAVEL of subrounded sandstone. No odour	

Continued to next sheet

	Undisturbed		Surface Finish		Plain Pipe
	Disturbed		Bentonite Seal		Slotted Section
	Bulk		Filter Pack		
	Water		Arisings		
	Water Strike				
	Water Level				

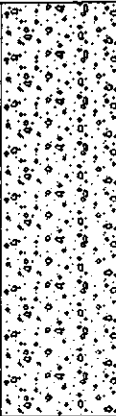
Level is to local datum



Borehole Log

BH 03

Level (AOD): 98.46m
Borehole Diameter: 200mm
Well Diameter: 50mm
Screen Position :

WATER		SAMPLING DATA			DESCRIPTION OF STRATA		DEPTH	LEGEND	LVL.
STK	WELL	TYPE	DEPTH (m)	SAMPLE REF	DESCRIPTION		(mbgl)		(mAOD)
					Orange brown sandy cobbly GRAVEL of subrounded sandstone. No odour				
						9.50			88.96
					Stiff to very stiff reddish brown CLAY.	10.00			88.46
					End of Borehole				

○	Undisturbed		Surface Finish		Plain Pipe
●	Disturbed		Bentonite Seal		Slotted Section
B	Bulk		Filter Pack		
W	Water		Arisings		
	Water Strike				
	Water Level				

[illegible]



Borehole Log

BH 04

Project No:	C712B	Contractor:	GTD Drilling	Level (AOD):	98.57m
Location:	Bridgend	Engineer:	R Davies	Borehole Diameter:	200mm
Client:	United Utilities	Plant:	Dando 150	Well Diameter:	50mm
Start Date:	29 May 2002	Easting:		Screen Position :	0.20 - 0.50m
		Northing:			2.00 - 10.00m

WATER		SAMPLING DATA			DESCRIPTION OF STRATA		DEPTH	LEGEND	LVL
STK	WELL	TYPE	DEPTH (m)	SAMPLE REF	DESCRIPTION		(mabgl)		(mAOD)
					TOPSOIL with occasional bricks.		0.35		98.22
			0.50	BH 04/0.50	MADE GROUND. Grey gravelly clay. Gravel of ash. No odour.		0.60		97.97
					Soft to firm orange brown sandy silty CLAY. No odour.				
			1.50	BH 04/1.50	Firm to stiff grey very sandy gravelly silty CLAY. No odour.		1.55		97.02
							2.50		96.07
					Grey clayey SAND and GRAVEL. Gravel is fine to coarse subrounded sandstone.		3.10		95.47
					Orange brown sandy cobbly GRAVEL of subrounded sandstone.				

Continued to next sheet

KEY:

- | | | | | | |
|---|--------------|---|----------------|---|-----------------|
| ○ | Undisturbed |  | Surface Finish |  | Plain Pipe |
| ● | Disturbed |  | Bentonite Seal |  | Slotted Section |
| B | Bulk |  | Filter Pack | | |
| W | Water |  | Arisings | | |
| | Water Strike | | | | |
|  | Water Level | | | | |

REMARKS:



Borehole Log

BH 04

Project No: C712B
Location: Bridgend
Client: United Utilities
Start Date: 29 May 2002

Contractor: GTD Drilling
Engineer: R Davies
Plant: Dando 150
Easting:
Northing:

Level (AOD): 98.57m
Borehole Diameter: 200mm
Well Diameter: 50mm
Screen Position :

WATER		SAMPLING DATA			DESCRIPTION OF STRATA			
STK	WELL	TYPE	DEPTH (m)	SAMPLE REF	DESCRIPTION	DEPTH (mbgl)	LEGEND	LVL (mAOD)
					Orange brown sandy cobbly GRAVEL of subrounded sandstone.			
			8					
			9					
			10		Stiff to very stiff reddish brown CLAY.	9.30		89.27
						10.00		88.57
					End of Borehole			
			11					
			12					
			13					

KEY:

- | | | | | | |
|---|--------------|---|----------------|---|-----------------|
| ○ | Undisturbed |  | Surface Finish | | Plain Pipe |
| ● | Disturbed |  | Bentonite Seal |  | Slotted Section |
| B | Bulk |  | Filter Pack | | |
| W | Water |  | Arisings | | |
| | Water Strike | | | | |
| ▼ | Water Level | | | | |

REMARKS:



TP 01

Sheet 1 of 1

Level (AOD): 98.40m

[illegible]

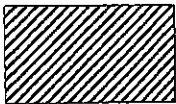


TP 02

Sheet 1 of 1

Contractor: GTD Drilling
Engineer: R Davies
Plant: Hand dug
Easting:
Northing:

Level (AOD): 98.55m

WATER	SAMPLING DATA			DESCRIPTION OF STRATA		
STK	TYPE	DEPTH (m)	SAMPLE REF	DESCRIPTION	DEPTH (m/bgl)	LEGEND LVL (m AOD)
	●	1.50	TP 02/1.50	TOPSOIL.	0.20	98.35
				MADE GROUND. Brown sandy gravelly silty clay with brick and ash. No odour.	0.40	98.15
				Soft to firm brown with orange mottles sandy silty CLAY. No odour.	1.00	97.55
				Soft to firm orange brown sandy silty CLAY. No odour.	1.50	97.05
				End of Trial Pit		
KEY: ○ Undisturbed ● Disturbed B Bulk W Water Water Strike ▼ Water Level				REMARKS: Side Stability: Other Details:		
				 Width: 0.00m Length: 0.00m		



CELTIC
TECHNOLOGIES

Borehole Log TP 03

Project No:	C712B	Contractor:	GTD Drilling	Level (AOD):	98.77m
Location:	Bridgend	Engineer:	R Davies	Borehole Diameter:	
Client:	United Utilities	Plant:	Hand dug	Well Diameter:	
Start Date:	29 May 2002	Easting:		Screen Position :	
		Northing:			

WATER		SAMPLING DATA			DESCRIPTION OF STRATA		
STK	WELL	TYPE	DEPTH (m)	SAMPLE REF	DESCRIPTION	DEPTH (mbgl)	LVL (mAOD)
					TOPSOIL.	0.05	98.72
					MADE GROUND. Brick rubble and concrete.	0.10	98.67
					MADE GROUND. Brown sandy slightly gravelly silty clay. Gravel of fine angular ash. No odour.	0.30	98.47
					Soft to firm brown with orange mottles sandy silty CLAY. No odour.	0.80	97.97
			1.30	TP 03/1.30	Brown grey very clayey sandy GRAVEL of subrounded sandstone.	1.30	97.47
					End of Borehole		
		1					
		2					
		3					
		4					
		5					
		6					

KEY:

○	Undisturbed	■	Surface Finish		Plain Pipe
●	Disturbed	■	Bentonite Seal		Slotted Section
B	Bulk				
W	Water				
	Water Strike	●	Filter Pack		
▼	Water Level	///	Arisings		

REMARKS:

A plastic pipe approx. 100 mm in diameter was encountered in the western end of the pit, water with a faint sheen but no odour was seeping from the joints.

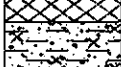


Borehole Log

TP 04

Contractor: GTD Drilling
Engineer: R Davies
Plant: Hand dug
Easting:
Northing:

Level (AOD): 98.69m
Borehole Diameter:
Well Diameter:
Screen Position :

WATER		SAMPLING DATA			DESCRIPTION OF STRATA			
STK	WELL	TYPE	DEPTH (m)	SAMPLE REF	DESCRIPTION	DEPTH (mbgl)	LEGEND	LVL (mAOD)
			0.50	TP 04/0.50	TOPSOIL.	0.10		98.59
		●			MADE GROUND. Brown very gravelly silty clay. Gravel of brick and ash. No odour.	0.50		98.19
		1			Soft to firm orange brown sandy slightly gravelly silty CLAY with occasional organic rich laminae. No odour.	1.20		97.49
					----- End of Borehole			
		2						
		3						
		4						
		5						
		6						

○	Undisturbed		Surface Finish		Plain Pipe
●	Disturbed		Bentonite Seal		Slotted Section
B	Bulk		Filter Pack		
W	Water		Arisings		
	Water Strike				
	Water Level				



CELTIC
TECHNOLOGIES

Borehole Log
TP 05

Project No: C712B
Location: Bridgend
Client: United Utilities
Start Date: 29 May 2002

Contractor: GTD Drilling
Engineer: R Davies
Plant: Hand dug
Easting:
Northing:

Level (AOD): 98.73m
Borehole Diameter:
Well Diameter:
Screen Position :

WATER		SAMPLING DATA			DESCRIPTION OF STRATA		
STK	WELL	TYPE	DEPTH (m)	SAMPLE REF	DESCRIPTION	DEPTH (mbgl)	LVL (mAOD)
					TOPSOIL.	0.20	98.53
		●	0.50	TP 05/0.50	MADE GROUND. Dark brown sandy very gravelly silty clay. Gravel is brick ash and concrete.		
		1					
		2					
		3					
		4					
		5					
		6					
					End of Borehole	1.20	97.53

KEY:

○	Undisturbed	■	Surface Finish		Plain Pipe
●	Disturbed	■	Bentonite Seal	≡	Slotted Section
B	Bulk	●	Filter Pack		
W	Water	▼	Water Level		
	Water Strike	///	Arisings		

REMARKS:

APPENDIX D CHEMICAL ANALYSIS RESULTS

Technical Information

Quotation Number: 33954 A/JF

Quotation Date: 28/05/2002

All Methods are based on MEWAM ("Blue Book") except for those marked (-), which have been developed in-house.

Quotation for Soil, Water & Leachate Analysis. Ref: Pencoe

<u>Suite 1 - Solids</u>			
Test	Reporting Limit	Method	NAMAS
Moisture content at 30 C	0.1 %		Accredited
pH (Sludge & Soil)	0.1		Accredited
Sulphate Total as SO ₄ by ICPdw	250 mg/kg	ICP	
Sulphate as SO ₄ , water sol dw	50 mg/kg		Accredited
Cyanide as CN, total dry weight	2 mg/kg		Accredited
Ammonia H ₂ O sol as NH ₃	3 mg/kg		Accredited
Arsenic as As, dry weight	0.05 mg/kg	Atomic Fluorescence	Accredited
Cadmium as Cd, dry weight	0.5 mg/kg	ICP	Accredited
Chromium as Cr, dry weight	2 mg/kg	ICP	Accredited
Copper as Cu, dry weight	1 mg/kg	ICP	Accredited
Mercury as Hg, dry weight	0.05 mg/kg	Atomic Fluorescence	Accredited
Selenium as Se, dry weight	0.05 mg/kg	Atomic Fluorescence	Accredited
Zinc as Zn, dry weight	1.5 mg/kg	ICP	Accredited
Nickel as Ni, dry weight	4 mg/kg	ICP	Accredited
Lead as Pb, dry weight	9 mg/kg	ICP	Accredited
Tin as Sn, dry weight	15 mg/kg	ICP	Accredited
Silver as Ag, dry weight	5 mg/kg	ICP	
Aluminium as Al, dry wt.	5 mg/kg	ICP	Accredited
Iron as Fe, dry weight	10 mg/kg	ICP	Accredited
Titanium as Ti, dry weight	5 mg/kg	ICP	
Manganese as Mn, dry weight	5 mg/kg	ICP	Accredited
TPH >C6-C40	25 mg/kg		
Toluene Extractable Matter	250 mg/kg		

<u>Suite 2 - Solids</u>			
Test	Reporting Limit	Method	NAMAS
Asbestos identification	1 %		
VOC	* ug/kg	G C M S	Accredited
SVOC with TICs	* mg/kg		

Technical Information

Quotation Number: 33954 A/JF
Quotation Date: 28/05/2002

<u>Suite 2 - Solids</u>			
<u>PCB's</u>			
Test	Reporting Limit	Method	NAMAS
PCB 101	2 ug/kg	G C	Accredited
PCB 118	2 ug/kg	G C	Accredited
PCB 138	2 ug/kg	G C	Accredited
PCB 153	2 ug/kg	G C	Accredited
PCB 180	2 ug/kg	G C	Accredited
PCB 28	2 ug/kg	G C	Accredited
PCB 52	2 ug/kg	G C	Accredited

<u>Suite 2 - Solids</u>			
Test	Reporting Limit	Method	NAMAS
Total Coliforms - Soils	0 per gram		
Faecal Streps Soil	0 per g		

<u>Suite 2 - Solids</u>			
<u>ORGANOPHOSPHORUS PESTICIDES</u>			
Test	Reporting Limit	Method	NAMAS
Azinphos-methyl	0 ug/kg		
Carbophenothion	0 ug/kg		
Chlorfenvinphos	0 ug/kg		
Chlopyrifos	0 ug/kg		
Demeton-s-methyl	0 ug/kg		
Diazinon	0 ug/kg		
Dichlorvos	0 ug/kg		
Dimethoate	0 ug/kg		
Disulphoton	0 ug/kg		
Fenitrothion	0 ug/kg		
Fenthion	0 ug/kg		
Malathion	0 ug/kg		
Mevinphos	0 ug/kg		
Parathion ethyl	0 ug/kg		
Parathion methyl	0 ug/kg		
Phorate	0 ug/kg		
Phosalone	0 ug/kg		
Priniphos-methyl	0 ug/kg		
Propetamphos	0 ug/kg		
Triazaphos	0 ug/kg		

Technical Information

Quotation Number: 33954 A/JF
Quotation Date: 28/05/2002

<u>Suite 2 - Solids</u>			
<u>Organochlorine Pesticides</u>			
Test	Reporting Limit	Method	NAMAS
Tecnazene	2 ug/kg	G C	Accredited
Hexachlorobutadiene	2 ug/kg	G C	Accredited
Aldrin	2 ug/kg	G C	Accredited
Chlordane - gamma	2 ug/kg	G C	Accredited
Chlordane-alpha	2 ug/kg	G C	Accredited
Dichlobenil	2 ug/kg		Accredited
Heptachlor Epoxide	2 ug/kg	G C	Accredited
Dieldrin	2 ug/kg		Accredited
Endosulphan alpha	2 ug/kg	G C	Accredited
Endrin	2 ug/kg	G C	Accredited
HCH - gamma	2 ug/kg	G C	Accredited
Hexachlorobenzene	2 ug/kg	G C	Accredited
HCH - alpha	2 ug/kg	G C	Accredited
Isodrin	2 ug/kg	G C	Accredited
HCH - beta	2 ug/kg	G C	Accredited
p,p - DDT	2 ug/kg	G C	Accredited
o,p - DDE	2 ug/kg	G C	Accredited
o,p - DDT	2 ug/kg	G C	Accredited
o,p - TDE	2 ug/kg	G C	Accredited
p,p - DDE	2 ug/kg	G C	Accredited
p,p - TDE	2 ug/kg	G C	Accredited
Triallate	2 ug/kg	G C	Accredited
Trifluralin	2 ug/kg	G C	Accredited
1,2,4 - Trichlorobenzene	2 ug/kg	G C	Accredited

<u>Suite 2 - Solids</u>			
Test	Reporting Limit	Method	NAMAS
Ethylene Glycol	0 mg/kg		
Detergents, anionic H2O Sol	3 mg/kg	Calculated	Accredited
Detergent, non-ionic H2O Sol	0 mg/kg	Calculated	Accredited

Technical Information

Quotation Number: 33954 A/JF
Quotation Date: 28/05/2002

Test	Liquids		Method	NAMAS
	Reporting	Limit		
pH	0		pH Probe	Accredited
Sulphate as SO4 (filt)	0	mg/l	Colorimetry	
Sulphide as S	0.01	mg/l	Spectrophoretic	Accredited
Cyanide , Total as CN	0.1	mg/l	Colorimetry	Accredited
Ammoniacal Nitrogen as N	0.3	mg/l	Colorimetry	Accredited
Arsenic , Total as As	0.001	mg/l	Atomic Fluorescence	Accredited
Cadmium , Total as Cd	0.001	mg/l	ICP - O E S	Accredited
Chromium , Total as Cr	0.005	mg/l	ICP - O E S	Accredited
Copper, Total as Cu	0.02	mg/l	ICP - O E S	Accredited
Mercury , Total as Hg	0.0001	mg/l	Atomic Fluorescence	Accredited
Selenium , Total as Se	0.001	mg/l	Atomic Fluorescence	Accredited
Zinc, Total as Zn	0.03	mg/l	ICP - O E S	Accredited
Nickel , Total as Ni	0.007	mg/l	ICP - O E S	Accredited
Lead , Total as Pb	0.01	mg/l	ICP - O E S	Accredited
Tin , Total as Sn	0.1	mg/l	ICP - O E S	Accredited
Silver , Total as Ag	0.02	mg/l	ICP - O E S	Accredited
Aluminium, Total as Al	0.1	mg/l	ICP - O E S	Accredited
Iron , Total as Fe	0.05	mg/l	ICP - O E S	Accredited
Titanium , Total as Ti	0.1	mg/l	ICP - O E S	Accredited
Manganese , Total as Mn	0.04	mg/l	ICP - O E S	Accredited
Calcium , Total as Ca	1	mg/l	ICP - O E S	Accredited
Magnesium as Mg	1	mg/l	ICP - O E S	Accredited
Sodium , Total as Na	1	mg/l	ICP - O E S	Accredited
Potassium , Total as K	1	mg/l	ICP - O E S	Accredited
Bromide as Br	0	ug/l		Accredited
Chloride as Cl	2	mg/l	Colorimetry	Accredited
TPH >C6-C40	50	ug/l		
VOC	*	ug/l	G C M S	Accredited
SVOC with TICs	*	ug/l		

Technical Information

Quotation Number: 33954 A/JF
Quotation Date: 28/05/2002

Test	<u>Liquids</u>		Method	NAMAS
	Reporting	Limit PCB's		
PCB 101	5	ng/l	G C	Accredited
PCB 118	5	ng/l	G C	Accredited
PCB 138	5	ng/l	G C	Accredited
PCB 52	5	ng/l	G C	Accredited
PCB 153	5	ng/l	G C	Accredited
PCB 180	5	ng/l	G C	Accredited
PCB 281	5	ng/l	G C	Accredited

Test	Liquids		Method	NAMAS
	Reporting	Limit		
Total Coliform presumpt	0	cfu/100ml	Coliforms / e.coli	Accredited
Total Coliforms confirmed	0	cfu/100ml	Coliforms / e.coli	Accredited
Faecal strep confirmed	0	cfu/100ml	F. Streptococci	Accredited

Test	<u>Liquids</u>		Method	NAMAS
	<u>Organophosphorus Pesticides</u>			
	Reporting	Limit		
Triazophos	0.05	ug/l	G C	Accredited
Phorate	0.05	ug/l	G C	Accredited
Propetamphos	0.05	ug/l	G C	Accredited
Pirimiphos-methyl	0.05	ug/l	G C	Accredited
Fenthion	0.05	ug/l	G C	Accredited
Dichlorvos	0.05	ug/l	G C	Accredited
Mevinphos	0.05	ug/l	G C	Accredited
Demeton-s-methyl	0.05	ug/l	G C	Accredited
Dimethoate	0.05	ug/l	G C	Accredited
Diazinon	0.05	ug/l	G C	Accredited
Parathion-methyl	0.05	ug/l	G C	Accredited
Disulphoton	0.05	ug/l	G C	Accredited
Fenitrothion	0.05	ug/l	G C	Accredited
Malathion	0.05	ug/l	G C	Accredited
Parathion ethyl	0.05	ug/l	G C	Accredited
Chlorfenvinphos	0.05	ug/l	G C	Accredited
Carbophenothion	0.05	ug/l	G C	Accredited
Azinphos-methyl	0.05	ug/l	G C	Accredited

Technical Information

Quotation Number: 33954 A/JF
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Liquids			
Organochlorine Pesticides			
Test	Reporting Limit	Method	NAMAS
Aldrin	5 ng/l	GC	Accredited
Dieldrin	5 ng/l	GC	Accredited
Heptachlor Epoxide	5 ng/l	GC	Accredited
Chlordane - alpha	5 ng/l	GC	Accredited
Dichlobenil	5 ng/l	GC	Accredited
Chlordane gamma	5 ng/l	GC	
Endosulphan alpha	5 ng/l	GC	Accredited
Endrin	5 ng/l	GC	Accredited
HCH - alpha	5 ng/l	GC	Accredited
HCH - beta	5 ng/l	GC	Accredited
HCH - gamma	5 ng/l	GC	Accredited
Hexachlorobutadiene	5 ng/l	GC	Accredited
Hexachlorobenzene	5 ng/l	GC	Accredited
Isodrin	5 ng/l	GC	Accredited
o,p - DDE	5 ng/l	GC	Accredited
o,p - DDT	5 ng/l	GC	Accredited
o,p - TDE	5 ng/l	GC	Accredited
p,p - DDE	5 ng/l	GC	Accredited
p,p - DDT	5 ng/l	GC	Accredited
p,p - TDE	5 ng/l	GC	Accredited
Tecnazene	5 ng/l	GC	
Triallate	5 ng/l	GC	Accredited
1,2,4-Trichlorobenzene	5 ng/l	GC	Accredited
Trifluralin	5 ng/l	GC	Accredited

Test	Liquids		Method	NAMAS
	Reporting	Limit		
NVM, light petroleum extract	4	mg/l		Accredited
Ethylene Glycol	5	mg/l		
Detergents, anionic as NaLS	0.3	mg/l		Accredited
Detergents, non-ionic	0.5	mg/l		Accredited

Technical Information

Quotation Number: 33954 A/JF
Quotation Date: 28/05/2002

Test	Reporting Limit	Method	NAMAS
pH	0	pH Probe	Accredited
Sulphate as SO ₄	5 mg/l	Colorimetry	Accredited
Sulphate as SO ₄ (filt)	0 mg/l	Colorimetry	
Sulphide as S	0.01 mg/l	Spectrophoretic	Accredited
Cyanide, Total as CN	0.1 mg/l	Colorimetry	Accredited
Ammoniacal Nitrogen as N	0.3 mg/l	Colorimetry	Accredited
Arsenic, Total as As	0.001 mg/l	Atomic Fluorescence	Accredited
Cadmium, Total as Cd	0.001 mg/l	ICP - OES	Accredited
Chromium, Total as Cr	0.005 mg/l	ICP - OES	Accredited
Copper, Total as Cu	0.02 mg/l	ICP - OES	Accredited
Mercury, Total as Hg	0.0001 mg/l	Atomic Fluorescence	Accredited
Selenium, Total as Se	0.001 mg/l	Atomic Fluorescence	Accredited
Zinc, Total as Zn	0.03 mg/l	ICP - OES	Accredited
Nickel, Total as Ni	0.007 mg/l	ICP - OES	Accredited
Lead, Total as Pb	0.01 mg/l	ICP - OES	Accredited
Tin, Total as Sn	0.1 mg/l	ICP - OES	Accredited
Silver, Total as Ag	0.02 mg/l	ICP - OES	Accredited
Aluminium, Total as Al	0.1 mg/l	ICP - OES	Accredited
Iron, Total as Fe	0.05 mg/l	ICP - OES	Accredited
Titanium, Total as Ti	0.1 mg/l	ICP - OES	Accredited
Manganese, Total as Mn	0.04 mg/l	ICP - OES	Accredited
TPH >C6-C40	50 ug/l		
NVM, light petroleum extract	4 mg/l		Accredited
SVOC with TICs	* ug/l		

Technical Information

Quotation Number: 33954 A/JF
Quotation Date: 28/05/2002

Test	<u>Leachates</u>		Method	NAMAS
	Reporting	Limit		
PCB 101	5	ng/l	GC	Accredited
PCB 118	5	ng/l	GC	Accredited
PCB 138	5	ng/l	GC	Accredited
PCB 52	5	ng/l	GC	Accredited
PCB 153	5	ng/l	GC	Accredited
PCB 180	5	ng/l	GC	Accredited
PCB 28	5	ng/l	GC	Accredited

Test	<u>Leachates</u>		Method	NAMAS
	Reporting	Limit		
Triazophos	0.05	ug/l	GC	Accredited
Phorate	0.05	ug/l	GC	Accredited
Propetamphos	0.05	ug/l	GC	Accredited
Pirimiphos-methyl	0.05	ug/l	GC	Accredited
Fenthion	0.05	ug/l	GC	Accredited
Dichlorvos	0.05	ug/l	GC	Accredited
Mevinphos	0.05	ug/l	GC	Accredited
Demeton-s-methyl	0.05	ug/l	GC	Accredited
Dimethoate	0.05	ug/l	GC	Accredited
Diazinon	0.05	ug/l	GC	Accredited
Parathion-methyl	0.05	ug/l	GC	Accredited
Disulphoton	0.05	ug/l	GC	Accredited
Fenitrothion	0.05	ug/l	GC	Accredited
Malathion	0.05	ug/l	GC	Accredited
Parathion ethyl	0.05	ug/l	GC	Accredited
Chlorfenvinphos	0.05	ug/l	GC	Accredited
Carbophenothion	0.05	ug/l	GC	Accredited
Azinphos-methyl	0.05	ug/l	GC	Accredited

Technical Information

Quotation Number: 33954 A/JF
Quotation Date: 28/05/2002

Test	<u>Leachates</u>		Method	NAMAS
	<u>Organochlorine Pesticides</u>			
Reporting Limit				
Aldrin	5	ng/l	G C	Accredited
Dieldrin	5	ng/l	G C	Accredited
Heptachlor Epoxide	5	ng/l	G C	Accredited
Chlordane - alpha	5	ng/l	G C	Accredited
Dichlobenil	5	ng/l	G C	Accredited
Chlordane gamma	5	ng/l	G C	
Endosulphan alpha	5	ng/l	G C	Accredited
Endrin	5	ng/l	G C	Accredited
HCH - alpha	5	ng/l	G C	Accredited
HCH - beta	5	ng/l	G C	Accredited
HCH - gamma	5	ng/l	G C	Accredited
Hexachlorobutadiene	5	ng/l	G C	Accredited
Hexachlorobenzene	5	ng/l	G C	Accredited
Isodrin	5	ng/l	G C	Accredited
o,p - DDE	5	ng/l	G C	Accredited
o,p - DDT	5	ng/l	G C	Accredited
o,p - TDE	5	ng/l	G C	Accredited
p,p - DDE	5	ng/l	G C	Accredited
p,p - DDT	5	ng/l	G C	Accredited
p,p - TDE	5	ng/l	G C	Accredited
Tecnazene	5	ng/l	G C	
Triallate	5	ng/l	G C	Accredited
1,2,4-Trichlorobenzene	5	ng/l	G C	Accredited
Trifluralin	5	ng/l	G C	Accredited

Test	<u>Leachates</u>		Method	NAMAS
	Reporting Limit			
Ethylene Glycol	5	mg/l		
Detergents, anionic as NaLS	0.3	mg/l		Accredited
Detergents, non-ionic	0.5	mg/l		Accredited

Technical Information

Quotation Number: 33954 A/JF
Quotation Date: 28/05/2002

A A S	Atomic Absorption Spectrophotometry
A F S	Atomic Fluorescence Spectrophotometry
G C	Gas Chromatography
H P L C	High Performance Liquid Chromatography
I C	Ion Chromatography
I C P	Inductively Coupled Plasma
I R	Infra Red Spectroscopy
M S	Mass Spectrometry

A 'Reporting Limit' is the minimum level at which we normally report.

*Severn Trent Laboratories recommend these levels of analysis based on the information available.
However, on receipt of samples, levels of analysis may be reviewed.*

SEVERN TRENT LABORATORIES

GROUP STANDARD OPERATING PROCEDURES

INDEX OF STANDARD OPERATING PROCEDURES

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DOCUMENT NUMBER	TITLE OF DOCUMENT
SOP:G001	PROCEDURE FOR METHOD CONTROL
SOP:G002	PROCEDURE FOR WRITING, CONTROLLING STANDARD OPERATING PROCEDURES AND OPERATING PROCEDURES
SOP:G003	PROCEDURE FOR AUDITS
SOP:G004	PROCEDURE FOR THE ARCHIVING OF DATA
SOP:G005	PROCEDURE FOR THE TRANS SHIPMENT OF SAMPLES
SOP:G006	PROCEDURE FOR CALIBRATION & USE OF THERMOMETERS AND DIGITAL TEMPERATURE READOUTS
SOP:G007	PROCEDURE FOR UPDATING CONTROLLED DOCUMENTATION
SOP:G008	PROCEDURE FOR CLIENT INSTRUCTIONS
SOP:G009	PROCEDURE FOR DATA ENTRY ONTO WORKSHEETS
SOP:G010	PROCEDURE FOR TEST REPORTS
SOP:G011	PROCEDURE FOR COMPLAINTS
SOP:G012	PROCEDURE FOR APPROVAL OF SUB-CONTRACTORS
SOP:G013	PROCEDURE FOR SUB-CONTRACTING
SOP:G014	NOT IN USE
SOP:G015	PROCEDURE FOR THE LABORATORY CALIBRATION SYSTEM
SOP:G016	PROCEDURE FOR MANAGEMENT REVIEW
SOP:G017	PROCEDURE FOR MONITORING THE PERFORMANCE OF THE ANALYTICAL QUALITY CONTROL
SOP:G018	Withdrawn

GROUP STANDARD OPERATING PROCEDURES

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DOCUMENT NUMBER	TITLE OF DOCUMENT
SOP:G019	Withdrawn
SOP:G020	PROCEDURE FOR TENDERS BIDS & CONTRACTS
SOP:G021	PROCEDURE FOR SUPPLIES & SUPPORT SERVICES
SOP:G022	Withdrawn
SOP:G023	PROCEDURE FOR RECORDS
SOP:G024	PROCEDURE FOR TRAINING
SOP:G025	PROCEDURE FOR APPRAISALS
SOP:G026	PROCEDURE FOR THE TRANSPORT AND RELOCATION OF MEASURING EQUIPMENT
SOP:G027	PROCEDURE FOR FORMAL SAMPLES
SOP:G028	PROCEDURE FOR WORKSHEET PRODUCTION AND MANUAL DATA ENTRY ONTO LaBS
SOP:G029	PROCEDURE FOR ELECTRONIC DATA ENTRY ONTO LaBS
SOP:G030	PROCEDURE FOR MISCELLANEOUS CALIBRATIONS
SOP:G031	PROCEDURE FOR SAMPLE RECEIPT, INTER LABORATORY SHIPMENT AND ANALYSIS OF URBAN WASTEWATER SAMPLES FROM DCWW
SOP:G032	PROCEDURE FOR INTERLABORATORY TRANSFER OF MISCELLANEOUS ANALYSIS
SOP:G033	Document not released yet.
SOP:G034	PROCEDURE FOR CALCULATING MEASUREMENT OF UNCERTAINTY FOR CHEMICAL PARAMETER

SEVERN TRENT LABORATORIES

GROUP STANDARD OPERATING PROCEDURES

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DOCUMENT NUMBER	TITLE OF DOCUMENT
SOP:G035	PROCEDURE PROTOCOL TO ESTIMATE THE UNCERTAINTY OF MEASUREMENT OF MICROBIOLOGICAL ENUMERATIVE ANALYSES
SOP:G036	PROCEDURE PROTOCOL TO DETERMINE THE LIMIT OF DETECTION OF MICROBIAL ANALYSES

Solid Analysis

Report Summary



STL COVENTRY

SEVERN
TRENT
SERVICES

Mr Jon Freeman
Celtic Technologies Ltd
Cambrian Buildings
Mount Stuart Square
Cardiff

CF10 5QQ

INTERIM REPORT

Report Number : TH/146818/2002

Number of Samples
included in report

7

Job Received :

29 May 2002

Number of test results
included in report

303

Analysis Commenced :

30 May 2002

Signed :

Name :

Date : 14 June 2002

Title :

Unless otherwise stated Severn Trent Laboratories was not responsible for sampling
Information on the methods of analysis and performance characteristics are available on request
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory

Certificate of Analysis



1214
0307
1299

STL COVENTRY

SEVERN
TRENT
SERVICES

INTERIM REPORT

Sample 1 Laboratory Number : 237753
of 7 Report Number : TH/146818/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : AQC SPIKE

Sample Date : 29 May 2002 Sample Received : 29 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Mercury as Hg, dry weight	30.88	mg/kg	C	CON19
Arsenic as As, dry weight	24.14	mg/kg	C	CON21
Aluminium as Al, dry wt.	49.29	mg/kg	C	CON20
Selenium as Se, dry weight	15.77	mg/kg	C	CON21
pH (Sludge & Soil)	Analyst Comment		C	CON11
Titanium as Ti, dry weight	7.92	mg/kg	*	CON20
Silver as Ag, dry weight	8.12	mg/kg	*	CON20
Tin as Sn, dry weight	8.15	mg/kg	C	CON20
Iron as Fe, dry weight	48.45	mg/kg	C	CON20
Cadmium as Cd, dry weight	0.78	mg/kg	C	CON20
Chromium as Cr, dry weight	7.90	mg/kg	C	CON20
Copper as Cu, dry weight	7.86	mg/kg	C	CON20
Lead as Pb, dry weight	7.95	mg/kg	C	CON20
Nickel as Ni, dry weight	7.95	mg/kg	C	CON20
Zinc as Zn, dry weight	8.23	mg/kg	C	CON20
Manganese as Mn, dry weight	48.95	mg/kg	C	CON20
TPH >C6-C40	Analyst Comment	mg/kg	*	GE034
SVOC with TICs	Analyst Comment	mg/kg	*	GE031
VOC	Analyst Comment	ug/kg	C	GE032
Ethylene Glycol	<100	mg/kg	*	C
Ammonia H2O sol as NH3	Analyst Comment	mg/kg	C	CON03
Cyanide as CN, total dry weight	10.4	mg/kg	C	CON08
Sulphate as SO4, water sol dw	Analyst Comment	mg/kg	C	CON03
Sulphide, dry weight	16.9	mg/kg	C	CON01
Detergents, anionic H2O Sol	Analyst Comment	mg/kg	C	CALC
Sulphate Total as SO3 by ICPdw	388	mg/kg	*	CON20
Ash @ 550c	Analyst Comment	%	*	CON10
Moisture content at 30 C	Analyst Comment	%	C	CON10
Asbestos Identification	Analyst Comment	%	*	CON50

Analyst Comment for 237753 :
Not applicable to (LP4) % Ash at 550 for 2hrs.
Not applicable to (LPQ) % Moisture.
Not applicable for asbestos analysis.
Not applicable for ammonia.
AQC FOR ANIONIC DETERGENT= 2.1MG/L.
Not applicable for pH.
Please see attached report for VOC/SVOC AQC results.
Not applicable for SULPHATE.
Please see attached report for TPH results.

Accreditation Codes : * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcom S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



1314
0807
1228

STL COVENTRY

SEVERN

TRENT

SERVICES

INTERIM REPORT

Sample **2** Laboratory Number : **237754**
of **7** Report Number : **TH/146818/2002**

Sample Source : **Celtic Technologies Ltd**
Sample Point Description : **Celtic Technologies Ltd**
Sample Description : **AQC BLANK**

Sample Date : **29 May 2002** Sample Received : **29 May 2002** Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Mercury as Hg, dry weight	0.000	mg/kg	C	CON19
Arsenic as As, dry weight	0.024	mg/kg	C	CON21
Aluminium as Al, dry wt.	<5	mg/kg	C	CON20
Selenium as Se, dry weight	0.000	mg/kg	C	CON21
pH (Sludge & Soil)	Analyst Comment		C	CON11
Titanium as Ti, dry weight	<5	mg/kg	C	CON20
Silver as Ag, dry weight	<6	mg/kg	C	CON20
Tin as Sn, dry weight	<15	mg/kg	C	CON20
Iron as Fe, dry weight	<10	mg/kg	C	CON20
Cadmium as Cd, dry weight	<0.5	mg/kg	C	CON20
Chromium as Cr, dry weight	<2	mg/kg	C	CON20
Copper as Cu, dry weight	<1	mg/kg	C	CON20
Lead as Pb, dry weight	<9	mg/kg	C	CON20
Nickel as Ni, dry weight	<4	mg/kg	C	CON20
Zinc as Zn, dry weight	<1.5	mg/kg	C	CON20
Manganese as Mn, dry weight	<1	mg/kg	C	CON20
TPH >C6-C40	Analyst Comment	mg/kg	C	GEO34
SVOC with TICs	Analyst Comment	mg/kg	C	GEO31
VOC	Analyst Comment	ug/kg	C	GEO32
Ethylene Glycol	<100	mg/kg	C	
Ammonia H2O sol as NH3	Analyst Comment	mg/kg	C	CON03
Cyanide as CN, total dry weight	<2	mg/kg	C	CON08
Sulphate as SO4, water sol dw	Analyst Comment	mg/kg	C	CON03
Sulphide, dry weight	0	mg/kg	C	CON01
Detergents, anionic H2O Sol	<3	mg/kg	C	CALC
Sulphate Total as SO3 by ICPdw	<260	mg/kg	C	CON20
Ash @ 550c	Analyst Comment	%	C	CON10
Moisture content at 30 C	Analyst Comment	%	C	CON10
Asbestos Identification	Analyst Comment	%	C	CON50

Analyst Comment for 237754 : Not applicable to (LP4) % Ash at 550 for 2hrs.
Not applicable to (LPQ) % Moisture.
Not applicable for asbestos analysis.
Not applicable for ammonia.
Not applicable for pH.
Please see attached report for VOC/SVOC AQC results.
Not applicable for SULPHATE.
Please see attached report for TPH results.

Accreditation Codes : * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



1314
1997
1228

STL COVENTRY

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TRENT
SERVICES

INTERIM REPORT

Sample 3 Laboratory Number : 237755
of 7 Report Number : TH/146818/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : REFERENCE MATERIAL

Sample Date : 29 May 2002 Sample Received : 29 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Mercury as Hg, dry weight	0.63	mg/kg	C	CON19
Arsenic as As, dry weight	8.67	mg/kg	C	CON21
Aluminium as Al, dry wt.	2057	mg/kg	C	CON20
Selenium as Se, dry weight	1.08	mg/kg	C	CON21
pH (Sludge & Soil)	6.86		C	CON11
Titanium as Ti, dry weight	Analyst Comment	mg/kg	*	CON20
Silver as Ag, dry weight	Analyst Comment	mg/kg	*	CON20
Tin as Sn, dry weight	Analyst Comment	mg/kg	C	CON20
Iron as Fe, dry weight	7439	mg/kg	C	CON20
Cadmium as Cd, dry weight	1.9	mg/kg	C	CON20
Chromium as Cr, dry weight	99	mg/kg	C	CON20
Copper as Cu, dry weight	17	mg/kg	C	CON20
Lead as Pb, dry weight	46	mg/kg	C	CON20
Nickel as Ni, dry weight	13	mg/kg	C	CON20
Zinc as Zn, dry weight	50	mg/kg	C	CON20
Manganese as Mn, dry weight	104	mg/kg	C	CON20
TPH >C6-C40	Analyst Comment	mg/kg	*	GEO34
SVOC with TICs	Analyst Comment	mg/kg	*	GEO31
VOC	Analyst Comment	ug/kg	C	GEO32
Ethylene Glycol	<100	mg/kg	*	C
Ammonia H2O sol as NH3	Analyst Comment	mg/kg	C	CON03
Cyanide as CN, total dry weight	N/A	mg/kg	C	CON08
Sulphate as SO4, water sol dw	Analyst Comment	mg/kg	C	CON03
Sulphide, dry weight	Analyst Comment	mg/kg	C	CON01
Detergents, anionic H2O Sol	Analyst Comment	mg/kg	C	CALC
Sulphate Total as SO3 by ICPdw	2160	mg/kg	*	CON20
Ash @ 550c	Analyst Comment	%	*	CON10
Moisture content at 30 C	Analyst Comment	%	C	CON10
Asbestos identification	Analyst Comment	%	*	CON50

Analyst Comment for 237755 : Not applicable to (LP4) % Ash at 550 for 2hrs.
N/A for Sulphides
Not applicable to (LPQ) % Moisture.
Not applicable for asbestos analysis.
Not applicable for ammonia/DETERGENT/VOC/SVOC.
Not applicable for SULPHATE.
Not applicable for TPH analysis.

Accreditation Codes : * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



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STL COVENTRY

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INTERIM REPORT

Sample 4 Laboratory Number : 237756
of 7 Report Number : TH/146818/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : BH4/0.5

Sample Date : 29 May 2002 Sample Received : 29 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Mercury as Hg, dry weight	<0.05	mg/kg	C	CON19
Arsenic as As, dry weight	3.78	mg/kg	C	CON21
Aluminium as Al, dry wt.	5800	mg/kg	C	CON20
Selenium as Se, dry weight	0.11	mg/kg	C	CON21
pH (Sludge & Soil)	7.5		C	CON11
Titanium as Ti, dry weight	32	mg/kg	* C	CON20
Silver as Ag, dry weight	<5	mg/kg	* C	CON20
Tin as Sn, dry weight	<15	mg/kg	C	CON20
Iron as Fe, dry weight	19300	mg/kg	C	CON20
Cadmium as Cd, dry weight	<0.5	mg/kg	C	CON20
Chromium as Cr, dry weight	11	mg/kg	C	CON20
Copper as Cu, dry weight	12	mg/kg	C	CON20
Lead as Pb, dry weight	28	mg/kg	C	CON20
Nickel as Ni, dry weight	11	mg/kg	C	CON20
Zinc as Zn, dry weight	59	mg/kg	C	CON20
Manganese as Mn, dry weight	579	mg/kg	C	CON20
TPH >C6-C40	Analyst Comment	mg/kg	* C	GE034
Ammonia H2O sol as NH3	16.8	mg/kg	C	CON03
Cyanide as CN, total dry weight	<2	mg/kg	C	CON08
Sulphate as SO4, water sol dw	12.9	mg/kg	C	CON03
Sulphide, dry weight	<25	mg/kg	C	CON01
Sulphate Total as SO4 by ICPdw	<250	mg/kg	* C	CON20
Ash @ 550c	95.57	%	* C	CON10
Moisture content at 30 C	13.6	%	C	CON10
Asbestos identification	Analyst Comment	%	* C	CON50

Analyst Comment for 237756 : No asbestos observed in sample submitted.
Please see attached report for TPH results.

Accreditation Codes : * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



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STL COVENTRY

SEVERN
TRENT
SERVICES

INTERIM REPORT

Sample 5 Laboratory Number : 237757
of 7 Report Number : TH/146818/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : BH4/1.5

Sample Date : 29 May 2002 Sample Received : 29 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Mercury as Hg, dry weight	<0.05	mg/kg	C	CON19
Arsenic as As, dry weight	9.32	mg/kg	C	CON21
Technazene	<2	ug/kg	C	GEO1
Aluminium as Al, dry wt.	6840	mg/kg	C	CON20
Selenium as Se, dry weight	<0.05	mg/kg	C	CON21
Hexachlorobutadiene	<2	ug/kg	C	GEO1
pH (Sludge & Soil)	7.3		C	CON11
Titanium as Ti, dry weight	31	mg/kg	C	CON20
Silver as Ag, dry weight	<5	mg/kg	C	CON20
Tin as Sn, dry weight	<15	mg/kg	C	CON20
Iron as Fe, dry weight	20500	mg/kg	C	CON20
Cadmium as Cd, dry weight	<0.5	mg/kg	C	CON20
Chromium as Cr, dry weight	12	mg/kg	C	CON20
Copper as Cu, dry weight	8	mg/kg	C	CON20
Lead as Pb, dry weight	14	mg/kg	C	CON20
Nickel as Ni, dry weight	10	mg/kg	C	CON20
Zinc as Zn, dry weight	39	mg/kg	C	CON20
Manganese as Mn, dry weight	218	mg/kg	C	CON20
TPH >C6-C40	Analyst Comment	mg/kg	C	GEO34
SVOC with TICs	Analyst Comment	mg/kg	C	GEO31
VOC	Analyst Comment	ug/kg	C	GEO32
Aldrin	<2	ug/kg	C	GEO1
Chlordane - gamma	<2	ug/kg	C	GEO1
Chlordane-alpha	<2	ug/kg	C	GEO1
Dichlobenil	<2	ug/kg	C	GEO1
Heptachlor Epoxide	<2	ug/kg	C	GEO1
Dieldrin	<2	ug/kg	C	GEO1
Endosulphan alpha	<2	ug/kg	C	GEO1
Endrin	<2	ug/kg	C	GEO1
HCH - gamma	<2	ug/kg	C	GEO1
Hexachlorobenzene	<2	ug/kg	S	GEO1
HCH - alpha	<2	ug/kg	C	GEO1
Isodrin	<2	ug/kg	C	GEO1
HCH - beta	<2	ug/kg	C	GEO1
p,p - DDT	<2	ug/kg	C	GEO1
o,p - DDE	<2	ug/kg	C	GEO1
o,p - DDT	<2	ug/kg	C	GEO1
o,p - TDE	<2	ug/kg	C	GEO1
PCB 101	<2	ug/kg	C	GEO1
PCB 118	<2	ug/kg	C	GEO1
PCB 138	<2	ug/kg	C	GEO1
PCB 153	<2	ug/kg	C	GEO1
PCB 180	<2	ug/kg	C	GEO1
PCB 28	<2	ug/kg	C	GEO1
PCB 52	<2	ug/kg	C	GEO1

Certificate of Analysis



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STL COVENTRY

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SERVICES

INTERIM REPORT

Sample 5 Laboratory Number: 237757
of 7 Report Number: TH/148818/2002

Sample Source: Celtic Technologies Ltd
Sample Point Description: Celtic Technologies Ltd
Sample Description: BH4/1.5

Sample Date: 29 May 2002 Sample Received: 29 May 2002 Analysis Complete:

Test Description	Result	Units	Accreditation	Method
p,p - DDE	<2	ug/kg	C	GEO1
p,p - TDE	<2	ug/kg	C	GEO1
Triallate	<2	ug/kg	C	GEO1
Trifluralin	<2	ug/kg	C	GEO1
1,2,4 - Trichlorobenzene	<2	ug/kg	C	GEO1
Ethylene Glycol	<100	mg/kg	*	C
Azinphos-methyl	Analyst Comment	ug/kg	*	S
Carbophenothion	Analyst Comment	ug/kg	*	S
Chlorfenvinphos	Analyst Comment	ug/kg	*	S
Chlorpyrifos	Analyst Comment	ug/kg	*	S
Demeton-s-methyl	Analyst Comment	ug/kg	*	S
Diazinon	Analyst Comment	ug/kg	*	S
Dichlorvos	Analyst Comment	ug/kg	*	S
Dimethoate	Analyst Comment	ug/kg	*	S
Disulphoton	Analyst Comment	ug/kg	*	S
Fenitrothion	Analyst Comment	ug/kg	*	S
Fenthion	Analyst Comment	ug/kg	*	S
Malathion	Analyst Comment	ug/kg	*	S
Mevinphos	Analyst Comment	ug/kg	*	S
Parathion ethyl	Analyst Comment	ug/kg	*	S
Parathion methyl	Analyst Comment	ug/kg	*	S
Phorate	Analyst Comment	ug/kg	*	S
Phosalone	Analyst Comment	ug/kg	*	S
Pirimiphos-methyl	Analyst Comment	ug/kg	*	S
Propetamphos	Analyst Comment	ug/kg	*	S
Triazaphos	Analyst Comment	ug/kg	*	S
Ammonia H2O sol as NH3	13.4	mg/kg	C	CON03
Cyanide as CN, total dry weight	<2	mg/kg	C	CON08
Sulphate as SO4, water sol dw	<10	mg/kg	C	CON03
Sulphide, dry weight	<25	mg/kg	C	CON01
Detergents, anionic H2O Sol	<3	mg/kg	C	CALC
Detergent, non-ionic H2O Sol	37	mg/kg	C	CALC
Sulphate Total as SO4 by ICPdw	<250	mg/kg	*	C
Ash @ 550c	96.80	%	*	C
Moisture content at 30 C	16.9	%	*	C
Asbestos identification	Analyst Comment	%	*	C
Total Coliforms	180	cfu/g	*	R
Faecal Streptococci	<10	cfu/g	*	R

Analyst Comment for 237757: No asbestos observed in sample submitted.
Please see attached report for VOC/SVOC results.
Please see attached report for TPH results.
Please see attached for subcontracted op results.

Accreditation Codes: * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



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STL COVENTRY

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INTERIM REPORT

Sample 6 Laboratory Number: 237758
of 7 Report Number: TH/146818/2002

Sample Source: Celtic Technologies Ltd
Sample Point Description: Celtic Technologies Ltd
Sample Description: TP5/0.5

Sample Date: 29 May 2002 Sample Received: 29 May 2002 Analysis Complete:

Test Description	Result	Units	Accreditation	Method	
Mercury as Hg, dry weight	0.12	mg/kg	C	CON19	
Arsenic as As, dry weight	14.28	mg/kg	C	CON21	
Aluminium as Al, dry wt.	6540	mg/kg	C	CON20	
Selenium as Se, dry weight	0.15	mg/kg	C	CON21	
pH (Sludge & Soil)	7.6		C	CON11	
Titanium as Ti, dry weight	66	mg/kg	*	C	CON20
Silver as Ag, dry weight	<6	mg/kg	*	C	CON20
Tin as Sn, dry weight	<15	mg/kg	C	CON20	
Iron as Fe, dry weight	7930	mg/kg	C	CON20	
Cadmium as Cd, dry weight	<0.5	mg/kg	C	CON20	
Chromium as Cr, dry weight	11	mg/kg	C	CON20	
Copper as Cu, dry weight	105	mg/kg	C	CON20	
Lead as Pb, dry weight	25	mg/kg	C	CON20	
Nickel as Ni, dry weight	11	mg/kg	C	CON20	
Zinc as Zn, dry weight	90	mg/kg	C	CON20	
Manganese as Mn, dry weight	423	mg/kg	C	CON20	
TPH >C6-C40	Analyst Comment	mg/kg	*	C	GE034
Ammonia H2O sol as NH3	21.2	mg/kg	C	CON03	
Cyanide as CN, total dry weight	<2	mg/kg	C	CON08	
Sulphate as SO4, water sol dw	12.3	mg/kg	C	CON03	
Sulphide, dry weight	<25	mg/kg	C	CON01	
Sulphate Total as SO4 by ICPdw	707	mg/kg	*	C	CON20
Ash @ 550c	93.76	%	*	C	CON10
Moisture content at 30 C	13.5	%	*	C	CON10
Asbestos identification	Analyst Comment	%	*	C	CON50

Analyst Comment for 237758: No asbestos observed in sample submitted.
Please see attached report for TPH results.

Accreditation Codes: * = Not UKAS accredited B = Analysed at Bndgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



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STL COVENTRY

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INTERIM REPORT

Sample 7 Laboratory Number : 237759
of 7 Report Number : TH/146818/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : BH3/M.5

Sample Date : 29 May 2002 Sample Received : 29 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Mercury as Hg, dry weight	<0.05	mg/kg	C	CON19
Arsenic as As, dry weight	9.83	mg/kg	C	CON21
Tecnazene	<2	ug/kg	C	GEO1
Aluminium as Al, dry wt.	4190	mg/kg	C	CON20
Selenium as Se, dry weight	<0.05	mg/kg	C	CON21
Hexachlorobutadiene	<2	ug/kg	C	GEO1
pH (Sludge & Soil)	7.3		C	CON11
Titanium as Ti, dry weight	<5	mg/kg	C	CON20
Silver as Ag, dry weight	<5	mg/kg	C	CON20
Tin as Sn, dry weight	<15	mg/kg	C	CON20
Iron as Fe, dry weight	11200	mg/kg	C	CON20
Cadmium as Cd, dry weight	<0.5	mg/kg	C	CON20
Chromium as Cr, dry weight	15	mg/kg	C	CON20
Copper as Cu, dry weight	154	mg/kg	C	CON20
Lead as Pb, dry weight	14	mg/kg	C	CON20
Nickel as Ni, dry weight	9	mg/kg	C	CON20
Zinc as Zn, dry weight	40	mg/kg	C	CON20
Manganese as Mn, dry weight	138	mg/kg	C	CON20
TPH >C6-C40	Analyst Comment	mg/kg	C	GEO34
SVOC with TICs	Analyst Comment	mg/kg	C	GEO31
VOC	Analyst Comment	ug/kg	C	GEO32
Aldrin	<2	ug/kg	C	GEO1
Chlordane - gamma	<2	ug/kg	C	GEO1
Chlordane-alpha	<2	ug/kg	C	GEO1
Dichlobenil	<2	ug/kg	C	GEO1
Heptachlor Epoxide	<2	ug/kg	C	GEO1
Dieldrin	<2	ug/kg	C	GEO1
Endosulphan alpha	<2	ug/kg	C	GEO1
Endrin	<2	ug/kg	C	GEO1
HCH - gamma	<2	ug/kg	C	GEO1
Hexachlorobenzene	<2	ug/kg	S	GEO1
HCH - alpha	<2	ug/kg	C	GEO1
Isodrin	<2	ug/kg	C	GEO1
HCH - beta	<2	ug/kg	C	GEO1
p,p - DDT	<2	ug/kg	C	GEO1
o,p - DDE	<2	ug/kg	C	GEO1
o,p - DDT	<2	ug/kg	C	GEO1
o,p - TDE	<2	ug/kg	C	GEO1
PCB 101	<2	ug/kg	C	GEO1
PCB 118	<2	ug/kg	C	GEO1
PCB 138	<2	ug/kg	C	GEO1
PCB 153	<2	ug/kg	C	GEO1
PCB 180	<2	ug/kg	C	GEO1
PCB 28	<2	ug/kg	C	GEO1
PCB 52	<2	ug/kg	C	GEO1

Certificate of Analysis



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STL COVENTRY



INTERIM REPORT

Sample 7 Laboratory Number: 237759
of 7 Report Number: TH/148818/2002

Sample Source: Celtic Technologies Ltd
Sample Point Description: Celtic Technologies Ltd
Sample Description: BH3/1.5

Sample Date: 29 May 2002 Sample Received: 29 May 2002 Analysis Complete:

Test/Description	Result	Units	Accreditation	Method
p,p - DDE	<2	ug/kg	C	GEO1
p,p - TDE	<2	ug/kg	C	GEO1
Triallate	<2	ug/kg	C	GEO1
Trifluralin	<2	ug/kg	C	GEO1
1,2,4 - Trichlorobenzene	<100	mg/kg	C	
Ethylene Glycol	Analyst Comment	ug/kg	S	
Azinphos-methyl	Analyst Comment	ug/kg	S	
Carbophenothion	Analyst Comment	ug/kg	S	
Chlorfenvinphos	Analyst Comment	ug/kg	S	
Chlorpyrifos	Analyst Comment	ug/kg	S	
Demeton-s-methyl	Analyst Comment	ug/kg	S	
Diazinon	Analyst Comment	ug/kg	S	
Dichlorvos	Analyst Comment	ug/kg	S	
Dimethoate	Analyst Comment	ug/kg	S	
Disulphoton	Analyst Comment	ug/kg	S	
Fenitrothion	Analyst Comment	ug/kg	S	
Fenthion	Analyst Comment	ug/kg	S	
Malathion	Analyst Comment	ug/kg	S	
Mevinphos	Analyst Comment	ug/kg	S	
Parathion ethyl	Analyst Comment	ug/kg	S	
Parathion methyl	Analyst Comment	ug/kg	S	
Phorate	Analyst Comment	ug/kg	S	
Phosalone	Analyst Comment	ug/kg	S	
Priniphos-methyl	Analyst Comment	ug/kg	S	
Propetamphos	Analyst Comment	ug/kg	S	
Triazaphos	16.0	mg/kg	C	CON03
Ammonia H2O sol as NH3	<2	mg/kg	C	CON08
Cyanide as CN, total dry weight	234.3	mg/kg	C	CON03
Sulphate as SO4, water sol dw	<25	mg/kg	C	CON01
Sulphide, dry weight	<3	mg/kg	C	CALC
Detergents, anionic H2O Sol	60	mg/kg	C	CALC
Detergent, non-ionic H2O Sol	<250	mg/kg	C	CON20
Sulphate Total as SO4 by ICPdw	97.27	%	C	CON10
Ash @ 550c	14.0	%	C	CON10
Moisture content at 30 C	Analyst Comment	%	C	CON50
Asbestos identification	<10	cfu/g	R	
Total Coliforms	<10	cfu/g	R	
Faecal Streptococci				

Analyst Comment for 237759: No asbestos observed in sample submitted.
Please see attached report for VOC/SVOC results.
Please see attached report for TPH results.
Please see attached for subcontracted op results.

Accreditation Codes: * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



STL COVENTRY



INTERIM REPORT

Sample 7 Laboratory Number : 237758
of 7 Report Number : TH /146818/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : BH3/1.5

Sample Date : 29 May 2002 Sample Received : 29 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
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Signed :

Name :

Date : 14 June 2002

Title :

Report Summary



STL COVENTRY

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SERVICES

Mr Jon Freeman
Celtic Technologies Ltd
Cambrian Buildings
Mount Stuart Square
Cardiff

CF10 5QQ

INTERIM REPORT

Report Number : TH/146588/2002

Number of Samples
included in report

7

Job Received :

28 May 2002

Number of test results
included in report

395

Analysis Commenced :

29 May 2002

Signed :

Name :

Date : 14 June 2002

Title :

Unless otherwise stated Severn Trent Laboratories was not responsible for sampling
Information on the methods of analysis and performance characteristics are available on request
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory

Certificate of Analysis



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STL COVENTRY



INTERIM REPORT

Sample 1 Laboratory Number : 236324
of 7 Report Number : TH/146588/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : AQC SPIKE

Sample Date : 28 May 2002 Sample Received : 28 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Mercury as Hg, dry weight	30.82	mg/kg	C	CON19
Arsenic as As, dry weight	25.01	mg/kg	C	CON21
Technazene	109	ug/kg	C	GEO1
Aluminium as Al, dry wt.	50.75	mg/kg	C	CON20
Selenium as Se, dry weight	16.29	mg/kg	C	CON21
Hexachlorobutadiene	58.8	ug/kg	C	GEO1
pH (Sludge & Soil)	Analyst Comment		C	CON11
Titanium as Ti, dry weight	7.60	mg/kg	*	CON20
Silver as Ag, dry weight	8.10	mg/kg	*	CON20
Tin as Sn, dry weight	7.79	mg/kg	C	CON20
Iron as Fe, dry weight	49.86	mg/kg	C	CON20
Cadmium as Cd, dry weight	0.79	mg/kg	C	CON20
Chromium as Cr, dry weight	7.89	mg/kg	C	CON20
Copper as Cu, dry weight	7.77	mg/kg	C	CON20
Lead as Pb, dry weight	8.07	mg/kg	C	CON20
Nickel as Ni, dry weight	7.83	mg/kg	C	CON20
Zinc as Zn, dry weight	8.43	mg/kg	C	CON20
Manganese as Mn, dry weight	48.88	mg/kg	C	CON20
TPH >C8-C40	Analyst Comment	mg/kg	*	GEO34
SVOC with TICs	Analyst Comment	mg/kg	*	GEO31
VOC	Analyst Comment	ug/kg	C	GEO32
Aldrin	97.0	ug/kg	C	GEO1
Chlordane - gamma	74.5	ug/kg	C	GEO1
Chlordane-alpha	97.8	ug/kg	C	GEO1
Dichlobenil	76.7	ug/kg	C	GEO1
Heptachlor Epoxide	92.9	ug/kg	C	GEO1
Dieldrin	102	ug/kg	C	GEO1
Endosulphan alpha	102	ug/kg	C	GEO1
Endrin	115	ug/kg	C	GEO1
HCH - gamma	93.7	ug/kg	C	GEO1
Hexachlorobenzene	59.8	ug/kg	C	GEO1
HCH - alpha	78.4	ug/kg	S	GEO1
Isodrin	99.7	ug/kg	C	GEO1
HCH - beta	102	ug/kg	C	GEO1
p,p - DDT	165	ug/kg	C	GEO1
o,p - DDE	69.5	ug/kg	C	GEO1
o,p - DDT	109	ug/kg	C	GEO1
o,p - TDE	75.5	ug/kg	C	GEO1
p,p - DDE	110	ug/kg	C	GEO1
p,p - TDE	126	ug/kg	C	GEO1
Triallate	112	ug/kg	C	GEO1
Trifluralin	121	ug/kg	C	GEO1
1,2,4 - Trichlorobenzene	99.7	ug/kg	C	GEO1
PCB28	73.9	UG/KG	*	CON66
PCB52	64.4	ug/kg	*	CON66

Certificate of Analysis



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STL COVENTRY

SEVERN
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SERVICES

INTERIM REPORT

Sample 1 Laboratory Number : 236324
of 7 Report Number : TH/146588/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : AQC SPIKE

Sample Date : 28 May 2002 Sample Received : 28 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
PCB101	64.1	ug/kg	* C	CON66
PCB118	74.1	ug/kg	* C	CON66
PCB138	68.9	ug/kg	* C	CON66
PCB153	66.6	ug/kg	* C	CON66
PCB180	73.3	ug/kg	* C	CON66
Ethylene Glycol	<100	mg/kg	* C	
Ammonia H2O sol as NH3	Analyst Comment	mg/kg	C	CON03
Cyanide as CN, total dry weight	9.98	mg/kg	C	CON08
Sulphate as SO4, water sol dw	Analyst Comment	mg/kg	C	CON03
Sulphide, dry weight	0	mg/kg	C	CON01
Detergents, anionic H2O Sol	Analyst Comment	mg/kg	C	CALC
Sulphate Total as SO3 by ICPdw	395	mg/kg	* C	CON20
Ash @ 550c	Analyst Comment	%	* C	CON10
Moisture content at 30 C	Analyst Comment	%	C	CON10
Asbestos identification	Analyst Comment	%	* C	CON50
Total Coliforms	Analyst Comment	cfu/g	* R	
Faecal Streptococci	Analyst Comment	cfu/g	* R	

Analyst Comment for 236324 :
Not applicable to (LP4) % Ash at 550 for 2hrs.
Not applicable for (LPQ) moisture
Not applicable for pH.
Not applicable for ammonia.
Please see attached report for TPH/VOC/SVOC AQC results.
Not applicable for asbestos analysis.
Not applicable for sulphate.
AQC value for detergent = 2.1 mg/l.
AQC value for T. coliform = 89% Recovery.
AQC value for F. strep = 69% Recovery.

Accreditation Codes : * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcom S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



STL COVENTRY

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INTERIM REPORT

Sample **2** Laboratory Number : **236325**
of **7** Report Number : **TH /146588/2002**

Sample Source : **Celtic Technologies Ltd**
Sample Point Description : **Celtic Technologies Ltd**
Sample Description : **AQC BLANK**

Sample Date : **28 May 2002** Sample Received : **28 May 2002** Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Mercury as Hg, dry weight	0.019	mg/kg	C	CON19
Arsenic as As, dry weight	0.046	mg/kg	C	CON21
Tecnazene	<2	ug/kg	C	GE01
Aluminium as Al, dry wt.	<5	mg/kg	C	CON20
Selenium as Se, dry weight	0.000	mg/kg	C	CON21
Hexachlorobutadiene	<2	ug/kg	C	GE01
pH (Sludge & Soil)	Analyst Comment		C	CON11
Titanium as Ti, dry weight	<5	mg/kg	C	CON20
Silver as Ag, dry weight	<5	mg/kg	C	CON20
Tin as Sn, dry weight	<15	mg/kg	C	CON20
Iron as Fe, dry weight	<10	mg/kg	C	CON20
Cadmium as Cd, dry weight	<1.7	mg/kg	C	CON20
Chromium as Cr, dry weight	<2	mg/kg	C	CON20
Copper as Cu, dry weight	<1	mg/kg	C	CON20
Lead as Pb, dry weight	<9	mg/kg	C	CON20
Nickel as Ni, dry weight	<4	mg/kg	C	CON20
Zinc as Zn, dry weight	<1.5	mg/kg	C	CON20
Manganese as Mn, dry weight	<1	mg/kg	C	CON20
TPH >C6-C40	Analyst Comment	mg/kg	C	GE034
SVOC with TICs	Analyst Comment	mg/kg	C	GE031
VOC	Analyst Comment	ug/kg	C	GE032
Aldrin	<2	ug/kg	C	GE01
Chlordane - gamma	<2	ug/kg	C	GE01
Chlordane-alpha	<2	ug/kg	C	GE01
Dichlobenil	<2	ug/kg	C	GE01
Heptachlor Epoxide	<2	ug/kg	C	GE01
Dieldrin	<2	ug/kg	C	GE01
Endosulphan alpha	<2	ug/kg	C	GE01
Endrin	<2	ug/kg	C	GE01
HCH - gamma	<2	ug/kg	C	GE01
Hexachlorobenzene	<2	ug/kg	C	GE01
HCH - alpha	<2	ug/kg	S	GE01
Isodrin	<2	ug/kg	C	GE01
HCH - beta	<2	ug/kg	C	GE01
p,p - DDT	<2	ug/kg	C	GE01
o,p - DDE	<2	ug/kg	C	GE01
o,p - DDT	<2	ug/kg	C	GE01
o,p - TDE	<2	ug/kg	C	GE01
p,p - DDE	<2	ug/kg	C	GE01
p,p - TDE	<2	ug/kg	C	GE01
Triallate	<2	ug/kg	C	GE01
Trifluralin	<2	ug/kg	C	GE01
1,2,4 - Trichlorobenzene	<2	ug/kg	C	GE01
PCB28	<2	UG/KG	C	CON66
PCB52	<2	ug/kg	C	CON66

Certificate of Analysis

**STL COVENTRY****SEVERN
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SERVICES**

INTERIM REPORT

Sample **2** Laboratory Number : **236325**
of **7** Report Number : **TH/146588/2002**

Sample Source : **Celtic Technologies Ltd**
Sample Point Description : **Celtic Technologies Ltd**
Sample Description : **AQC BLANK**

Sample Date : **28 May 2002** Sample Received : **28 May 2002** Analysis Complete :

Test Description	Result	Units	Accreditation	Method
PCB101	<2	ug/kg	* C	CON88
PCB118	<2	ug/kg	* C	CON88
PCB138	<2	ug/kg	* C	CON88
PCB153	<2	ug/kg	* C	CON88
PCB180	<2	ug/kg	* C	CON88
Ethylene Glycol	<100	mg/kg	* C	
Ammonia H2O sol as NH3	Analyst Comment	mg/kg	C	CON03
Cyanide as CN, total dry weight	<2	mg/kg	C	CON08
Sulphate as SO4, water sol dw	Analyst Comment	mg/kg	C	CON03
Sulphide, dry weight	21.2	mg/kg	C	CON01
Detergents, anionic H2O Sol	<0.3	mg/kg	C	CALC
Sulphate Total as SO3 by ICPdw	<250	mg/kg	* C	CON20
Ash @ 550c	Analyst Comment	%	* C	CON10
Moisture content at 30 C	Analyst Comment	%	C	CON10
Asbestos identification	Analyst Comment	%	* C	CON60
Total Coliforms	0	cfu/g	* R	
Faecal Streptococci	0	cfu/g	* R	

Analyst Comment for 236325 : Not applicable to (LP4) % Ash at 550 for 2hrs.
Not applicable for (LPQ) moisture.
Not applicable for pH. Not applicable for ammonia..
Please see attached report for TPH/VOC/SVOC AQC results.
Not applicable for asbestos analysis.
Not applicable for sulphate.

Accreditation Codes : * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



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STL COVENTRY

SEVERN
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INTERIM REPORT

Sample 3 Laboratory Number : 236326
of 7 Report Number : TH/146588/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : TP2 1.5

Sample Date : 28 May 2002 Sample Received : 28 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Mercury as Hg, dry weight	0.08	mg/kg	C	CON19
Arsenic as As, dry weight	1.87	mg/kg	C	CON21
Tecnazene	<2	ug/kg	C	GEO1
Aluminium as Al, dry wt.	6400	mg/kg	C	CON20
Selenium as Se, dry weight	<0.05	mg/kg	C	CON21
Hexachlorobutadiene	<2	ug/kg	C	GEO1
pH (Sludge & Soil)	7.4		C	CON11
Titanium as Ti, dry weight	21	mg/kg	*	CON20
Silver as Ag, dry weight	<5	mg/kg	*	CON20
Tin as Sn, dry weight	<15	mg/kg	C	CON20
Iron as Fe, dry weight	15200	mg/kg	C	CON20
Cadmium as Cd, dry weight	<1.7	mg/kg	C	CON20
Chromium as Cr, dry weight	11	mg/kg	C	CON20
Copper as Cu, dry weight	7	mg/kg	C	CON20
Lead as Pb, dry weight	25	mg/kg	C	CON20
Nickel as Ni, dry weight	6	mg/kg	C	CON20
Zinc as Zn, dry weight	42	mg/kg	C	CON20
Manganese as Mn, dry weight	212	mg/kg	C	CON20
TPH >C6-C40	Analyst Comment	mg/kg	*	GEO34
SVOC with TICs	Analyst Comment	mg/kg	*	GEO31
VOC	Analyst Comment	ug/kg	C	GEO32
Aldrin	<2	ug/kg	C	GEO1
Chlordane - gamma	<2	ug/kg	C	GEO1
Chlordane-alpha	<2	ug/kg	C	GEO1
Dichlobenil	<2	ug/kg	C	GEO1
Heptachlor Epoxide	<2	ug/kg	C	GEO1
Dieldrin	<2	ug/kg	C	GEO1
Endosulphan alpha	<2	ug/kg	C	GEO1
Endrin	<2	ug/kg	C	GEO1
HCH - gamma	<2	ug/kg	C	GEO1
Hexachlorobenzene	<2	ug/kg	C	GEO1
HCH - alpha	<2	ug/kg	S	GEO1
Isodrin	<2	ug/kg	C	GEO1
HCH - beta	<2	ug/kg	C	GEO1
p,p - DDT	<2	ug/kg	C	GEO1
o,p - DDE	<2	ug/kg	C	GEO1
o,p - DDT	<2	ug/kg	C	GEO1
o,p - TDE	<2	ug/kg	C	GEO1
p,p - DDE	<2	ug/kg	C	GEO1
p,p - TDE	<2	ug/kg	C	GEO1
Triallate	<2	ug/kg	C	GEO1
Trifluralin	<2	ug/kg	C	GEO1
1,2,4 - Trichlorobenzene	<2	ug/kg	C	GEO1
PCB28	<2	UG/KG	*	CON66
PCB52	<2	ug/kg	*	CON66

Certificate of Analysis



STL COVENTRY

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INTERIM REPORT

Sample 3 Laboratory Number: 236326
of 7 Report Number: TH/146588/2002

Sample Source: Celtic Technologies Ltd
Sample Point Description: Celtic Technologies Ltd
Sample Description: TP2 1.6

Sample Date: 28 May 2002 Sample Received: 28 May 2002 Analysis Complete:

Test Description	Result	Units	Accreditation	Method
PCB101	<2	ug/kg	* C	CON88
PCB118	<2	ug/kg	* C	CON66
PCB138	<2	ug/kg	* C	CON86
PCB153	<2	ug/kg	* C	CON66
PCB180	<2	ug/kg	* C	CON66
Ethylene Glycol	<100	mg/kg	* C	
Azinphos-methyl	Analyst Comment	ug/kg	* S	
Carbophenothion	Analyst Comment	ug/kg	* S	
Chlorfenvinphos	Analyst Comment	ug/kg	* S	
Chlopyrifos	Analyst Comment	ug/kg	* S	
Demeton-s-methyl	Analyst Comment	ug/kg	* S	
Diazinon	Analyst Comment	ug/kg	* S	
Dichlorvos	Analyst Comment	ug/kg	* S	
Dimethoate	Analyst Comment	ug/kg	* S	
Disulphoton	Analyst Comment	ug/kg	* S	
Fenitrothion	Analyst Comment	ug/kg	* S	
Fenthion	Analyst Comment	ug/kg	* S	
Malathion	Analyst Comment	ug/kg	* S	
Mevinphos	Analyst Comment	ug/kg	* S	
Parathion ethyl	Analyst Comment	ug/kg	* S	
Parathion methyl	Analyst Comment	ug/kg	* S	
Phorate	Analyst Comment	ug/kg	* S	
Phosalone	Analyst Comment	ug/kg	* S	
Pirimiphos-methyl	Analyst Comment	ug/kg	* S	
Propetamphos	Analyst Comment	ug/kg	* S	
Triazaphos	Analyst Comment	ug/kg	* S	
Ammonia H2O sol as NH3	8.6	mg/kg	C	CON03
Cyanide as CN, total dry weight	<2	mg/kg	C	CON08
Sulphate as SO4, water sol dw	<10	mg/kg	C	CON03
Sulphide, dry weight	<25	mg/kg	C	CON01
Detergents, anionic H2O Sol	<3	mg/kg	C	CALC
Sulphate Total as SO3 by ICPdw	<250	mg/kg	* C	CON20
Ash @ 550c	95.12	%	* C	CON10
Moisture content at 30 C	15.5	%	* C	CON10
Total Coliforms	<10	cfu/g	* R	
Faecal Streptococci	<10	cfu/g	* R	

Analyst Comment for 236326: Please see attached report for TPH/VOC/SVOC results.

Accreditation Codes: * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



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STL COVENTRY

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INTERIM REPORT

Sample 4 Laboratory Number: 236327
of 7 Report Number: TH/148588/2002

Sample Source: Celtic Technologies Ltd
Sample Point Description: Celtic Technologies Ltd
Sample Description: TP3 1.3

Sample Date: 28 May 2002 Sample Received: 28 May 2002 Analysis Complete:

Test Description	Result	Units	Accreditation	Method
Mercury as Hg, dry weight	<0.05	mg/kg	C	CON19
Arsenic as As, dry weight	6.08	mg/kg	C	CON21
Technazene	<2	ug/kg	C	GEO1
Aluminium as Al, dry wt.	7400	mg/kg	C	CON20
Selenium as Se, dry weight	<0.05	mg/kg	C	CON21
Hexachlorobutadiene	<2	ug/kg	C	GEO1
pH (Sludge & Soil)	7.2		C	CON11
Titanium as Ti, dry weight	30	mg/kg	*	CON20
Silver as Ag, dry weight	<5	mg/kg	*	CON20
Tin as Sn, dry weight	<15	mg/kg	C	CON20
Iron as Fe, dry weight	20500	mg/kg	C	CON20
Cadmium as Cd, dry weight	<1.7	mg/kg	C	CON20
Chromium as Cr, dry weight	8	mg/kg	C	CON20
Copper as Cu, dry weight	9	mg/kg	C	CON20
Lead as Pb, dry weight	14	mg/kg	C	CON20
Nickel as Ni, dry weight	8	mg/kg	C	CON20
Zinc as Zn, dry weight	34	mg/kg	C	CON20
Manganese as Mn, dry weight	150	mg/kg	C	CON20
TPH >C6-C40	Analyst Comment	mg/kg	*	GEO34
SVOC with TICs	Analyst Comment	mg/kg	*	GEO31
VOC	Analyst Comment	ug/kg	C	GEO32
Aldrin	<2	ug/kg	C	GEO1
Chlordane - gamma	<2	ug/kg	C	GEO1
Chlordane-alpha	<2	ug/kg	C	GEO1
Dichlobenil	<2	ug/kg	C	GEO1
Heptachlor Epoxide	<2	ug/kg	C	GEO1
Dieldrin	<2	ug/kg	C	GEO1
Endosulphan alpha	<2	ug/kg	C	GEO1
Endrin	<2	ug/kg	C	GEO1
HCH - gamma	<2	ug/kg	C	GEO1
Hexachlorobenzene	<2	ug/kg	C	GEO1
HCH - alpha	<2	ug/kg	S	GEO1
Isodrin	<2	ug/kg	C	GEO1
HCH - beta	<2	ug/kg	C	GEO1
p,p - DDT	<2	ug/kg	C	GEO1
o,p - DDE	<2	ug/kg	C	GEO1
o,p - DDT	<2	ug/kg	C	GEO1
o,p - TDE	<2	ug/kg	C	GEO1
p,p - DDE	<2	ug/kg	C	GEO1
p,p - TDE	<2	ug/kg	C	GEO1
Triallate	<2	ug/kg	C	GEO1
Trifluralin	<2	ug/kg	C	GEO1
1,2,4 - Trichlorobenzene	<2	ug/kg	C	GEO1
PCB28	<2	UG/KG	*	CON66
PCB52	<2	ug/kg	*	CON66

Certificate of Analysis



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STL COVENTRY

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INTERIM REPORT

Sample 4 Laboratory Number : 236327
of 7 Report Number : TH/146586/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : TP3 1.3

Sample Date : 28 May 2002 Sample Received : 28 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
PCB101	<2	ug/kg	* C	CON66
PCB118	<2	ug/kg	* C	CON66
PCB138	<2	ug/kg	* C	CON66
PCB153	<2	ug/kg	* C	CON66
PCB180	<2	ug/kg	* C	CON66
Ethylene Glycol	<100	mg/kg	* C	
Azinphos-methyl	Analyst Comment	ug/kg	* S	
Carbophenothion	Analyst Comment	ug/kg	* S	
Chlorfenvinphos	Analyst Comment	ug/kg	* S	
Chlorpyrifos	Analyst Comment	ug/kg	* S	
Demeton-s-methyl	Analyst Comment	ug/kg	* S	
Diazinon	Analyst Comment	ug/kg	* S	
Dichlorvos	Analyst Comment	ug/kg	* S	
Dimethoate	Analyst Comment	ug/kg	* S	
Disulphoton	Analyst Comment	ug/kg	* S	
Fenitrothion	Analyst Comment	ug/kg	* S	
Fenthion	Analyst Comment	ug/kg	* S	
Malathion	Analyst Comment	ug/kg	* S	
Mevinphos	Analyst Comment	ug/kg	* S	
Parathion ethyl	Analyst Comment	ug/kg	* S	
Parathion methyl	Analyst Comment	ug/kg	* S	
Phorate	Analyst Comment	ug/kg	* S	
Phosalone	Analyst Comment	ug/kg	* S	
Pirimiphos-methyl	Analyst Comment	ug/kg	* S	
Propetamphos	Analyst Comment	ug/kg	* S	
Triazaphos	Analyst Comment	ug/kg	* S	
Ammonia H2O sol as NH3	17.6	mg/kg	C	CON03
Cyanide as CN, total dry weight	<2	mg/kg	C	CON08
Sulphate as SO4, water sol dw	<10	mg/kg	C	CON03
Sulphide, dry weight	<25	mg/kg	C	CON01
Detergents, anionic H2O Sol	<3	mg/kg	C	CALC
Sulphate Total as SO3 by ICPdw	<250	mg/kg	* C	CON20
Ash @ 550c	97.45	%	* C	CON10
Moisture content at 30 C	10.7	%	* C	CON10
Total Coliforms	110	cfu/g	* R	
Faecal Streptococci	10	cfu/g	* R	

Analyst Comment for 236327 : Please see attached report for TPH/VOC/SVOC results.

Accreditation Codes : * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcom S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



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STL COVENTRY

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INTERIM REPORT

Sample 5 Laboratory Number: 236328
of 7 Report Number: TH/146588/2002

Sample Source: Celtic Technologies Ltd
Sample Point Description: Celtic Technologies Ltd
Sample Description: BH2 0.5

Sample Date: 28 May 2002 Sample Received: 28 May 2002 Analysis Complete:

Test Description	Result	Units	Accreditation	Method
Mercury as Hg, dry weight	0.14	mg/kg	C	CON19
Arsenic as As, dry weight	9.84	mg/kg	C	CON21
Aluminium as Al, dry wt	9300	mg/kg	C	CON20
Selenium as Se, dry weight	0.14	mg/kg	C	CON21
pH (Sludge & Soil)	8.2		C	CON11
Titanium as Ti, dry weight	62	mg/kg	*	CON20
Silver as Ag, dry weight	<5	mg/kg	*	CON20
Tin as Sn, dry weight	<15	mg/kg	C	CON20
Iron as Fe, dry weight	19800	mg/kg	C	CON20
Cadmium as Cd, dry weight	<1.7	mg/kg	C	CON20
Chromium as Cr, dry weight	12	mg/kg	C	CON20
Copper as Cu, dry weight	71	mg/kg	C	CON20
Lead as Pb, dry weight	61	mg/kg	C	CON20
Nickel as Ni, dry weight	11	mg/kg	C	CON20
Zinc as Zn, dry weight	130	mg/kg	C	CON20
Manganese as Mn, dry weight	328	mg/kg	C	CON20
TPH >C6-C40	Analyst Comment	mg/kg	*	GE034
Ammonia H2O sol as NH3	24.5	mg/kg	C	CON03
Cyanide as CN, total dry weight	<2	mg/kg	C	CON08
Sulphate as SO4, water sol dw	<10	mg/kg	C	CON03
Sulphide, dry weight	<25	mg/kg	C	CON01
Sulphate Total as SO3 by ICPdw	490	mg/kg	*	CON20
Ash @ 550c	92.05	%	*	CON10
Moisture content at 30 C	13.1	%	C	CON10
Asbestos identification	Analyst Comment	%	*	CON50

Analyst Comment for 236328: Please see attached report for TPH results.
No asbestos observed in sample submitted.

Accreditation Codes: * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



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STL COVENTRY

SEVERN
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INTERIM REPORT

Sample 6 Laboratory Number : 236329
of 7 Report Number : TH/146588/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : TP4 0.5

Sample Date : 28 May 2002 Sample Received : 28 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Mercury as Hg, dry weight	0.13	mg/kg	C	CON19
Arsenic as As, dry weight	23.39	mg/kg	C	CON21
Aluminium as Al, dry wt.	9230	mg/kg	C	CON20
Selenium as Se, dry weight	0.40	mg/kg	C	CON21
pH (Sludge & Soil)	8.1		C	CON11
Titanium as Ti, dry weight	110	mg/kg	* C	CON20
Silver as Ag, dry weight	<6	mg/kg	* C	CON20
Tin as Sn, dry weight	<15	mg/kg	C	CON20
Iron as Fe, dry weight	33900	mg/kg	C	CON20
Cadmium as Cd, dry weight	<1.7	mg/kg	C	CON20
Chromium as Cr, dry weight	15	mg/kg	C	CON20
Copper as Cu, dry weight	41	mg/kg	C	CON20
Lead as Pb, dry weight	79	mg/kg	C	CON20
Nickel as Ni, dry weight	17	mg/kg	C	CON20
Zinc as Zn, dry weight	151	mg/kg	C	CON20
Manganese as Mn, dry weight	804	mg/kg	C	CON20
TPH >C6-C40	Analyst Comment	mg/kg	* C	GE034
Ammonia H2O sol as NH3	20.0	mg/kg	C	CON03
Cyanide as CN, total dry weight	<2	mg/kg	C	CON08
Sulphate as SO4, water sol dw	<10	mg/kg	C	CON03
Sulphide, dry weight	<25	mg/kg	C	CON01
Sulphate Total as SO3 by ICPdw	868	mg/kg	* C	CON20
Ash @ 550c	89.66	%	* C	CON10
Moisture content at 30 C	17.7	%	C	CON10
Asbestos identification	Analyst Comment	%	* C	CON50

Analyst Comment for 236329 : Please see attached report for TPH results.
No asbestos observed in sample submitted.

Accreditation Codes : * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



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STL COVENTRY



INTERIM REPORT

Sample 7 Laboratory Number : 236425
of 7 Report Number : TH/146598/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : Reference material

Sample Date : 28 May 2002 Sample Received : 28 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Mercury as Hg, dry weight	1.16	mg/kg	C	CON19
Arsenic as As, dry weight	8.14	mg/kg	C	CON21
Tecnazene	Analyst Comment	ug/kg	C	GEO1
Aluminium as Al, dry wt.	2057	mg/kg	C	CON20
Selenium as Se, dry weight	1.11	mg/kg	C	CON21
Hexachlorobutadiene	Analyst Comment	ug/kg	C	GEO1
pH (Sludge & Soil)	6.88		C	CON11
Titanium as Ti, dry weight	38	mg/kg	C	CON20
Silver as Ag, dry weight	Analyst Comment	mg/kg	C	CON20
Tin as Sn, dry weight	Analyst Comment	mg/kg	C	CON20
Iron as Fe, dry weight	7439	mg/kg	C	CON20
Cadmium as Cd, dry weight	1.9	mg/kg	C	CON20
Chromium as Cr, dry weight	114	mg/kg	C	CON20
Copper as Cu, dry weight	19	mg/kg	C	CON20
Lead as Pb, dry weight	53	mg/kg	C	CON20
Nickel as Ni, dry weight	13	mg/kg	C	CON20
Zinc as Zn, dry weight	62	mg/kg	C	CON20
Manganese as Mn, dry weight	115	mg/kg	C	CON20
TPH >C6-C40	Analyst Comment	mg/kg	C	GEO34
Aldrin	Analyst Comment	ug/kg	C	GEO1
Chlordane - gamma	Analyst Comment	ug/kg	C	GEO1
Chlordane-alpha	Analyst Comment	ug/kg	C	GEO1
Dichlobenil	Analyst Comment	ug/kg	C	GEO1
Heptachlor Epoxide	Analyst Comment	ug/kg	C	GEO1
Dieldrin	Analyst Comment	ug/kg	C	GEO1
Endosulphan alpha	Analyst Comment	ug/kg	C	GEO1
Endrin	Analyst Comment	ug/kg	C	GEO1
HCH - gamma	Analyst Comment	ug/kg	C	GEO1
Hexachlorobenzene	Analyst Comment	ug/kg	C	GEO1
HCH - alpha	Analyst Comment	ug/kg	S	GEO1
Isodrin	Analyst Comment	ug/kg	C	GEO1
HCH - beta	Analyst Comment	ug/kg	C	GEO1
p,p - DDT	Analyst Comment	ug/kg	C	GEO1
o,p - DDE	Analyst Comment	ug/kg	C	GEO1
o,p - DDT	Analyst Comment	ug/kg	C	GEO1
o,p - TDE	Analyst Comment	ug/kg	C	GEO1
p,p - DDE	Analyst Comment	ug/kg	C	GEO1
p,p - TDE	Analyst Comment	ug/kg	C	GEO1
Triallate	Analyst Comment	ug/kg	C	GEO1
Trifluralin	Analyst Comment	ug/kg	C	GEO1
1,2,4 - Trichlorobenzene	Analyst Comment	ug/kg	C	GEO1
PCB28	Analyst Comment	UG/KG	C	CON66
PCB52	Analyst Comment	ug/kg	C	CON66
PCB101	Analyst Comment	ug/kg	C	CON66
PCB118	Analyst Comment	ug/kg	C	CON66

Certificate of Analysis



1214
1997
1779

STL COVENTRY

SEVERN

TRENT

SERVICES

INTERIM REPORT

Sample 7 Laboratory Number: 236425
of 7 Report Number: TH/146588/2002

Sample Source: Celtic Technologies Ltd
Sample Point Description: Celtic Technologies Ltd
Sample Description: Reference material

Sample Date: 28 May 2002 Sample Received: 28 May 2002 Analysis Complete:

Test Description	Result	Units	Accreditation	Method
PCB138	Analyst Comment	ug/kg	* C	CON66
PCB153	Analyst Comment	ug/kg	* C	CON66
PCB180	Analyst Comment	ug/kg	* C	CON66
Ethylene Glycol	<100	mg/kg	* C	
Ammonia H2O sol as NH3	Analyst Comment	mg/kg	C	CON03
yanide as CN, total dry weight	N/A	mg/kg	C	CON08
Sulphate as SO4, water sol dw	Analyst Comment	mg/kg	C	CON03
Sulphide, dry weight	Analyst Comment	mg/kg	C	CON01
Detergents, anionic H2O Sol	Analyst Comment	mg/kg	C	CALC
Sulphate Total as SO3 by ICPdw	1818	mg/kg	* C	CON20
Ash @ 550c	Analyst Comment	%	* C	CON10
Moisture content at 30 C	Analyst Comment	%	C	CON10
Total Coliforms	Analyst Comment	cfu/g	* R	
Faecal Streptococci	Analyst Comment	cfu/g	* R	

Analyst Comment for 236425: Not applicable to (LP4) % Ash at 550 for 2hrs.
Sulphides - Reference material N/A
Not applicable for ammonia.
Not applicable for moisture content.
Not applicable for TPH analysis.
Not applicable for sulphate/detergent.
Not applicable for T. coliform.
Not applicable for F. strep.
Not applicable to OCL / PCB analysis.

Accreditation Codes: * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinands Q = Not Detected

Signed:

Name:

Date: 14 June 2002

Title:

Certificate of Analysis



1814
1887
1990

STL COVENTRY

SEVERN
TRENT
SERVICES

INTERIM REPORT

Sample 7 Laboratory Number : 237759
of 7 Report Number : TH/146818/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : BH3/1.5

Sample Date : 29 May 2002 Sample Received : 29 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
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Signed :

Name :

Date : 13 June 2002

Title :

TOTAL PETROLEUM HYDROCARBONS

Client Name: **CELTIC TECHNOLOGIES**

Lab. Sample ID: 238324
Job No.: 146588
Sample Location: NONE SUPPLIED
Client Sample ID: QC SPIKE 120931
Sample Matrix: SOLID
Weight(g): 5
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 7-Jun-2002

CONCENTRATION UNITS: mg/kg

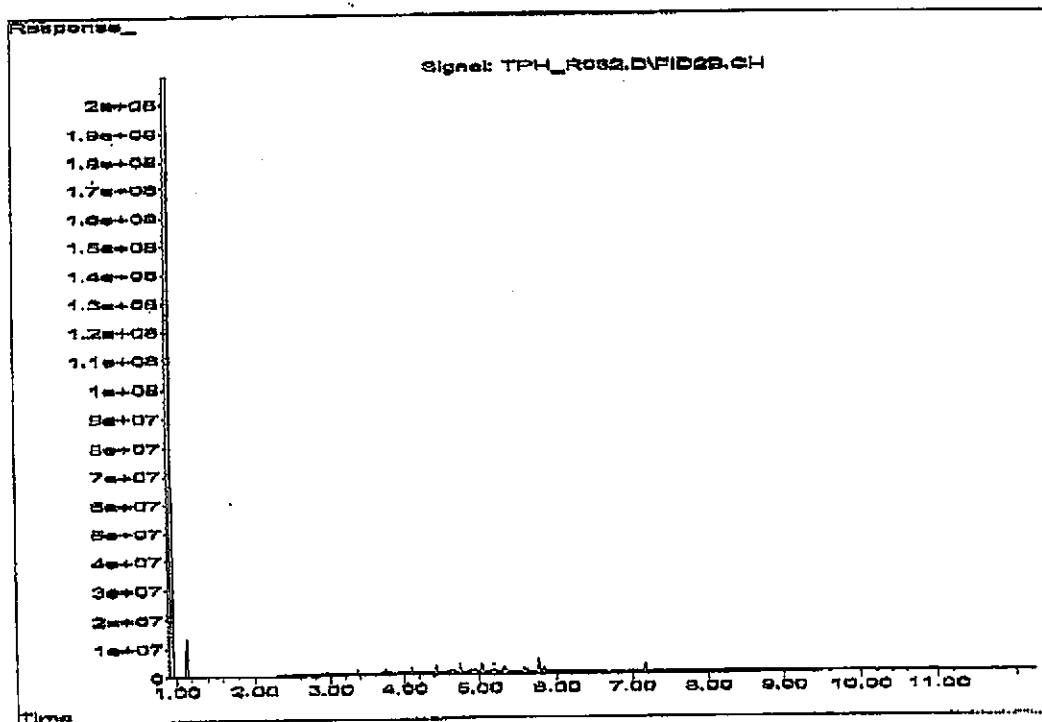
RESULTS

RANGE:	MRL	RESULT
>C6 - C8	5	ND
>C8 - C10	5	102
>C10 - C16	10	1130
>C16 - C24	10	714
>C24 - C40	25	52
TOTAL TPH >C6 - C40		2000

MRL = MINIMUM REPORTING LIMIT

ND = NOT DETECTED

CHROMATOGRAM



**SEVERN TRENT
LABORATORIES**



TOTAL PETROLEUM HYDROCARBONS

Client Name: CELTIC TECHNOLOGIES

Lab. Sample ID: 236325
Job No.: 146588
Sample Location: NONE SUPPLIED
Client Sample ID: QC BLANK 120932
Sample Matrix: SOLID
Weight(g): 5
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 7-Jun-2002

CONCENTRATION UNITS: mg/kg

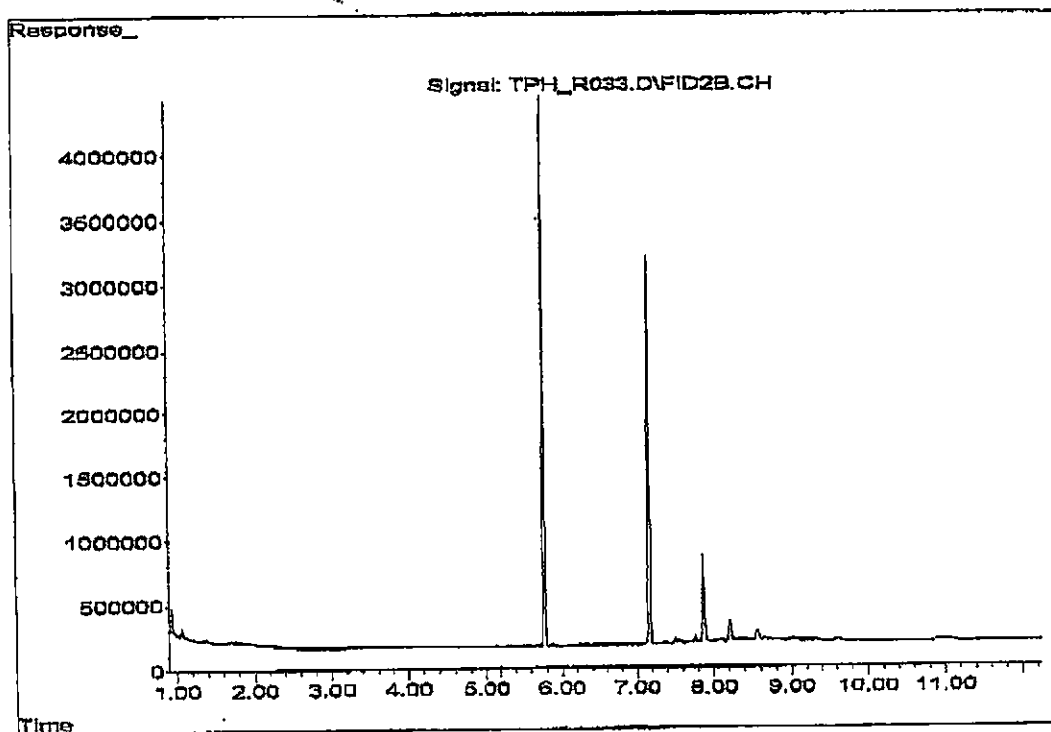
RESULTS

RANGE	MRL	RESULT
>C6 - C8	5	ND
>C8 - C10	5	ND
>C10 - C16	10	ND
>C16 - C24	10	ND
>C24 - C40	25	51
TOTAL TPH >C8 - C40		51

MRL = MINIMUM REPORTING LIMIT

ND = NOT DETECTED

CHROMATOGRAM



SEVERN TRENT
LABORATORIES



TOTAL PETROLEUM HYDROCARBONS

Client Name: CELTIC TECHNOLOGIES

Lab. Sample ID: 236326
Job No.: 146588
Sample Location: NONE SUPPLIED
Client Sample ID: TP2 1.5
Sample Matrix: SOLID
Weight(g): 4.89
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 7-Jun-2002

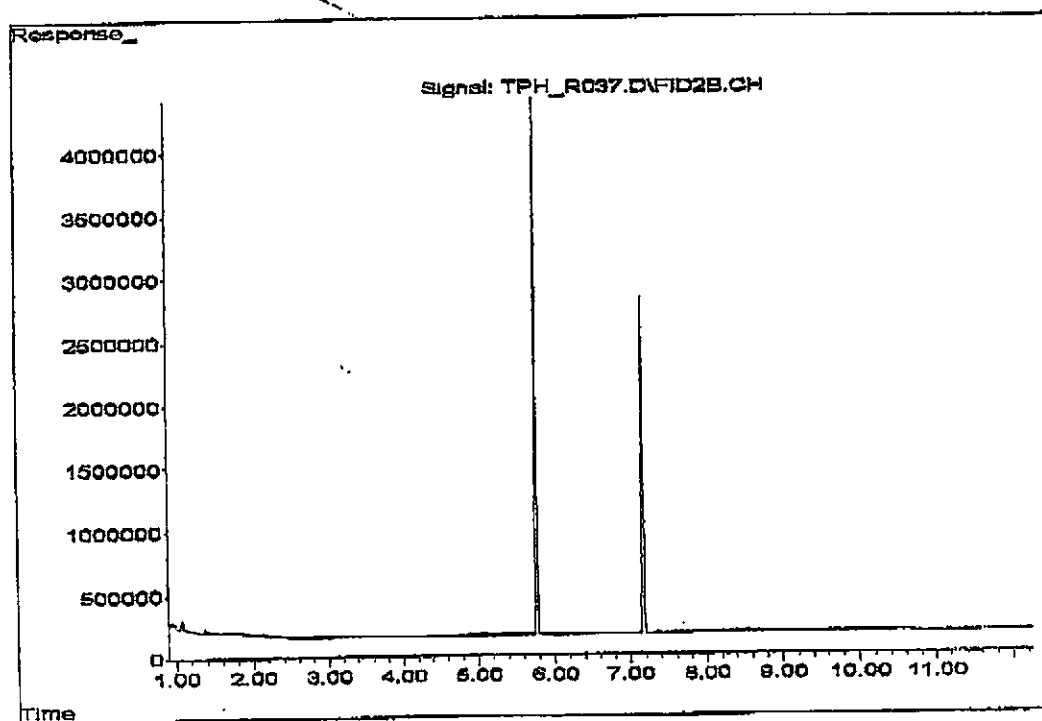
CONCENTRATION UNITS: mg/kg

RESULTS

RANGE	MRL	RESULT
>C8 - C8	5	ND
>C8 - C10	5	ND
>C10 - C16	10	ND
>C16 - C24	10	ND
>C24 - C40	25	ND
TOTAL TPH >C8 - C40		ND

MRL = MINIMUM REPORTING LIMIT
ND = NOT DETECTED

CHROMATOGRAM



SEVERN TRENT
LABORATORIES



TOTAL PETROLEUM HYDROCARBONS

Client Name: CELTIC TECHNOLOGIES

Lab. Sample ID: 236327
Job No.: 146588
Sample Location: NONE SUPPLIED
Client Sample ID: TP3 1.3
Sample Matrix: SOLID
Weight(g): 5.04
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 7-Jun-2002

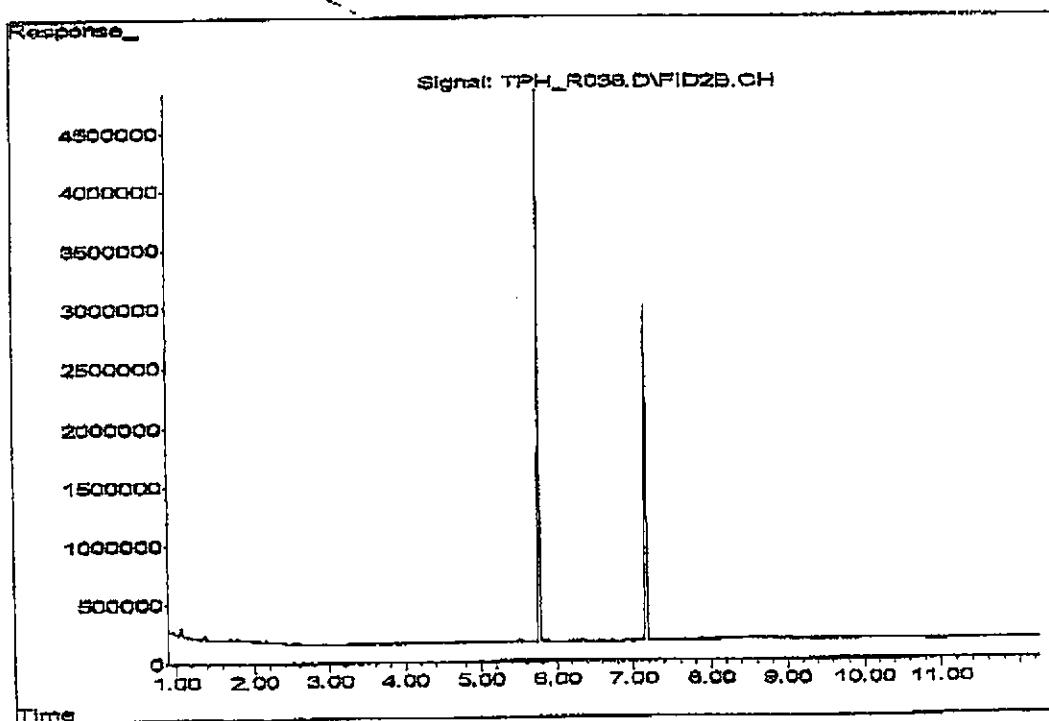
CONCENTRATION UNITS: mg/kg

RESULTS

RANGE	MRL	RESULT
>C8 - C8	5	ND
>C8 - C10	5	ND
>C10 - C16	10	ND
>C16 - C24	10	ND
>C24 - C40	25	ND
TOTAL TPH >C8 - C40		ND

MRL = MINIMUM REPORTING LIMIT
ND = NOT DETECTED

CHROMATOGRAM



SEVERN TRENT
LABORATORIES



TOTAL PETROLEUM HYDROCARBONS

Client Name: CELTIC TECHNOLOGIES

Lab. Sample ID: 236328
Job No.: 148588
Sample Location: NONE SUPPLIED
Client Sample ID: BH2 0.5
Sample Matrix: SOLID
Weight(g): 5.05
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 7-Jun-2002

CONCENTRATION UNITS: mg/kg

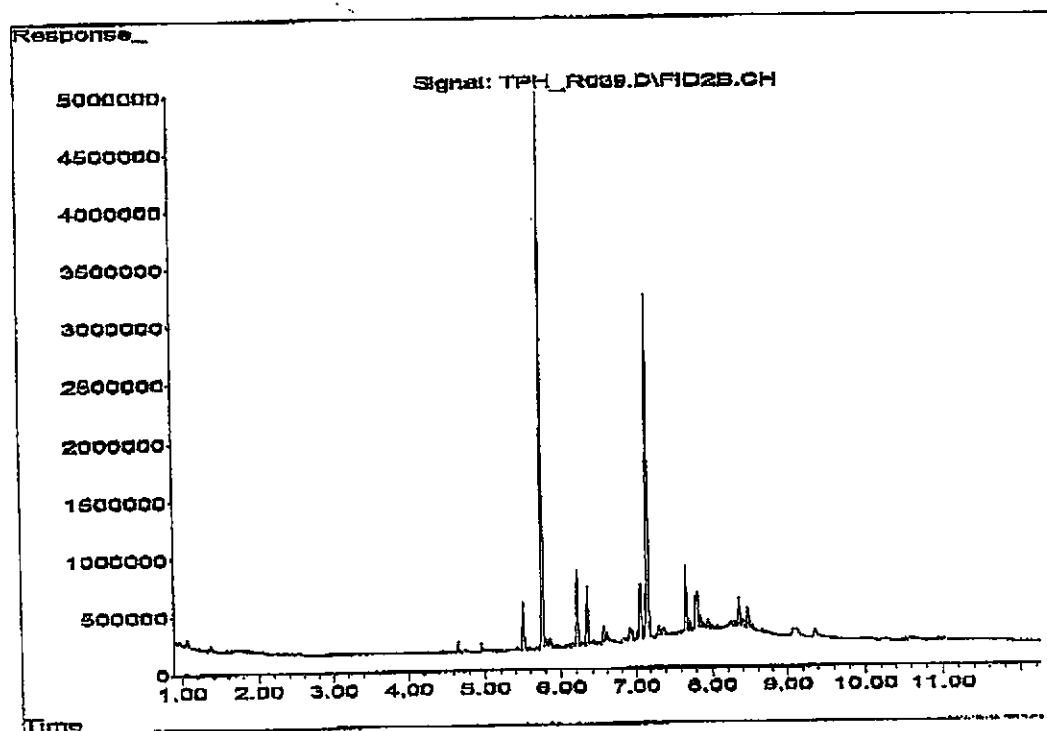
RESULTS

RANGE	MRL	RESULT
>C8 - C8	5	ND
>C8 - C10	5	ND
>C10 - C16	10	ND
>C16 - C24	10	89
>C24 - C40	25	206
TOTAL TPH >C8 - C40		275

MRL = MINIMUM REPORTING LIMIT

ND = NOT DETECTED

CHROMATOGRAM



SEVERN TRENT
LABORATORIES



TOTAL PETROLEUM HYDROCARBONS

Client Name: CELTIC TECHNOLOGIES

Lab. Sample ID: 238329
Job No.: 148588
Sample Location: NONE SUPPLIED
Client Sample ID: TP4 0.5
Sample Matrix: SOLID
Weight(g): 4.89
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 7-Jun-2002

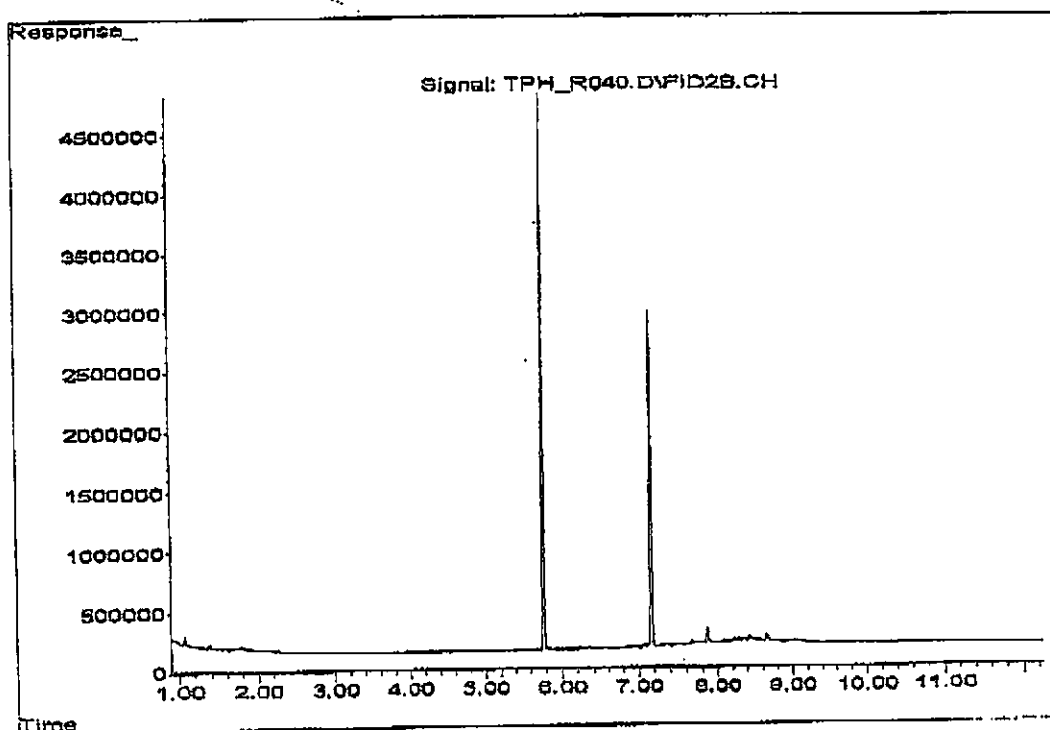
CONCENTRATION UNITS: mg/kg

RESULTS

RANGE-	MRL	RESULT
>C8 - C8	5	ND
>C8 - C10	5	ND
>C10 - C16	10	ND
>C16 - C24	10	ND
>C24 - C40	25	34
TOTAL TPH >C8 - C40		34

MRL = MINIMUM REPORTING LIMIT
ND = NOT DETECTED

CHROMATOGRAM



SEVERN TRENT
LABORATORIES

SEVERN
TRENT
SERVICES

VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 236324
 Job No : 146588
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : AQC SPIKE
 Sample Matrix : SOIL
 Vial No : 12

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\2V-DATA\JUNE02\2V0506021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 06/06/2002

CAS NO	Compound	IRI	Result	Flags
75-71-8	Dichlorodifluoromethane ug/kg	5	ND	
74-87-3	Chloromethane ug/kg	5	ND	
75-00-3	Chloroethane ug/kg	5	ND	
74-83-9	Bromomethane ug/kg	5	ND	
75-69-4	Trichlorofluoromethane ug/kg	5	ND	
75-35-4	1,1-Dichloroethene ug/kg	5	48.9	
75-09-2	Dichloromethane ug/kg	5	ND	
156-80-9	Trans-1,2-dichloroethene ug/kg	5	ND	
75-34-3	1,1-Dichloroethane ug/kg	5	ND	
156-58-2	Cis-1,2-dichloroethane ug/kg	5	ND	
594-20-7	2,2-Dichloropropane ug/kg	5	ND	
67-66-3	Chloroform ug/kg	5	ND	
74-97-5	Bromochloromethane ug/kg	5	ND	
71-55-6	1,1,1-Trichloroethane ug/kg	5	ND	
563-58-6	1,1-Dichloropropene ug/kg	5	ND	
107-08-2	1,2-Dichloroethane ug/kg	5	ND	
71-43-2	Benzene ug/kg	5	51.1	
78-87-5	1,2-Dichloropropane ug/kg	5	ND	
79-01-6	Trichloroethene ug/kg	5	49.7	
75-27-4	Bromodichloromethane ug/kg	5	ND	
74-95-3	Dibromomethane ug/kg	5	ND	
10061-01-5	Cis-1,3-dichloropropene ug/kg	5	ND	
108-88-3	Toluene ug/kg	5	48.6	
10061-02-6	Trans-1,3-dichloropropene ug/kg	5	ND	
79-00-5	1,1,2-trichloroethane ug/kg	5	ND	
56-23-5	Carbon Tetrachloride ug/kg	5	ND	
75-01-4	Vinyl Chloride ug/kg	5	ND	
124-28-9	1,3-dichloropropane ug/kg	5	ND	
127-18-4	Tetrachloroethene ug/kg	5	ND	
124-46-1	Dibromochloromethane ug/kg	5	ND	
106-93-4	1,2-dibromoethane ug/kg	5	ND	
108-90-7	Chlorobenzene ug/kg	5	60.7	
630-20-6	1,1,1,2-tetrachloroethane ug/kg	5	ND	
100-41-4	Ethylbenzene ug/kg	5	ND	
1330-20-7	m,p-xylene ug/kg	10	ND	
95-47-6	o-xylene ug/kg	5	ND	
100-42-5	Styrene ug/kg	5	ND	

VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 236324
 Job No : 146588
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : AQC SPIKE
 Sample Matrix : SOIL
 Vial No : 12

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\2V-DATA\JUNE02\2V050802A
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 06/06/2002

CAS NO	Compound	MRL	Result	Flags
75-25-2	Bromoform ug/kg	5	ND	
98-82-8	Isopropylbenzene ug/kg	5	ND	
79-34-5	1,1,2,2-tetrachloroethane ug/kg	5	ND	
96-18-4	1,2,3-trichloropropane ug/kg	5	ND	
103-65-1	n-propylbenzene ug/kg	5	ND	
108-86-1	Bromobenzene ug/kg	5	ND	
95-49-8	2-chlorotoluene ug/kg	5	ND	
108-67-8	1,3,5-trimethylbenzene ug/kg	5	ND	
106-43-4	4-chlorotoluene ug/kg	5	ND	
98-06-6	tert-butylbenzene ug/kg	5	ND	
95-63-6	1,2,4-trimethylbenzene ug/kg	5	ND	
135-98-8	sec-butylbenzene ug/kg	5	ND	
99-87-6	p-isopropyltoluene ug/kg	5	ND	
541-73-1	1,3-dichlorobenzene ug/kg	5	ND	
106-46-7	1,4-dichlorobenzene ug/kg	5	ND	
104-51-8	n-butylbenzene ug/kg	5	ND	
95-50-1	1,2-dichlorobenzene ug/kg	5	ND	
96-12-8	1,2-dibromo-3-chloropropane ug/kg	5	ND	
120-82-1	1,2,4-trichlorobenzene ug/kg	5	ND	
87-68-3	Hexachlorobutadiene ug/kg	5	ND	
91-20-3	Naphthalene ug/kg	5	ND	
87-61-8	1,2,3-trichlorobenzene ug/kg	5	ND	
Surrogate	Dibromofluoromethane %Recovered		106.8 Pass	
Surrogate	Toluene-d8 %Recovered		98.2 Pass	
Surrogate	4-bromofluorobenzene %Recovered		97.4 Pass	

VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 236325
 Job No : 146588
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : AQC BLANK
 Sample Matrix : SOIL
 Vial No : 11

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\2V-DATA\LINE02\2V0506021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 06/06/2002

CAS NO	Compound	MR	Result	Flags
75-71-8	Dichlorodifluoromethane ug/kg	5	ND	
74-87-3	Chloromethane ug/kg	5	ND	
75-00-3	Chloroethane ug/kg	5	ND	
74-83-9	Bromomethane ug/kg	5	ND	
75-69-4	Trichlorofluoromethane ug/kg	5	ND	
75-35-4	1,1-Dichloroethane ug/kg	5	ND	
75-09-2	Dichloromethane ug/kg	5	ND	
156-80-9	Trans-1,2-dichloroethene ug/kg	5	ND	
75-34-3	1,1-Dichloroethane ug/kg	5	ND	
156-59-2	Cis-1,2-dichloroethene ug/kg	5	ND	
594-20-7	2,2-Dichloropropane ug/kg	5	ND	
67-66-3	Chloroform ug/kg	5	ND	
74-97-5	Bromochloromethane ug/kg	5	ND	
71-55-6	1,1,1-Trichloroethane ug/kg	5	ND	
563-58-6	1,1-Dichloropropene ug/kg	5	ND	
107-06-2	1,2-Dichloroethane ug/kg	5	ND	
71-43-2	Benzene ug/kg	5	ND	
78-87-5	1,2-Dichloropropane ug/kg	5	ND	
79-01-6	Trichloroethene ug/kg	5	ND	
75-27-4	Bromodichloromethane ug/kg	5	ND	
74-95-3	Dibromomethane ug/kg	5	ND	
10061-01-5	Cis-1,3-dichloropropene ug/kg	5	ND	
108-88-3	Toluene ug/kg	5	ND	
10061-02-6	Trans-1,3-dichloropropene ug/kg	5	ND	
79-00-5	1,1,2-trichloroethane ug/kg	5	ND	
56-23-6	Carbon Tetrachloride ug/kg	5	ND	
75-01-4	Vinyl Chloride ug/kg	5	ND	
124-28-9	1,3-dichloropropane ug/kg	5	ND	
127-18-4	Tetrachloroethene ug/kg	5	ND	
124-48-1	Dibromochloromethane ug/kg	5	ND	
106-93-4	1,2-dibromoethane ug/kg	5	ND	
108-90-7	Chlorobenzene ug/kg	5	ND	
630-20-6	1,1,1,2-tetrachloroethane ug/kg	5	ND	
100-41-4	Ethylbenzene ug/kg	5	ND	
1330-20-7	m,p-xylene ug/kg	10	ND	
95-47-6	o-xylene ug/kg	5	ND	
100-42-5	Styrene ug/kg	5	ND	
75-25-2	Bromoform ug/kg	5	ND	

STL COVENTRY



VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 236325
 Job No : 146588
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : AQC BLANK
 Sample Matrix : SOIL
 Vial No : 11

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\2V-DATA\JUNE02\2V050802A
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 06/06/2002

CAS NO	Compound	MRI	Result	Flags
98-82-8	Isopropylbenzene ug/kg	5	ND	
79-34-5	1,1,2,2-tetrachloroethane ug/kg	5	ND	
98-18-4	1,2,3-trichloropropane ug/kg	5	ND	
103-65-1	n-propylbenzene ug/kg	5	ND	
108-86-1	Bromobenzene ug/kg	5	ND	
95-49-8	2-chlorotoluene ug/kg	5	ND	
108-67-8	1,3,5-trimethylbenzene ug/kg	5	ND	
106-43-4	4-chlorotoluene ug/kg	5	ND	
98-06-8	tert-butylbenzene ug/kg	5	ND	
95-63-8	1,2,4-trimethylbenzene ug/kg	5	ND	
135-98-8	sec-butylbenzene ug/kg	5	ND	
99-87-6	p-isopropyltoluene ug/kg	5	ND	
541-73-1	1,3-dichlorobenzene ug/kg	5	ND	
106-46-7	1,4-dichlorobenzene ug/kg	5	ND	
104-51-8	n-butylbenzene ug/kg	5	ND	
95-50-1	1,2-dichlorobenzene ug/kg	5	ND	
96-12-8	1,2-dibromo-3-chloropropane ug/kg	5	ND	
120-82-1	1,2,4-trichlorobenzene ug/kg	5	ND	
87-68-3	Hexachlorobutadiene ug/kg	5	ND	
91-20-3	Naphthalene ug/kg	5	ND	
87-61-6	1,2,3-trichlorobenzene ug/kg	5	ND	
Surrogate	Dibromofluoromethane %Recovered		108.4 Pass	
Surrogate	Toluene-d8 %Recovered		98.0 Pass	
Surrogate	4-bromofluorobenzene %Recovered		97.8 Pass	

VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 236326
 Job No : 146588
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : TP2 1.5
 Sample Matrix : SOIL
 Vial No : 15

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\2V-DATA\JUNE02\2V050802A
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 06/06/2002

CAS NO	Compound	MRL	Result	Flags
75-71-8	Dichlorodifluoromethane ug/kg	5	ND	
74-87-3	Chloromethane ug/kg	5	ND	
75-00-3	Chloroethane ug/kg	5	ND	
74-83-9	Bromomethane ug/kg	5	ND	
75-69-4	Trichlorofluoromethane ug/kg	5	ND	
75-35-4	1,1-Dichloroethene ug/kg	5	ND	
75-09-2	Dichloromethane ug/kg	5	ND	
156-60-9	Trans-1,2-dichloroethene ug/kg	5	ND	
75-34-3	1,1-Dichloroethane ug/kg	5	ND	
156-59-2	Cis-1,2-dichloroethene ug/kg	5	ND	
594-20-7	2,2-Dichloropropane ug/kg	5	ND	
67-68-3	Chloroform ug/kg	5	ND	
74-97-5	Bromochloromethane ug/kg	5	1.1	J
71-55-6	1,1,1-Trichloroethane ug/kg	5	ND	
563-58-6	1,1-Dichloropropene ug/kg	5	ND	
107-06-2	1,2-Dichloroethane ug/kg	5	ND	
71-43-2	Benzene ug/kg	5	ND	
78-87-5	1,2-Dichloropropane ug/kg	5	ND	
79-01-6	Trichloroethene ug/kg	5	ND	
76-27-4	Bromodichloromethane ug/kg	5	ND	
74-95-3	Dibromomethane ug/kg	5	ND	
10081-01-5	Cis-1,3-dichloropropene ug/kg	5	ND	
108-88-3	Toluene ug/kg	5	1.7	J
10081-02-6	Trans-1,3-dichloropropene ug/kg	5	ND	
79-00-5	1,1,2-trichloroethane ug/kg	5	ND	
56-23-5	Carbon Tetrachloride ug/kg	5	ND	
75-01-4	Vinyl Chloride ug/kg	5	ND	
124-28-9	1,3-dichloropropane ug/kg	5	ND	
127-18-4	Tetrachloroethene ug/kg	5	ND	
124-48-1	Dibromochloromethane ug/kg	5	ND	
106-93-4	1,2-dibromoethane ug/kg	5	ND	
108-90-7	Chlorobenzene ug/kg	5	ND	
630-20-6	1,1,1,2-tetrachloroethane ug/kg	5	ND	
100-41-4	Ethylbenzene ug/kg	5	2.6	J
1330-20-7	m,p-xylene ug/kg	10	8.3	J
95-47-8	o-xylene ug/kg	5	1.9	J
100-42-5	Styrene ug/kg	5	ND	
75-25-2	Bromoform ug/kg	5	ND	

STL COVENTRY



VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 236328
 Job No : 146588
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : TP2 1.5
 Sample Matrix : SOIL
 Vial No : 15

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\2V-DATA\JUNE02\2V050602\1
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 06/06/2002

CAS NO	Compound	MRL	Result	Flags
98-82-8	Isopropylbenzene ug/kg	5	ND	
79-34-5	1,1,2,2-tetrachloroethane ug/kg	5	ND	
96-18-4	1,2,3-trichloropropane ug/kg	5	ND	
103-65-1	n-propylbenzene ug/kg	5	ND	
106-86-1	Bromobenzene ug/kg	5	ND	
95-49-8	2-chlorotoluene ug/kg	5	ND	
106-67-8	1,3,5-trimethylbenzene ug/kg	5	4.0	J
106-43-4	4-chlorotoluene ug/kg	5	ND	
98-06-6	tert-butylbenzene ug/kg	5	ND	
95-63-6	1,2,4-trimethylbenzene ug/kg	5	2.0	J
135-98-8	sec-butylbenzene ug/kg	5	1.5	J
99-87-8	p-isopropyltoluene ug/kg	5	ND	
541-73-1	1,3-dichlorobenzene ug/kg	5	ND	
106-46-7	1,4-dichlorobenzene ug/kg	5	ND	
104-51-8	n-butylbenzene ug/kg	5	ND	
95-50-1	1,2-dichlorobenzene ug/kg	5	ND	
96-12-8	1,2-dibromo-3-chloropropane ug/kg	5	ND	
120-82-1	1,2,4-trichlorobenzene ug/kg	5	ND	
87-68-3	Hexachlorobutadiene ug/kg	5	ND	
91-20-3	Naphthalene ug/kg	5	ND	
87-61-6	1,2,3-trichlorobenzene ug/kg	5	ND	
Surrogate	Dibromofluoromethane %Recovered		111.1 Pass	
Surrogate	Toluene-d8 %Recovered		96.0 Pass	
Surrogate	4-bromofluorobenzene %Recovered		95.0 Pass	

VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 236327
 Job No : 146588
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : TP3 1.3
 Sample Matrix : SOIL
 Vial No : 16

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\2V-DATA\UNED2\2V0606021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 06/09/2002

CAS NO	Compound	NPL	Result	Flags
75-71-8	Dichlorodifluoromethane ug/kg	5	ND	
74-87-3	Chloromethane ug/kg	5	ND	
75-00-3	Chloroethane ug/kg	5	ND	
74-83-9	Bromomethane ug/kg	5	ND	
75-89-4	Trichlorofluoromethane ug/kg	5	ND	
75-35-4	1,1-Dichloroethene ug/kg	5	ND	
75-09-2	Dichloromethane ug/kg	5	1.3	J
156-60-9	Trans-1,2-dichloroethene ug/kg	5	ND	
75-34-3	1,1-Dichloroethane ug/kg	5	ND	
156-58-2	Cis-1,2-dichloroethene ug/kg	5	ND	
594-20-7	2,2-Dichloropropane ug/kg	5	ND	
67-66-3	Chloroform ug/kg	5	ND	
74-97-5	Bromochloromethane ug/kg	5	1.3	J
71-55-6	1,1,1-Trichloroethane ug/kg	5	ND	
563-58-8	1,1-Dichloropropene ug/kg	5	ND	
107-06-2	1,2-Dichloroethane ug/kg	5	ND	
71-43-2	Benzene ug/kg	5	ND	
78-87-5	1,2-Dichloropropane ug/kg	5	ND	
79-01-6	Trichloroethene ug/kg	5	ND	
75-27-4	Bromodichloromethane ug/kg	5	ND	
74-95-3	Dibromomethane ug/kg	5	ND	
10061-01-5	Cis-1,3-dichloropropene ug/kg	5	ND	
108-88-3	Toluene ug/kg	5	2.6	J
10061-02-6	Trans-1,3-dichloropropene ug/kg	5	ND	
79-00-5	1,1,2-trichloroethane ug/kg	5	ND	
56-23-5	Carbon Tetrachloride ug/kg	5	ND	
75-01-4	Vinyl Chloride ug/kg	5	ND	
124-28-9	1,3-dichloropropane ug/kg	5	ND	
127-18-4	Tetrachloroethene ug/kg	5	ND	
124-48-1	Dibromochloromethane ug/kg	5	ND	
106-93-4	1,2-dibromoethane ug/kg	5	ND	
108-90-7	Chlorobenzene ug/kg	5	ND	
630-20-8	1,1,1,2-tetrachloroethane ug/kg	5	ND	
100-41-4	Ethylbenzene ug/kg	5	5.3	
1330-20-7	m,p-xylene ug/kg	10	17.6	
95-47-6	o-xylene ug/kg	5	4.2	J
100-42-5	Styrene ug/kg	5	ND	
75-25-2	Bromoform ug/kg	5	ND	

STL COVENTRY



VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name	: Celtic Technologies Ltd	Method	: EPA 8260 MODIFIED
Lab Sample ID	: 236327	Data Type	: MS DATA
Job No	: 146586	Data Path	: D:\2V-DATA\JUNE02\2V050602\
Sample Location	: Celtic Technologies Ltd	Quant Type	: ISTD
Client Sample ID	: TP3 1.3	Accreditation Status	: UKAS
Sample Matrix	: SOIL	Dilution Factor	: 1
Vial No	: 16	Report Date	: 06/06/2002

CAS NO	Compound	Limit	Result	Flags
98-82-8	Isopropylbenzene ug/kg	5	ND	
79-34-5	1,1,2,2-tetrachloroethane ug/kg	5	ND	
96-18-4	1,2,3-trichloropropane ug/kg	5	ND	
103-65-1	n-propylbenzene ug/kg	5	ND	
108-86-1	Bromobenzene ug/kg	5	ND	
95-49-8	2-chlorotoluene ug/kg	5	ND	
108-67-8	1,3,5-trimethylbenzene ug/kg	5	7.5	
106-43-4	4-chlorotoluene ug/kg	5	ND	
93-06-6	tert-butylbenzene ug/kg	5	ND	
95-63-6	1,2,4-trimethylbenzene ug/kg	5	3.9	J
135-98-8	sec-butylbenzene ug/kg	5	2.9	J
99-87-6	p-isopropyltoluene ug/kg	5	ND	
541-73-1	1,3-dichlorobenzene ug/kg	5	ND	
106-46-7	1,4-dichlorobenzene ug/kg	5	ND	
104-51-8	n-butylbenzene ug/kg	5	ND	
95-50-1	1,2-dichlorobenzene ug/kg	5	ND	
96-12-8	1,2-dibromo-3-chloropropane ug/kg	5	ND	
120-82-1	1,2,4-trichlorobenzene ug/kg	5	ND	
87-68-3	Hexachlorobutadiene ug/kg	5	ND	
91-20-3	Naphthalene ug/kg	5	ND	
87-61-6	1,2,3-trichlorobenzene ug/kg	5	ND	
Surrogate	Dibromofluoromethane %Recovered		115.8 Pass	
Surrogate	Toluene-d8 %Recovered		92.3 Pass	
Surrogate	4-bromofluorobenzene %Recovered		95.9 Pass	

Please note : Result of ND is Not Detectable

For Surrogate Compounds 50 ug/kg added, lower limit is 75% and higher limit is 125%

Explanation of compound flags :

J : Compound is detectable but is below normal reporting limit

E : Result is above the calibrated range and is therefore an estimate

B : Compound also detected in Blank extract

D : Sample was diluted and re-analysed to obtain a valid result for this compound

SEMI-VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 236324
 Job No : 146588
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : AQC SPIKE
 Sample Matrix : SOIL
 Vial No : 11

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\060602\
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

Sample	Compound	Unit	Result	Unit
108-95-2	Phenol mg/kg	1.0	19.8	
111-44-4	Bis(2-chloroethyl)ether mg/kg	1.0	ND	
95-57-8	2-chlorophenol mg/kg	1.0	19.5	
106-46-7	1,4-Dichlorobenzene mg/kg	1.0	18.6	
541-73-1	1,3-Dichlorobenzene mg/kg	1.0	ND	
95-48-7	2-Methylphenol mg/kg	1.0	ND	
106-44-5	4-Methylphenol mg/kg	1.0	ND	
132-64-9	Dibenzofuran mg/kg	1.0	ND	
95-50-1	1,2-Dichlorobenzene mg/kg	1.0	ND	
108-60-1	bis(2-chloroisopropyl)ether mg/kg	1.0	ND	
621-64-7	N-nitroso-di-n-propylamine mg/kg	1.0	18.4	
67-72-1	Hexachloroethane mg/kg	1.0	ND	
98-95-3	Nitrobenzene mg/kg	1.0	ND	
78-59-1	Isophorone mg/kg	1.0	ND	
105-67-9	2,4-dimethylphenol mg/kg	1.0	ND	
88-75-5	2-nitrophenol mg/kg	1.0	ND	
111-91-1	bis(2-chloroethoxy)methane mg/kg	1.0	ND	
120-83-2	2,4-Dichlorophenol mg/kg	1.0	ND	
120-82-1	1,2,4-Trichlorobenzene mg/kg	1.0	19.4	
120-83-2	2,4-Dinitrophenol mg/kg	5.0	ND	
91-20-3	Naphthalene mg/kg	1.0	ND	
87-68-3	Hexachlorobutadiene mg/kg	1.0	ND	
59-50-7	4-Chloro-3-methylphenol mg/kg	2.0	18.2	
91-57-6	2-Methylnaphthalene mg/kg	1.0	ND	
88-06-2	2,4,6-Trichlorophenol mg/kg	1.0	ND	
95-95-4	2,4,5-Trichlorophenol mg/kg	1.0	ND	
91-58-7	2-Chloronaphthalene mg/kg	1.0	ND	
131-11-3	Dimethylphthalate mg/kg	1.0	ND	
606-20-2	2,6-Dinitrotoluene mg/kg	1.0	ND	
208-96-8	Acenaphthylene mg/kg	1.0	ND	
83-32-9	Acenaphthene mg/kg	1.0	18.1	
121-14-2	2,4-Dinitrotoluene mg/kg	1.0	16.7	
84-66-2	Diethylphthalate mg/kg	1.0	ND	
100-02-7	4-Nitrophenol mg/kg	5.0	17.7	
7005-72-3	4-Chlorophenyl phenyl ether mg/kg	1.0	ND	
86-73-7	Fluorene mg/kg	1.0	ND	
86-74-8	Carbazole mg/kg	1.0	ND	

SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
Lab Sample ID : 237910
Job No : 146842
Sample Location : Celtic Technologies Ltd
Client Sample ID : BH1
Sample Matrix : LIQUID
Vial No : 23

Method : EPA 8270 MODIFIED
Data Type : MS DATA
Data Path : D:\HPCHEM\DATA\LUNED2\050
Quant Type : ISTD
Accreditation Status : UKAS
Dilution Factor : 1
Report Date : 07/06/2002

KS No	Compound	ML	Result
108-95-2	Phenol ug/l	1.0	ND
111-44-4	Bis(2-chloroethyl) ether ug/l	1.0	ND
95-57-8	2-chlorophenol ug/l	1.0	ND
541-73-1	1,3 Dichlorobenzene ug/l	1.0	ND
106-46-7	1,4 Dichlorobenzene ug/l	1.0	ND
98-48-7	2-Methylphenol ug/l	1.0	ND
108-44-5	4-Methylphenol ug/l	1.0	ND
132-84-9	Dibenzofuran ug/l	1.0	ND
95-55-1	1,2 Dichlorobenzene ug/l	1.0	ND
108-60-1	bis(2-Chloroisopropyl) ether ug/l	1.0	ND
621-64-7	N-nitrosodi-n-propylamine ug/l	1.0	ND
67-72-1	Hexachloroethane ug/l	1.0	ND
98-95-3	Nitrobenzene ug/l	1.0	ND
78-59-1	Isophorone ug/l	1.0	ND
105-67-9	2,4-dimethylphenol ug/l	1.0	ND
88-75-5	2-nitrophenol ug/l	1.0	ND
111-91-1	bis(2-chloroethoxy)methane ug/l	1.0	ND
120-83-2	2,4-Dichlorophenol ug/l	1.0	ND
120-82-1	1,2,4-Trichlorobenzene ug/l	1.0	ND
120-83-2	2,4-Dinitrophenol ug/l	25.0	ND
91-20-3	Naphthalene ug/l	1.0	ND
87-68-3	Hexachlorobutadiene ug/l	1.0	ND
59-50-7	4-Chloro-3-methylphenol ug/l	2.0	ND
91-06-6	2-Methylnaphthalene ug/l	1.0	ND
88-06-2	2,4,6-Trichlorophenol ug/l	1.0	ND
95-95-4	2,4,5-Trichlorophenol ug/l	1.0	ND
91-58-7	2-Chloronaphthalene ug/l	1.0	ND
131-11-3	Dimethyl phthalate ug/l	1.0	ND
606-20-2	2,6-Dinitrotoluene ug/l	1.0	ND
208-96-8	Acenaphthylene ug/l	1.0	ND
83-32-9	Acenaphthene ug/l	1.0	ND
121-14-2	2,4-Dinitrotoluene ug/l	1.0	ND
84-66-2	Diethyl phthalate ug/l	1.0	ND
100-02-7	4-Nitrophenol ug/l	5.0	ND
7005-72-3	4-Chlorophenyl phenylether ug/l	1.0	ND
88-73-7	Fluorene ug/l	1.0	ND
86-74-8	Carbazole ug/l	1.0	ND

Certificate of Analysis**STL COVENTRY**
**SEVERN
TRENT
SERVICES**
INTERIM REPORT

Sample **4** Laboratory Number : **237913**
 of **4** Report Number : **TH/146842/2002**

Sample Source : **Celtic Technologies Ltd**
 Sample Point Description : **Celtic Technologies Ltd**
 Sample Description : **SPIKE**

Sample Date : Sample Received : **29 May 2002** Analysis Complete :

Test Description	Result	Units	Accreditation	Method
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Analyst Comment for 237913 : Not appropriate for micro analysis
 Please see attached report for SVOC-TIC/VOC AQC SPIKE analysis.
 Please see attached report for TPH results.
 no sample for bromide

Accreditation Codes : * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcom S = Sub-contracted analysis
 For Microbiological determinanda 0 = Not Detected

Signed :

Name :

Date : 13 June 2002

Title :

Certificate of Analysis



STL COVENTRY



INTERIM REPORT

Sample 4 Laboratory Number: 237913
of 4 Report Number: TH/146842/2002

Sample Source: Celtic Technologies Ltd

Sample Point Description: Celtic Technologies Ltd

Sample Description: SPIKE

Sample Date: 25 Sample Received: 29 May 2002 Analysis Complete:

Test Description	Result	Units	Accreditation	Method
Parathion-methyl	399.6	ug/l	C	GE05
Disulphoton	403.8	ug/l	C	GE06
Fenitrothion	388.0	ug/l	C	GE05
Malathion	487.7	ug/l	C	GE05
Parathion ethyl	397.5	ug/l	C	GE05
Chlorfenvinphos	438.5	ug/l	C	GE05
Chlorophenothion	407.0	ug/l	C	GE03
Azinphos-methyl	527.0	ug/l	C	GE05
Aldrin	106	ng/l	C	GE03
Dieldrin	108	ng/l	C	GE03
Heptachlor Epoxide	101	ng/l	C	GE03
Chlordane - alpha	106	ng/l	C	GE03
Dichlobenil	77.7	ng/l	C	GE03
Chlordane gamma	75.9	ng/l	C	GE03
Endosulphan alpha	101	ng/l	C	GE03
Endrin	94.8	ng/l	C	GE03
HCH - alpha	87.4	ng/l	C	GE03
HCH - beta	96.4	ng/l	C	GE03
HCH - gamma	88.7	ng/l	C	GE03
Hexachlorobutadiene	74.6	ng/l	C	GE03
Hexachlorobenzene	59.4	ng/l	C	GE03
Isodrin	106	ng/l	C	GE03
o,p - DDE	75.7	ng/l	C	GE03
o,p - DDT	71.3	ng/l	C	GE03
p,p - TDE	85.8	ng/l	C	GE03
PCB 101	80.4	ng/l	C	GE03
PCB 118	82.3	ng/l	C	GE03
PCB 138	80.3	ng/l	C	GE03
PCB 52	81.6	ng/l	C	GE03
PCB 153	81.6	ng/l	C	GE03
PCB 180	81.8	ng/l	C	GE03
PCB 28	78.6	ng/l	C	GE03
p,p - DDE	123	ng/l	C	GE03
p,p - DDT	87.7	ng/l	C	GE03
p,p - TDE	96.4	ng/l	C	GE03
Teconazene	92.6	ng/l	C	GE03
Triallate	96.6	ng/l	C	GE03
1,2,4-Trichlorobenzene	118	ng/l	C	GE03
Trifluralin	94.5	ng/l	C	GE03
Total Coliforms confirmed	Analyst Comment	cfu/100ml	C	W10
Total Coliform presumpt	Analyst Comment	cfu/100ml	C	W10
Faecal strep confirmed	Analyst Comment	cfu/100ml	C	W7
Faecal strep presumptive	Analyst Comment	cfu/100ml	C	W7

Certificate of Analysis



1814
0887
1228

STL COVENTRY



INTERIM REPORT

Sample 4 Laboratory Number : 237913
of 4 Report Number : TH/146842/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : SPIKE

Sample Date : Sample Received : 29 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
pH	7.0		C	WAS023
Chloride as Cl	418	mg/l	C	WAS036
Ammoniacal Nitrogen as N	58.6	mg/l	C	WAS036
Iron, Total as Fe	40.39	mg/l	C	WAS012
Manganese, Total as Mn	42.07	mg/l	C	WAS012
Aluminium, Total as Al	41.0	mg/l	C	WAS012
Cadmium, Total as Cd	0.776	mg/l	C	WAS012
Chromium, Total as Cr	7.816	mg/l	C	WAS012
Copper, Total as Cu	8.37	mg/l	C	WAS012
Lead, Total as Pb	8.19	mg/l	C	WAS012
Nickel, Total as Ni	7.678	mg/l	C	WAS012
Zinc, Total as Zn	7.76	mg/l	C	WAS012
Calcium, Total as Ca	400	mg/l	C	WAS012
Magnesium as Mg	209	mg/l	C	WAS012
Sodium, Total as Na	173	mg/l	C	WAS012
Potassium, Total as K	127	mg/l	C	WAS012
Total Hardness as CaCO ₃	1869	mg/l	C	WAS012
Hardness, Calcium as CaCO ₃	1001	mg/l	C	WAS012
Detergents, anionic as NaLS	2.2	mg/l	C	WAS020
Detergents, non-ionic	2.53	mg/l	C	WAS032
NVM, light petroleum extract	Analyst Comment	mg/l	C	WAS026
Sulphide as S	5.14	mg/l	C	WAS033
Silver, Total as Ag	8.51	mg/l	C	WAS012
Arsenic, Total as As	0.037	mg/l	C	WAS014
Mercury, Total as Hg	0.0009	mg/l	C	WAS013
Selenium, Total as Se	0.011	mg/l	C	WAS016
Sulphate as SO ₄ (filt)	634	mg/l	C	WAS036
Tin, Total as Sn	0.8	mg/l	C	WAS012
Cyanide, Total as CN	4.4	mg/l	C	WAS018
Titanium, Total as Ti	0.8	mg/l	C	WAS012
Bromide	Analyst Comment	ug/l	C	B
TPH >C6-C40	Analyst Comment	ug/l	C	GE034
VOC	Analyst Comment	ug/l	C	GE032
SVOC with TICs	Analyst Comment	ug/l	C	GE031
Ethylene Glycol	<20	mg/l	C	SOL2
Triazophos	678.8	ug/l	C	GE05
Phorate	378.7	ug/l	C	GE05
Propetamphos	400.1	ug/l	C	GE05
Pirimiphos-methyl	401.4	ug/l	C	GE05
Fenthion	410.5	ug/l	C	GE05
Dichlorvos	425.4	ug/l	C	GE05
Mevinphos	35.7	ug/l	C	GE05
Demeton-s-methyl	439.0	ug/l	C	GE05
Dimethoate	392.1	ug/l	C	GE05
Diazinon	375.4	ug/l	C	GE05

Certificate of Analysis



STL COVENTRY

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INTERIM REPORT

Sample 3 Laboratory Number : 237912
of 4 Report Number : TH/146842/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : BLANK

Sample Date : Sample Received : 29 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
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Analyst Comment for 237912 : NVM - No suitable aqc available for analysis.
Please see attached report for SVOC-TIC/VOC AQC BLANK analysis.
Please see attached report for TPH results.
no sample for bromide

Accreditation Codes : * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinanda 0 = Not Detected

Certificate of Analysis



1314
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1299

STL COVENTRY

SEVERN
TRENT
SERVICES

INTERIM REPORT

Sample 3 Laboratory Number: 237912
of 4 Report Number: TH/146842/2002

Sample Source: Celtic Technologies Ltd
Sample Point Description: Celtic Technologies Ltd
Sample Description: BLANK

Sample Date: Sample Received: 29 May 2002 Analysis Complete:

Test Description	Result	Units	Accreditation	Method
Parathion-methyl	0	ug/l	C	GE05
Disulphoton	0	ug/l	C	GE06
Fenitrothion	0	ug/l	C	GE05
Malathion	0	ug/l	C	GE06
Parathion ethyl	0	ug/l	C	GE05
Chlorfenvinphos	0	ug/l	C	GE05
Carbophenothion	0	ug/l	C	GE03
Azinphos-methyl	0	ug/l	C	GE05
Aldrin	<5	ng/l	C	GE03
Dieldrin	<5	ng/l	C	GE03
Heptachlor Epoxide	6.6	ng/l	C	GE03
Chlordane - alpha	<5	ng/l	C	GE03
Dichlobenil	24.7	ng/l	C	GE03
Chlordane gamma	<5	ng/l	C	GE03
Endosulphan alpha	<5	ng/l	C	GE03
Endrin	<5	ng/l	C	GE03
HCH - alpha	<5	ng/l	C	GE03
HCH - beta	<5	ng/l	C	GE03
HCH - gamma	<5	ng/l	C	GE03
Hexachlorobutadiene	<5	ng/l	C	GE03
Hexachlorobenzene	<5	ng/l	C	GE03
Isodrin	<5	ng/l	C	GE03
o,p - DDE	<5	ng/l	C	GE03
o,p - DDT	31.9	ng/l	C	GE03
o,p - TDE	<5	ng/l	C	GE03
PCB 101	<5	ng/l	C	GE03
PCB 118	<5	ng/l	C	GE03
PCB 138	<5	ng/l	C	GE03
PCB 52	<5	ng/l	C	GE03
PCB 153	<5	ng/l	C	GE03
PCB 180	<5	ng/l	C	GE03
PCB 28	<5	ng/l	C	GE03
p,p - DDE	<5	ng/l	C	GE03
p,p - DDT	<5	ng/l	C	GE03
p,p - TDE	<5	ng/l	C	GE03
Tecnazene	<5	ng/l	C	GE03
Triallate	5.6	ng/l	C	GE03
1,2,4-Trichlorobenzene	<5	ng/l	C	GE03
Trifluralin	9.0	ng/l	C	GE03
Total Coliforms confirmed	0	cfu/100ml	C	W10
Total Coliform presumptive	0	cfu/100ml	C	W10
Faecal strep confirmed	0	cfu/100ml	C	W7
Faecal strep presumptive	0	cfu/100ml	C	W7



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STL COVENTRY

SEVERN

TRENT

SERVICES

INTERIM REPORT

Sample 3 Laboratory Number: 237912
of 4 Report Number: TH/146842/2002

Sample Source : Celtic Technologies Ltd
Sample Point/Description : Celtic Technologies Ltd
Sample Description : BLANK

Sample Date: Sample Received: **29 May 2002** Analysis Complete:

Test Description	Result	Units	Accreditation	Method
pH	8.2		C	WAS023
Chloride as Cl	<2	mg/l	C	WAS036
Ammoniacal Nitrogen as N	0.4	mg/l	C	WAS036
Iron, Total as Fe	<0.05	mg/l	C	WAS012
Manganese, Total as Mn	<0.04	mg/l	C	WAS012
Aluminium, Total as Al	<0.1	mg/l	C	WAS012
Cadmium, Total as Cd	<0.001	mg/l	C	WAS012
Chromium, Total as Cr	<0.005	mg/l	C	WAS012
Copper, Total as Cu	<0.02	mg/l	C	WAS012
Lead, Total as Pb	<0.01	mg/l	C	WAS012
Nickel, Total as Ni	<0.007	mg/l	C	WAS012
Zinc, Total as Zn	<0.03	mg/l	C	WAS012
Calcium, Total as Ca	<2	mg/l	C	WAS012
Magnesium as Mg	<1	mg/l	C	WAS012
Sodium, Total as Na	<2	mg/l	C	WAS012
Potassium, Total as K	<1	mg/l	C	WAS012
Total Hardness as CaCO3	<15	mg/l	C	WAS012
Hardness, Calcium as CaCO3	<5	mg/l	C	WAS012
Detergents, anionic as NaLS	<0.3	mg/l	C	WAS020
Detergents, non-ionic	<0.5	mg/l	C	WAS032
NVM, light petroleum extract	Analyst Comment	mg/l	C	WAS026
Sulphide as S	<0.01	mg/l	C	WAS033
Silver, Total as Ag	<0.02	mg/l	C	WAS012
Arsenic, Total as As	<0.001	mg/l	C	WAS014
Mercury, Total as Hg	<0.0001	mg/l	C	WAS013
Selenium, Total as Se	<0.001	mg/l	C	WAS015
Sulphate as SO4 (filt)	<0.3	mg/l	C	WAS036
Tin, Total as Sn	<0.1	mg/l	C	WAS012
Cyanide, Total as CN	<0.1	mg/l	C	WAS018
Titanium, Total as Ti	<0.1	mg/l	C	WAS012
Bromide	Analyst Comment	ug/l	C	
TPH >C6-C40	Analyst Comment	ug/l	C	GE034
VOC	Analyst Comment	ug/l	C	GE032
SVOC with TICs	Analyst Comment	ug/l	C	GE031
Ethylene Glycol	<20	mg/l	C	SOL2
Triazophos	0	ug/l	C	GE05
Phorate	0	ug/l	C	GE05
Propetamphos	0	ug/l	C	GE05
Pirimiphos-methyl	0	ug/l	C	GE05
Fenthion	1.94	ug/l	C	GE05
Dichlorvos	0	ug/l	C	GE05
Mevinphos	0	ug/l	C	GE05
Demeton-s-methyl	0	ug/l	C	GE05
Dimethoate	0	ug/l	C	GE05
Diazinon	0	ug/l	C	GE05

Certificate of Analysis



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STL COVENTRY

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SERVICES

INTERIM REPORT

Sample 2 Laboratory Number : 237911
of 4 Report Number : TH/146942/2002

Sample Source : Celtic Technologies Ltd

Sample Point Description : Celtic Technologies Ltd

Sample Description : BH2

Sample Date : 29 May 2002 Sample Received : 29 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
------------------	--------	-------	---------------	--------

Analyst Comment for 237911 :	Please see attached report for SVOC-TIC/VOC analysis. Please see attached report for TPH results. No results reported for OP analysis due to AQC breach. the indication for the unreported compounds in the op analysis is <0.125. Unable to report results for PCB 101, PCB 118, PCB 138, PCB 153, PCB 28, PCB 52, hcb, hcbd, op-ddt, op-dde and g-chlordane due to AQC breaches, the indicated results are all <10 ng/l.			
------------------------------	---	--	--	--

Accreditation Codes : * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis

For Microbiological determinands 0 = Not Detected

Certificate of Analysis



STL COVENTRY

SEVERN

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SERVICES

INTERIM REPORT

Sample 2 Laboratory Number : 237911
of 4 Report Number : TH/146842/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : BH2

Sample Date : 29 May 2002 Sample Received : 29 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Parathion-methyl	Analyst Comment	ug/l	C	GE05
Disulphoton	<0.125	ug/l	C	GE05
Fenitrothion	Analyst Comment	ug/l	C	GE05
Malathion	<0.125	ug/l	C	GE05
Parathion ethyl	<0.125	ug/l	C	GE05
Chlorfenvinphos	<0.125	ug/l	C	GE05
Chlorophenothion	<0.125	ug/l	C	GE03
Azinphos-methyl	Analyst Comment	ug/l	C	GE05
Aldrin	<10	ng/l	C	GE03
Dieldrin	<10	ng/l	C	GE03
Heptachlor Epoxide	<10	ng/l	C	GE03
Chlordane - alpha	<10	ng/l	C	GE03
Dichlobenil	<10	ng/l	C	GE03
Chlordane gamma	Analyst Comment	ng/l	C	GE03
Endosulphan alpha	<10	ng/l	C	GE03
Endrin	<10	ng/l	C	GE03
HCH - alpha	<10	ng/l	C	GE03
HCH - beta	<10	ng/l	C	GE03
HCH - gamma	<10	ng/l	C	GE03
Hexachlorobutadiene	Analyst Comment	ng/l	C	GE03
Hexachlorobenzene	Analyst Comment	ng/l	C	GE03
Isodrin	<10	ng/l	C	GE03
o,p - DDE	Analyst Comment	ng/l	C	GE03
o,p - DDT	Analyst Comment	ng/l	C	GE03
p,p - TDE	<10	ng/l	C	GE03
PCB 101	Analyst Comment	ng/l	C	GE03
PCB 118	Analyst Comment	ng/l	C	GE03
PCB 138	Analyst Comment	ng/l	C	GE03
PCB 52	Analyst Comment	ng/l	C	GE03
PCB 153	Analyst Comment	ng/l	C	GE03
PCB 180	<10	ng/l	C	GE03
PCB 28	Analyst Comment	ng/l	C	GE03
p,p - DDE	<10	ng/l	C	GE03
p,p - DDT	<10	ng/l	C	GE03
p,p - TDE	<10	ng/l	C	GE03
Technazene	<10	ng/l	C	GE03
Triallate	<10	ng/l	C	GE03
1,2,4-Trichlorobenzene	<10	ng/l	C	GE03
Trifluralin	11.6	ng/l	C	GE03
Total Coliforms confirmed	340	cfu/100ml	C	W10
Total Coliform presumpt	340	cfu/100ml	C	W10
Faecal strep confirmed	60	cfu/100ml	C	W7
Faecal strep presumptive	60	cfu/100ml	C	W7

Certificate of Analysis



1314
09537
1229

STL COVENTRY

SEVERN
TRENT
SERVICES

INTERIM REPORT

Sample 2 Laboratory Number: 237911
of 4 Report Number: TH 146842/2002

Sample Source: Celtic Technologies Ltd
Sample Point Description: Celtic Technologies Ltd
Sample Description: BH2

Sample Date: 29 May 2002 Sample Received: 29 May 2002 Analysis Complete:

Test Description	Result	Units	Accreditation	Method
pH	6.7		C	WAS023
Chloride as Cl	33	mg/l	C	WAS036
Ammoniacal Nitrogen as N	0.4	mg/l	C	WAS036
Iron, Total as Fe	0.12	mg/l	C	WAS012
Manganese, Total as Mn	0.95	mg/l	C	WAS012
Aluminium, Total as Al	0.2	mg/l	C	WAS012
Cadmium, Total as Cd	<0.001	mg/l	C	WAS012
Chromium, Total as Cr	<0.005	mg/l	C	WAS012
Copper, Total as Cu	0.03	mg/l	C	WAS012
Lead, Total as Pb	<0.01	mg/l	C	WAS012
Nickel, Total as Ni	<0.007	mg/l	C	WAS012
Zinc, Total as Zn	0.04	mg/l	C	WAS012
Calcium, Total as Ca	85	mg/l	C	WAS012
Magnesium as Mg	9	mg/l	C	WAS012
Sodium, Total as Na	29	mg/l	C	WAS012
Potassium, Total as K	8	mg/l	C	WAS012
Total Hardness as CaCO3	248	mg/l	C	WAS012
Hardness, Calcium as CaCO3	212	mg/l	C	WAS012
Detergents, anionic as NaLS	<0.3	mg/l	C	WAS020
Detergents, non-ionic	11.1	mg/l	C	WAS032
NVM, light petroleum extract	17	mg/l	C	WAS026
Sulphide as S	<0.01	mg/l	C	WAS033
Silver, Total as Ag	<0.02	mg/l	C	WAS012
Arsenic, Total as As	<0.001	mg/l	C	WAS014
Mercury, Total as Hg	0.0011	mg/l	C	WAS013
Selenium, Total as Se	0.001	mg/l	C	WAS015
Sulphate as SO4 (filt)	49	mg/l	C	WAS036
Tin, Total as Sn	<0.1	mg/l	C	WAS012
Cyanide, Total as CN	<0.1	mg/l	C	WAS018
Titanium, Total as Ti	<0.1	mg/l	C	WAS012
Bromide	286	ug/l	C	WAS012
TPH >C6-C40	Analyst Comment	ug/l	C	GE034
VOC	Analyst Comment	ug/l	C	GE032
SVOC with TICs	Analyst Comment	ug/l	C	GE031
Ethylene Glycol	NO TESTS	mg/l	C	SOL2
Triazophos	Analyst Comment	ug/l	C	GE05
Phorate	<0.125	ug/l	C	GE05
Propetamphos	<0.125	ug/l	C	GE06
Pirimiphos-methyl	<0.125	ug/l	C	GE05
Fenthion	<0.125	ug/l	C	GE05
Dichlorvos	<0.125	ug/l	C	GE05
Mevinphos	Analyst Comment	ug/l	C	GE05
Demeton-s-methyl	Analyst Comment	ug/l	C	GE05
Dimethoate	<0.125	ug/l	C	GE05
Diazinon	<0.125	ug/l	C	GE05

1

2



3



Groundwater Analysis

**SAC SCIENTIFIC**

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1211

Bronya Taylor
Severn Trent Laboratories
Head Office
Torrington Avenue
Coventry
CV4 9GU

Date issued : 13/06/2002

Job Number : J200_007854
Date Received : 06/06/2002

Page 2 of 2

Purchase Order Number (if given) : 32718

QUALITY ASSURANCE REPORT

Your Reference : Quality Assurance Sample

SAC Sample Ref : 1020600121

Sample Matrix : Soil

Test	Result	Units	Spike Level	% Recovery	Flag
Organophosphorus Pesticides					
Azinphos-ethyl	0.329	mg/Kg	0.400	82	
Azinphos-methyl	0.555	mg/Kg	0.800	89	
Carbophenathion	0.387	mg/Kg	0.400	97	
Chlorfenvinphos	0.435	mg/Kg	0.400	109	
Chlorpyrifos	0.414	mg/Kg	0.400	104	
Chlorpyrifos-methyl	0.390	mg/Kg	0.400	98	
Diazinon	0.450	mg/Kg	0.400	113	
Dichlorvos	0.339	mg/Kg	0.400	85	
Dimethoate	0.361	mg/Kg	0.400	90	
Ethion	0.387	mg/Kg	0.400	97	
Fenitrothion	0.365	mg/Kg	0.400	91	
Fenthion	0.413	mg/Kg	0.400	103	
Malathion	0.367	mg/Kg	0.400	97	
Mevinphos	0.400	mg/Kg	0.400	100	
Parathion	0.371	mg/Kg	0.400	93	
Parathion-methyl	0.364	mg/Kg	0.400	91	
Phosalone	0.334	mg/Kg	0.400	84	
Pirimiphos-methyl	0.427	mg/Kg	0.400	107	
Propetamphos	0.401	mg/Kg	0.400	100	
Triazophos	0.310	mg/Kg	0.400	78	



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**Bronya Taylor**

Severn Trent Laboratories
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Date Issued : 13/06/2002

Job Number : J200_007834
Date Received : 06/06/2002

Page 1 of 2

Purchase Order Number (if given) : 32718

QUALITY ASSURANCE REPORT

Your Reference : Procedural Blank

SAC Sample Ref : 1020600120

Sample Matrix : Soil

Test	Result	Units
Organophosphorus Pesticides		
Azinphos-ethyl	<0.100	mg/Kg
Azinphos-methyl	<0.200	mg/Kg
Carbophenathion	<0.100	mg/Kg
Chlorfenvinphos	<0.100	mg/Kg
Chlorpyrifos	<0.100	mg/Kg
Chlorpyrifos-methyl	<0.100	mg/Kg
Diazinon	<0.100	mg/Kg
Dichlorvos	<0.100	mg/Kg
Dimethoate	<0.100	mg/Kg
Ethion	<0.100	mg/Kg
Fenitrothion	<0.100	mg/Kg
Fenthion	<0.100	mg/Kg
Malathion	<0.100	mg/Kg
Mevinphos	<0.100	mg/Kg
Parathion	<0.100	mg/Kg
Parathion-methyl	<0.100	mg/Kg
Phosalone	<0.100	mg/Kg
Pirimiphos-methyl	<0.100	mg/Kg
Propetamphos	<0.100	mg/Kg
Triazophos	<0.100	mg/Kg



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Head Office
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CV4 9GU

Date Issued : 13/06/2002

Job Number : J200_007854

Date Received : 06-06-2002

Page 2 of 2

Purchase Order Number (if given) : 32718

ANALYTICAL REPORT

SAC Sample Ref :
Your Reference :

Units

1020600118
236325

1020600119
236326

Organophosphorus Pesticides

SOP 76

Azinphos-ethyl	mg/Kg	<0.100	<0.100
Azinphos-methyl	mg/Kg	<0.200	<0.200
Carbophenanthion	mg/Kg	<0.100	<0.100
Chlorfenvinphos	mg/Kg	<0.100	<0.100
Chlorpyrifos	mg/Kg	<0.100	<0.100
Chlorpyrifos-methyl	mg/Kg	<0.100	<0.100
Diazinon	mg/Kg	<0.100	<0.100
Dichlorvos	mg/Kg	<0.100	<0.100
Dimethoate	mg/Kg	<0.100	<0.100
Ethion	mg/Kg	<0.100	<0.100
Fenitrothion	mg/Kg	<0.100	<0.100
Fenitrothion	mg/Kg	<0.100	<0.100
Malathion	mg/Kg	<0.100	<0.100
Mevinphos	mg/Kg	<0.100	<0.100
Parathion	mg/Kg	<0.100	<0.100
Parathion-methyl	mg/Kg	<0.100	<0.100
Phosalone	mg/Kg	<0.100	<0.100
Pirimiphos-methyl	mg/Kg	<0.100	<0.100
Propetamphos	mg/Kg	<0.100	<0.100
Triazophos	mg/Kg	<0.100	<0.100

NOTE :



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Registered in England No. 49722





Page 1 of 2

Purchase Order Number (if given) : 32718

102060017
237759

Organophosphorus Pesticides	SOP 76		
Azinphos-ethyl	mg/Kg	<0.100	<0.100
Azinphos-methyl	mg/Kg	<0.200	<0.200
Carbophenathion	mg/Kg	<0.100	<0.100
Chlorfenvinphos	mg/Kg	<0.100	<0.100
Chlorpyrifos	mg/Kg	<0.100	<0.100
Chlorpyrifos-methyl	mg/Kg	<0.100	<0.100
Diazinon	mg/Kg	<0.100	<0.100
Dichlorvos	mg/Kg	<0.100	<0.100
Dimethoate	mg/Kg	<0.100	<0.100
Ethion	mg/Kg	<0.100	<0.100
Fenitrothion	mg/Kg	<0.100	<0.100
Fenitlen	mg/Kg	<0.100	<0.100
Malathion	mg/Kg	<0.100	<0.100
Mevinphos	mg/Kg	<0.100	<0.100
Parathion	mg/Kg	<0.100	<0.100
Parathion-methyl	mg/Kg	<0.100	<0.100
Phosalone	mg/Kg	<0.100	<0.100
Phlomisphos-methyl	mg/Kg	<0.100	<0.100
Propelsmphos	mg/Kg	<0.100	<0.100
Thiozophos	mg/Kg	<0.100	<0.100

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Branya Taylor
Severn Trent Laboratories
Head Office
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Coventry
CV4 9GU

Date Issued : 13/06/2002

Job Number : J200_007854
Date Received : 06/06/2002

Page 1 of 1

Purchase Order Number (if given) : 32718

SAMPLE SUMMARY REPORT

The following samples were received at SAC Scientific for analysis :

SAC Sample Ref :	Your Reference :	Sample Matrix :
1020600116	237757	Soil
1020600117	237759	Soil
1020600118	236325	Soil
1020600119	236326	Soil
1020600120	Procedural Blank	Soil
1020600121	Quality Assurance Sample	Soil

All blank and analytical recovery data has been obtained using the same methodology as the submitted samples, and has the same status for UKAS accreditation.

All samples are analysed on an as received basis unless otherwise indicated.

The above sample(s) may have a result flag or flags shown on the report. The following are the result flag definitions:-

c - confirmed

m - matrix interference

sc - sub-contracted

d - duplicate analysis

dw - corrected for dry weight

adw - analysed on a dry weight basis

* - These analyses are not included within the scope of SAC's UKAS accreditation.



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1211

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Date Issued : 13/06/2002

Job Number : J200_007854
Date Received : 06/06/2002

Page 1 of 1

Purchase Order Number (if given) : 32718

Report Contents

This report **MUST** consist of the following :

Sample Summary Report - 1 Page

Analytical Report - 2 Pages

Quality Assurance Report - 2 Pages

Total - 5 Pages

Signed :-

S J Pattinson
Laboratory Manager

Reviewed by :-



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Registered in England No: 48397



**SAC SCIENTIFIC**

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Facsimile Document

From: Stuart J Pattinson
Laboratory Manager

13 June 2002

To: Severn Trent Laboratories
Fax No.: 024 76 856575

For the attention of: Bronya Taylor/Paula

Page 1 of 7

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Registered Office: Queen House, The Ring, Barking, Barking & Dagenham RM12 1AN
Registered in England No: 40722



Tentatively Identified Compound (LSC) Summary Report

Operator ID: AD Date Acquired: 6 Jun 2002 9:45 pm
Data File: D:\DATA\JUNE02\060602\SV010.D
Name: 237759
Misc:
Method: C:\HPCHEM\1\METHODS\JUNE02\060602.M (RTE Integrator)
Title: EPA Method 8270 SVOC's
Library Searched: C:\DATABASE\WILEY275.L

Compound name	CAS No.	Est. Conc Range	Quality
Not Known		12.08 mg/kg	-
Not Known		2.59 mg/kg	-
Not Known		4.75 mg/kg	-
Not Known		47.99 mg/kg	-
Not Known		1.28 mg/kg	-
Not Known		1.10 mg/kg	-
Not Known		2.11 mg/kg	-
Not Known		1.38 mg/kg	-
Not Known		1.07 mg/kg	-
Not Known		1.29 mg/kg	-
Not Known		1.10 mg/kg	-
Not Known		1.24 mg/kg	-

D:\DATA\JUNE02\060602\SV010.D

SEVERN TRENT
LABORATORIES

SEMI-VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237759
 Job No : 146818
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH3/1.6
 Sample Matrix : SOIL
 Vial No : 10

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\0806021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

AS No	Compound	Unit	Result	Pass/Fail
101-55-3	4-Bromophenyl phenyl ether mg/kg	1.0	ND	
118-74-1	Hexachlorobenzene mg/kg	1.0	ND	
87-86-5	Pentachlorophenol mg/kg	5.0	ND	
85-01-8	Phenanthrene mg/kg	1.0	ND	
120-12-7	Anthracene mg/kg	1.0	ND	
84-74-2	di-n-Butylphthalate mg/kg	1.0	ND	
206-44-0	Fluoranthene mg/kg	1.0	ND	
129-00-0	Pyrene mg/kg	1.0	ND	
85-53-3	Butylbenzylphthalate mg/kg	1.0	ND	
56-55-3	Benzo(a)anthracene mg/kg	1.0	ND	
218-01-9	Chrysene mg/kg	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate mg/kg	1.0	ND	
117-84-0	di-n-octylphthalate mg/kg	1.0	ND	
206-99-2	Benzo(b)fluoranthene mg/kg	1.0	ND	
207-08-9	Benzo(k)fluoranthene mg/kg	1.0	ND	
50-32-8	Benzo(a)pyrene mg/kg	1.0	ND	
193-39-5	Indeno(1,2,3-cd)pyrene mg/kg	1.0	ND	
53-70-3	Dibenz(a,h)anthracene mg/kg	1.0	ND	
191-24-2	Benzo(g,h,i)perylene mg/kg	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		98.1	Pass
Surrogate	Phenol-d6 %Recovered		108.2	Pass
Surrogate	Nitrobenzene-d6 %Recovered		105.5	Pass
Surrogate	2-Fluorobiphenyl %Recovered		101.6	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		72.4	Pass
Surrogate	Terphenyl-d14 %Recovered		100.1	Pass

Please note : Result of ND is Not Detectable

For Surrogate Compounds 50 ug/kg added, lower limit is 75% and higher limit is 125%

Explanation of compound flags :

J : Compound is detectable but is below normal reporting limit

E : Result is above the calibrated range and is therefore an estimate

B : Compound also detected in Blank extract

D : Sample was diluted and re-analysed to obtain a valid result for this compound

SEMI-VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237759
 Job No : 146818
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH3/1.5
 Sample Matrix : SOIL
 Vial No : 10

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\060802\1
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

AS NO	Compound	Conc	Result	Flag
108-95-2	Phenol mg/kg	1.0	ND	
111-44-4	Bis(2-chloroethyl)ether mg/kg	1.0	ND	
95-57-8	2-chlorophenol mg/kg	1.0	ND	
106-46-7	1,4-Dichlorobenzene mg/kg	1.0	ND	
541-73-1	1,3-Dichlorobenzene mg/kg	1.0	ND	
95-48-7	2-Methylphenol mg/kg	1.0	ND	
106-44-5	4-Methylphenol mg/kg	1.0	ND	
132-64-9	Dibenzofuran mg/kg	1.0	ND	
95-50-1	1,2-Dichlorobenzene mg/kg	1.0	ND	
108-60-1	bis(2-chloroisopropyl)ether mg/kg	1.0	ND	
621-64-7	N-nitroso-di-n-propylamine mg/kg	1.0	ND	
67-72-1	Hexachloroethane mg/kg	1.0	ND	
98-95-3	Nitrobenzene mg/kg	1.0	ND	
78-59-1	Isophorone mg/kg	1.0	1.4	
105-67-9	2,4-dimethylphenol mg/kg	1.0	ND	
88-75-5	2-nitrophenol mg/kg	1.0	ND	
111-91-1	bis(2-chloroethoxy)methane mg/kg	1.0	ND	
120-83-2	2,4-Dichlorophenol mg/kg	1.0	ND	
120-82-1	1,2,4-Trichlorobenzene mg/kg	1.0	ND	
120-83-2	2,4-Dinitrophenol mg/kg	5.0	ND	
91-20-3	Naphthalene mg/kg	1.0	ND	
87-68-3	Hexachlorobutadiene mg/kg	1.0	ND	
59-50-7	4-Chloro-3-methylphenol mg/kg	2.0	ND	
91-57-6	2-Methylnaphthalene mg/kg	1.0	ND	
88-06-2	2,4,6-Trichlorophenol mg/kg	1.0	ND	
95-95-4	2,4,5-Trichlorophenol mg/kg	1.0	ND	
91-58-7	2-Chloronaphthalene mg/kg	1.0	ND	
131-11-3	Dimethylphthalate mg/kg	1.0	ND	
606-20-2	2,6-Dinitrotoluene mg/kg	1.0	ND	
208-96-8	Acenaphthylene mg/kg	1.0	ND	
83-32-9	Acenaphthene mg/kg	1.0	ND	
121-14-2	2,4-Dinitrotoluene mg/kg	1.0	ND	
84-66-2	Diethylphthalate mg/kg	1.0	ND	
100-02-7	4-Nitrophenol mg/kg	5.0	ND	
7005-72-3	4-Chlorophenyl phenyl ether mg/kg	1.0	ND	
86-73-7	Fluorene mg/kg	1.0	ND	
86-74-8	Carbazole mg/kg	1.0	ND	
86-30-6	n-Nitrosodiphenylamine mg/kg	1.0	ND	

Tentatively Identified Compound (LSC) Summary Report

Operator ID: AD Date Acquired: 6 Jun 2002 9:11 pm
 Data File: D:\DATA\JUNE02\060602\SV009.D
 Name: 237757
 LSC:
 Method: C:\HPCHEM\1\METHODS\JUNE02\060602.M (RTE Integrator)
 Title: EPA Method 8270 SVOC's
 Library Searched: C:\DATABASE\WILEY275.L

Compound name	CAS No.	Est. Conc Range	Quality
ot Known		8.85 mg/kg	-
ot Known		1.68 mg/kg	-
ot Known		2.84 mg/kg	-
,5-Heptadien-4-one, 2,6-dimethyl-	000504-20-1	6.07 mg/kg	87
ot Known		50.98 mg/kg	-
ot Known		2.10 mg/kg	-
ot Known		1.32 mg/kg	-
ot Known		1.02 mg/kg	-
ot Known		0.97 mg/kg	-

D:\DATA\JUNE02\060602\SV009.D

SEVERN TRENT
LABORATORIES



SEMI-VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237757
 Job No : 146818
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH4/1.5
 Sample Matrix : SOIL
 Vial No : 9

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\060802\1
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

CAS NO	Compound	MR	Result	Ends
101-85-3	4-Bromophenyl phenyl ether mg/kg	1.0	ND	
118-74-1	Hexachlorobenzene mg/kg	1.0	ND	
87-86-8	Pentachlorophenol mg/kg	5.0	ND	
85-01-8	Phenanthrene mg/kg	1.0	ND	
120-12-7	Anthracene mg/kg	1.0	ND	
84-74-2	di-n-Butylphthalate mg/kg	1.0	ND	
206-44-0	Fluoranthene mg/kg	1.0	ND	
129-00-0	Pyrene mg/kg	1.0	ND	
85-68-7	Butylbenzylphthalate mg/kg	1.0	ND	
56-55-3	Benzo(a)anthracene mg/kg	1.0	ND	
218-01-9	Chrysene mg/kg	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate mg/kg	1.0	ND	
117-84-0	di-n-octylphthalate mg/kg	1.0	ND	
205-99-2	Benzo(b)fluoranthene mg/kg	1.0	ND	
207-08-9	Benzo(k)fluoranthene mg/kg	1.0	ND	
50-32-8	Benzo(a)pyrene mg/kg	1.0	ND	
193-39-6	Indeno(1,2,3-cd)pyrene mg/kg	1.0	ND	
53-70-3	Dibenz(a,h)anthracene mg/kg	1.0	ND	
191-24-2	Benzo(g,h,i)perylene mg/kg	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		103.3 Pass	
Surrogate	Phenol-d6 %Recovered		111.9 Pass	
Surrogate	Nitrobenzene-d5 %Recovered		103.3 Pass	
Surrogate	2-Fluorobiphenyl %Recovered		95.9 Pass	
Surrogate	2,4,6-Tribromophenol %Recovered		71.2 Pass	
Surrogate	Terphenyl-d14 %Recovered		96.6 Pass	

SEMI-VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
Lab Sample ID : 237757
Job No : 146818
Sample Location : Celtic Technologies Ltd
Client Sample ID : BH4/1.5
Sample Matrix : SOIL
Vial No : 9

Method : EPA 8270 MODIFIED
Data Type : MS DATA
Data Path : D:\DATA\JUNE02\060602\1
Quant Type : ISTD
Accreditation Status : UKAS
Dilution Factor : 1
Report Date : 07/06/2002

AS No	Compound	MRL	Result	Flags
108-95-2	Phenol mg/kg	1.0	ND	
111-44-4	Bis(2-chloroethyl)ether mg/kg	1.0	ND	
95-57-8	2-chlorophenol mg/kg	1.0	ND	
106-46-7	1,4-Dichlorobenzene mg/kg	1.0	ND	
541-73-1	1,3-Dichlorobenzene mg/kg	1.0	ND	
95-48-7	2-Methylphenol mg/kg	1.0	ND	
106-44-5	4-Methylphenol mg/kg	1.0	ND	
132-54-9	Dibenzofuran mg/kg	1.0	ND	
95-5-5	1,2-Dichlorobenzene mg/kg	1.0	ND	
108-60-1	bis(2-chloroisopropyl)ether mg/kg	1.0	ND	
621-64-7	N-nitroso-di-n-propylamine mg/kg	1.0	ND	
67-72-1	Hexachloroethane mg/kg	1.0	ND	
98-95-3	Nitrobenzene mg/kg	1.0	ND	
78-59-1	Isophorone mg/kg	1.0	2.6	
105-67-9	2,4-dimethylphenol mg/kg	1.0	ND	
88-75-5	2-nitrophenol mg/kg	1.0	ND	
111-91-1	bis(2-chloroethoxy)methane mg/kg	1.0	ND	
120-83-2	2,4-Dichlorophenol mg/kg	1.0	ND	
120-82-1	1,2,4-Trichlorobenzene mg/kg	1.0	ND	
120-83-2	2,4-Dinitrophenol mg/kg	5.0	ND	
91-20-3	Naphthalene mg/kg	1.0	ND	
87-68-3	Hexachlorobutadiene mg/kg	1.0	ND	
59-50-7	4-Chloro-3-methylphenol mg/kg	2.0	ND	
91-00-0	2-Methylnaphthalene mg/kg	1.0	ND	
88-06-2	2,4,6-Trichlorophenol mg/kg	1.0	ND	
95-95-4	2,4,5-Trichlorophenol mg/kg	1.0	ND	
91-58-7	2-Chloronaphthalene mg/kg	1.0	ND	
131-11-3	Dimethylphthalate mg/kg	1.0	ND	
606-20-2	2,6-Dinitrotoluene mg/kg	1.0	ND	
208-96-8	Acenaphthylene mg/kg	1.0	ND	
83-32-9	Acenaphthene mg/kg	1.0	ND	
121-14-2	2,4-Dinitrotoluene mg/kg	1.0	ND	
84-66-2	Diethylphthalate mg/kg	1.0	ND	
100-02-7	4-Nitrophenol mg/kg	5.0	ND	
7005-72-3	4-Chlorophenyl phenyl ether mg/kg	1.0	ND	
86-73-7	Fluorene mg/kg	1.0	ND	
86-74-8	Carbazole mg/kg	1.0	ND	
86-30-6	n-Nitrosodiphenylamine mg/kg	1.0	ND	

SEMI-VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name	: Celtic Technologies Ltd	Method	: EPA 8270 MODIFIED
Lab Sample ID	: 237754	Data Type	: MS DATA
Job No	: 148818	Data Path	: D:\DATA\JUNE02\060802\
Sample Location	: Celtic Technologies Ltd	Quant Type	: ISTD
Client Sample ID	: AQC BLANK	Accreditation Status	: UKAS
Sample Matrix	: SOIL	Dilution Factor	: 1
Vial No	: 13	Report Date	: 07/06/2002

CAS No	Compound	Unit	Result	Flags
101-55-3	4-Bromophenyl phenyl ether mg/kg	1.0	ND	
118-74-1	Hexachlorobenzene mg/kg	1.0	ND	
87-86-5	Pentachlorophenol mg/kg	5.0	ND	
85-01-8	Phenanthrene mg/kg	1.0	ND	
120-12-7	Anthracene mg/kg	1.0	ND	
84-74-2	di-n-Butylphthalate mg/kg	1.0	ND	
206-44-0	Fluoranthene mg/kg	1.0	ND	
129-00-0	Pyrene mg/kg	1.0	ND	
85-68-7	Butylbenzylphthalate mg/kg	1.0	ND	
56-55-3	Benzo(a)anthracene mg/kg	1.0	ND	
218-01-9	Chrysene mg/kg	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate mg/kg	1.0	ND	
117-84-0	di-n-octylphthalate mg/kg	1.0	ND	
205-99-2	Benzo(b)fluoranthene mg/kg	1.0	ND	
207-08-9	Benzo(k)fluoranthene mg/kg	1.0	ND	
50-32-8	Benzo(a)pyrene mg/kg	1.0	ND	
193-39-5	Indeno(1,2,3-cd)pyrene mg/kg	1.0	ND	
53-70-3	Dibenz(a,h)anthracene mg/kg	1.0	ND	
191-24-2	Benzo(g,h,i)perylene mg/kg	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		85.9	Pass
Surrogate	Phenol-d6 %Recovered		86.7	Pass
Surrogate	Nitrobenzene-d5 %Recovered		90.8	Pass
Surrogate	2-Fluorobiphenyl %Recovered		95.5	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		51.7	Pass
Surrogate	Terphenyl-d14 %Recovered		81.3	Pass

SEMI-VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
Lab Sample ID : 237754
Job No : 146818
Sample Location : Celtic Technologies Ltd
Client Sample ID : AQC BLANK
Sample Matrix : SOIL
Vial No : 13

Method : EPA 8270 MODIFIED
Data Type : MS DATA
Data Path : D:\DATA\JUNE02\0606021
Quant Type : ISTD
Accreditation Status : UKAS
Dilution Factor : 1
Report Date : 07/06/2002

AS No	Substance	MS	Result	Flags
108-95-2	Phenol mg/kg	1.0	ND	
111-44-4	Bis(2-chloroethyl)ether mg/kg	1.0	ND	
95-57-8	2-chlorophenol mg/kg	1.0	ND	
541-73-1	1,3-Dichlorobenzene mg/kg	1.0	ND	
106-46-7	1,4-Dichlorobenzene mg/kg	1.0	ND	
95-48-7	2-Methylphenol mg/kg	1.0	ND	
106-44-5	4-Methylphenol mg/kg	1.0	ND	
132-64-9	Dibenzofuran mg/kg	1.0	ND	
95-57-8	1,2-Dichlorobenzene mg/kg	1.0	ND	
108-50-1	bis(2-chloroisopropyl)ether mg/kg	1.0	ND	
621-64-7	N-nitroso-di-n-propylamine mg/kg	1.0	ND	
67-72-1	Hexachloroethane mg/kg	1.0	ND	
98-95-3	Nitrobenzene mg/kg	1.0	ND	
78-59-1	Isophorone mg/kg	1.0	ND	
105-67-9	2,4-dimethylphenol mg/kg	1.0	ND	
88-75-5	2-nitrophenol mg/kg	1.0	ND	
111-91-1	bis(2-chloroethoxy)methane mg/kg	1.0	ND	
120-83-2	2,4-Dichlorophenol mg/kg	1.0	ND	
120-82-1	1,2,4-Trichlorobenzene mg/kg	1.0	ND	
120-83-2	2,4-Dinitrophenol mg/kg	5.0	ND	
91-20-3	Naphthalene mg/kg	1.0	ND	
87-68-3	Hexachlorobutadiene mg/kg	1.0	ND	
59-50-7	4-Chloro-3-methylphenol mg/kg	2.0	ND	
91-57-6	2-Methylnaphthalene mg/kg	1.0	ND	
88-75-5	2,4,6-Trichlorophenol mg/kg	1.0	ND	
95-95-4	2,4,5-Trichlorophenol mg/kg	1.0	ND	
91-58-7	2-Chloronaphthalene mg/kg	1.0	ND	
131-11-3	Dimethylphthalate mg/kg	1.0	ND	
606-20-2	2,6-Dinitrotoluene mg/kg	1.0	ND	
208-96-8	Acenaphthylene mg/kg	1.0	ND	
83-32-9	Acenaphthene mg/kg	1.0	ND	
121-14-2	2,4-Dinitrotoluene mg/kg	1.0	ND	
84-86-2	Diethylphthalate mg/kg	1.0	ND	
100-02-7	4-Nitrophenol mg/kg	5.0	ND	
7005-72-3	4-Chlorophenyl phenyl ether mg/kg	1.0	ND	
86-73-7	Fluorene mg/kg	1.0	ND	
86-74-8	Carbazole mg/kg	1.0	ND	
86-30-6	n-Nitrosodiphenylamine mg/kg	1.0	ND	

SEMI-VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237753
 Job No : 146818
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : AQC SPIKE
 Sample Matrix : SOIL
 Vial No : 11

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\060602\1
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

CAS NO	Compound	MRC	Result	Pass/Fail
86-30-6	n-Nitrosodiphenylamine mg/kg	1.0	ND	
101-55-3	4-Bromophenyl phenyl ether mg/kg	1.0	ND	
118-74-1	Hexachlorobenzene mg/kg	1.0	ND	
87-86-6	Pentachlorophenol mg/kg	5.0	12.0	
85-01-8	Phenanthrene mg/kg	1.0	ND	
120-12-7	Anthracene mg/kg	1.0	ND	
84-74-2	di-n-Butylphthalate mg/kg	1.0	ND	
206-44-0	Fluoranthene mg/kg	1.0	ND	
129-00-0	Pyrene mg/kg /	1.0	18.3	
85-68-7	Butylbenzylphthalate mg/kg	1.0	ND	
56-55-3	Benzo(a)anthracene mg/kg	1.0	ND	
218-01-9	Chrysene mg/kg	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate mg/kg	1.0	ND	
117-84-0	di-n-octylphthalate mg/kg	1.0	ND	
205-99-2	Benzo(b)fluoranthene mg/kg	1.0	ND	
207-08-9	Benzo(k)fluoranthene mg/kg	1.0	ND	
50-32-8	Benzo(a)pyrene mg/kg	1.0	ND	
193-39-6	Indeno(1,2,3-cd)pyrene mg/kg	1.0	ND	
53-70-3	Dibenz(a,h)anthracene mg/kg	1.0	ND	
191-24-2	Benzo(g,h,i)perylene mg/kg	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		98.3	Pass
Surrogate	Phenol-d6 %Recovered		95.3	Pass
Surrogate	Nitrobenzene-d5 %Recovered		100.9	Pass
Surrogate	2-Fluorobiphenyl %Recovered		95.9	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		87.0	Pass
Surrogate	Terphenyl-d14 %Recovered		91.3	Pass

SEMI-VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237753
 Job No : 146818
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : AQC SPIKE
 Sample Matrix : SOIL
 Vial No : 11

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\0608021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

AS No	Compound	MR	Result	Flags
108-95-2	Phenol mg/kg	1.0	19.8	
111-44-4	Bis(2-chloroethyl)ether mg/kg	1.0	ND	
95-57-8	2-chlorophenol mg/kg	1.0	19.5	
106-46-7	1,4-Dichlorobenzene mg/kg	1.0	18.7	
541-73-1	1,3-Dichlorobenzene mg/kg	1.0	ND	
95-48-7	2-Methylphenol mg/kg	1.0	ND	
106-44-5	4-Methylphenol mg/kg	1.0	ND	
132-91-9	Dibenzofuran mg/kg	1.0	ND	
95-50-1	1,2-Dichlorobenzene mg/kg	1.0	ND	
108-80-1	bis(2-chloroisopropyl)ether mg/kg	1.0	ND	
621-64-7	N-nitroso-di-n-propylamine mg/kg	1.0	18.4	
67-72-1	Hexachloroethane mg/kg	1.0	ND	
98-95-3	Nitrobenzene mg/kg	1.0	ND	
78-59-1	Isophorone mg/kg	1.0	ND	
105-87-9	2,4-dimethylphenol mg/kg	1.0	ND	
88-75-5	2-nitrophenol mg/kg	1.0	ND	
111-91-1	bis(2-chloroethoxy)methane mg/kg	1.0	ND	
120-83-2	2,4-Dichlorophenol mg/kg	1.0	ND	
120-82-1	1,2,4-Trichlorobenzene mg/kg	1.0	19.4	
120-83-2	2,4-Dinitrophenol mg/kg	5.0	ND	
91-20-3	Naphthalene mg/kg	1.0	ND	
87-68-3	Hexachlorobutadiene mg/kg	1.0	ND	
59-50-7	4-Chloro-3-methylphenol mg/kg	2.0	18.1	
91-06-6	2-Methylnaphthalene mg/kg	1.0	ND	
88-06-2	2,4,6-Trichlorophenol mg/kg	1.0	ND	
95-95-4	2,4,5-Trichlorophenol mg/kg	1.0	ND	
91-58-7	2-Chloronaphthalene mg/kg	1.0	ND	
131-11-3	Dimethylphthalate mg/kg	1.0	ND	
606-20-2	2,6-Dinitrotoluene mg/kg	1.0	ND	
208-96-8	Acenaphthylene mg/kg	1.0	ND	
83-32-9	Acenaphthene mg/kg	1.0	18.1	
121-14-2	2,4-Dinitrotoluene mg/kg	1.0	17.2	
84-66-2	Diethylphthalate mg/kg	1.0	ND	
100-02-7	4-Nitrophenol mg/kg	5.0	16.9	
7005-72-3	4-Chlorophenyl phenyl ether mg/kg	1.0	ND	
86-73-7	Fluorene mg/kg	1.0	ND	
86-74-8	Carbazole mg/kg	1.0	ND	

VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name	: Celtic Technologies Ltd	Method	: EPA 8260 MODIFIED
Lab Sample ID	: 237759	Data Type	: MS DATA
Job No	: 146818	Data Path	: D:\2V-DATA\JUNE02\2V0508021
Sample Location	: Celtic Technologies Ltd	Quant Type	: ISTD
Client Sample ID	: BH3//1.5	Accreditation Status	: UKAS
Sample Matrix	: SOIL	Dilution Factor	: 1
Vial No	: 14	Report Date	: 06/06/2002

CAS NO	Compound	MRL	Result	Flags
98-82-8	Isopropylbenzene ug/kg	5	ND	
79-34-5	1,1,2,2-tetrachloroethane ug/kg	5	ND	
96-18-4	1,2,3-trichloropropane ug/kg	5	ND	
103-65-1	n-propylbenzene ug/kg	5	ND	
106-86-1	Bromobenzene ug/kg	5	ND	
95-49-8	2-chlorotoluene ug/kg	5	ND	
106-67-8	1,3,5-trimethylbenzene ug/kg	5	ND	
106-43-4	4-chlorotoluene ug/kg	5	ND	
98-08-6	tert-butylbenzene ug/kg	5	ND	
95-63-6	1,2,4-trimethylbenzene ug/kg	5	ND	
135-98-8	sec-butylbenzene ug/kg	5	ND	
99-87-6	p-isopropyltoluene ug/kg	5	ND	
541-73-1	1,3-dichlorobenzene ug/kg	5	ND	
106-46-7	1,4-dichlorobenzene ug/kg	5	ND	
104-51-8	n-butylbenzene ug/kg	5	ND	
95-50-1	1,2-dichlorobenzene ug/kg	5	ND	
96-12-8	1,2-dibromo-3-chloropropane ug/kg	5	ND	
120-82-1	1,2,4-trichlorobenzene ug/kg	5	ND	
87-68-3	Hexachlorobutadiene ug/kg	5	ND	
91-20-3	Naphthalene ug/kg	5	ND	
87-61-6	1,2,3-trichlorobenzene ug/kg	5	ND	
Surrogate	Dibromofluoromethane %Recovered		111.3	Pass
Surrogate	Toluene-d8 %Recovered		95.1	Pass
Surrogate	4-bromofluorobenzene %Recovered		95.7	Pass

Please note : Result of ND is Not Detectable

For Surrogate Compounds 50 ug/kg added, lower limit is 75% and higher limit is 125%

Explanation of compound flags :

J : Compound is detectable but is below normal reporting limit

E : Result is above the calibrated range and is therefore an estimate

B : Compound also detected in Blank extract

D : Sample was diluted and re-analysed to obtain a valid result for this compound

VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237759
 Job No : 148818
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH3//1.5
 Sample Matrix : SOIL
 Vial No : 14

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\2V-DATA\JUNE02\2V0506021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 06/06/2002

CAS NO	Compound	MRL	Result	Flags
75-71-8	Dichlorodifluoromethane ug/kg	5	ND	
74-87-3	Chloromethane ug/kg	5	ND	
75-00-3	Chloroethane ug/kg	5	ND	
74-83-9	Bromomethane ug/kg	5	ND	
75-69-4	Trichlorofluoromethane ug/kg	5	ND	
75-35-4	1,1-Dichloroethene ug/kg	5	ND	
75-09-2	Dichloromethane ug/kg	5	ND	
156-80-9	Trans-1,2-dichloroethene ug/kg	5	ND	
113-10-3	1,1-Dichloroethane ug/kg	5	ND	
156-58-2	Cis-1,2-dichloroethene ug/kg	5	ND	
594-20-7	2,2-Dichloropropane ug/kg	5	ND	
67-88-3	Chloroform ug/kg	5	ND	
74-97-5	Bromochloromethane ug/kg	5	ND	
71-55-8	1,1,1-Trichloroethane ug/kg	5	ND	
563-58-6	1,1-Dichloropropene ug/kg	5	ND	
107-06-2	1,2-Dichloroethane ug/kg	5	ND	
71-43-2	Benzene ug/kg	5	ND	
78-87-6	1,2-Dichloropropane ug/kg	5	ND	
79-01-6	Trichloroethene ug/kg	5	ND	
75-27-4	Bromodichloromethane ug/kg	5	ND	
74-95-3	Dibromomethane ug/kg	5	ND	
10061-01-5	Cis-1,3-dichloropropene ug/kg	5	ND	
108-88-3	Toluene ug/kg	5	ND	
128-81-02-6	Trans-1,3-dichloropropene ug/kg	5	ND	
79-00-5	1,1,2-trichloroethane ug/kg	5	ND	
56-23-6	Carbon Tetrachloride ug/kg	5	ND	
75-01-4	Vinyl Chloride ug/kg	5	ND	
124-28-9	1,3-dichloropropane ug/kg	5	ND	
127-18-4	Tetrachloroethene ug/kg	5	ND	
124-48-1	Dibromochloromethane ug/kg	5	ND	
106-93-4	1,2-dibromoethane ug/kg	5	ND	
106-90-7	Chlorobenzene ug/kg	5	ND	
630-20-6	1,1,1,2-tetrachloroethane ug/kg	5	ND	
100-41-4	Ethylbenzene ug/kg	5	ND	
1330-20-7	m,p-xylene ug/kg	10	ND	
96-47-6	o-xylene ug/kg	5	ND	
100-42-5	Styrene ug/kg	5	ND	
75-25-2	Bromoform ug/kg	5	ND	

STL COVENTRY



VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237757
 Job No : 146818
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH4//1.5
 Sample Matrix : SOIL
 Vial No : 13

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\2V-DATA\JUNE02\2V050802\1
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 06/06/2002

CAS NO	Compound	MSL	Result	Flags
98-82-8	Isopropylbenzene ug/kg	5	ND	
79-34-5	1,1,2,2-tetrachloroethane ug/kg	5	ND	
96-18-4	1,2,3-trichloropropane ug/kg	5	ND	
103-65-1	n-propylbenzene ug/kg	5	ND	
108-86-1	Bromobenzene ug/kg	5	ND	
95-49-8	2-chlorotoluene ug/kg	5	ND	
108-67-8	1,3,5-trimethylbenzene ug/kg	5	ND	
106-43-4	4-chlorotoluene ug/kg	5	ND	
98-06-6	tert-butylbenzene ug/kg	5	ND	
95-63-8	1,2,4-trimethylbenzene ug/kg	5	ND	
135-98-8	sec-butylbenzene ug/kg	5	ND	
99-87-6	p-isopropyltoluene ug/kg	5	ND	
541-73-1	1,3-dichlorobenzene ug/kg	5	ND	
106-46-7	1,4-dichlorobenzene ug/kg	5	ND	
104-51-8	n-butylbenzene ug/kg	5	ND	
95-50-1	1,2-dichlorobenzene ug/kg	5	ND	
96-12-8	1,2-dibromo-3-chloropropane ug/kg	5	ND	
120-82-1	1,2,4-trichlorobenzene ug/kg	5	ND	
87-68-3	Hexachlorobutadiene ug/kg	5	ND	
91-20-3	Naphthalene ug/kg	5	ND	
87-61-5	1,2,3-trichlorobenzene ug/kg	5	ND	
Surrogate	Dibromofluoromethane %Recovered		112.5 Pass	
Surrogate	Toluene-d8 %Recovered		97.5 Pass	
Surrogate	4-bromofluorobenzene %Recovered		97.8 Pass	

VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
Lab Sample ID : 237757
Job No : 146818
Sample Location : Celtic Technologies Ltd
Client Sample ID : BH4//1.5
Sample Matrix : SOIL
Vial No : 13

Method : EPA 8260 MODIFIED
Data Type : MS DATA
Data Path : D:\2V-DATA\UNE0212V0506021
Quant Type : ISTD
Accreditation Status : UKAS
Dilution Factor : 1
Report Date : 06/06/2002

CAS No	Compound	MRL	Result	Flags
75-71-8	Dichlorodifluoromethane ug/kg	5	ND	
74-87-3	Chloromethane ug/kg	5	ND	
75-00-3	Chloroethane ug/kg	5	ND	
74-83-9	Bromomethane ug/kg	5	ND	
75-69-4	Trichlorofluoromethane ug/kg	5	ND	
75-35-4	1,1-Dichloroethene ug/kg	5	ND	
75-09-2	Dichloromethane ug/kg	5	ND	
156-50-9	Trans-1,2-dichloroethene ug/kg	5	ND	
106-43-4	1,1-Dichloroethane ug/kg	5	ND	
156-58-2	Cis-1,2-dichloroethene ug/kg	5	ND	
594-20-7	2,2-Dichloropropane ug/kg	5	ND	
67-66-3	Chloroform ug/kg	5	ND	
74-97-5	Bromochloromethane ug/kg	5	ND	
71-55-6	1,1,1-Trichloroethane ug/kg	5	ND	
563-58-6	1,1-Dichloropropene ug/kg	5	ND	
107-06-2	1,2-Dichloroethane ug/kg	5	ND	
71-43-2	Benzene ug/kg	5	ND	
78-87-5	1,2-Dichloropropane ug/kg	5	ND	
79-01-6	Trichloroethene ug/kg	5	ND	
75-27-4	Bromodichloromethane ug/kg	5	ND	
74-95-3	Dibromomethane ug/kg	5	ND	
10061-01-5	Cis-1,3-dichloropropene ug/kg	5	ND	
108-88-3	Toluene ug/kg	5	ND	
10061-02-6	Trans-1,3-dichloropropene ug/kg	5	ND	
100-5	1,1,2-trichloroethane ug/kg	5	ND	
56-23-5	Carbon Tetrachloride ug/kg	5	ND	
75-01-4	Vinyl Chloride ug/kg	5	ND	
124-28-9	1,3-dichloropropane ug/kg	5	ND	
127-18-4	Tetrachloroethane ug/kg	5	ND	
124-48-1	Dibromochloromethane ug/kg	5	ND	
108-93-4	1,2-dibromoethane ug/kg	5	ND	
108-90-7	Chlorobenzene ug/kg	5	ND	
630-20-6	1,1,1,2-tetrachloroethane ug/kg	5	ND	
100-41-4	Ethylbenzene ug/kg	5	ND	
1330-20-7	m,p-xylene ug/kg	10	ND	
95-47-6	o-xylene ug/kg	5	ND	
100-42-5	Styrene ug/kg	5	ND	
75-25-2	Bromoform ug/kg	5	ND	

VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name	: Celtic Technologies Ltd	Method	: EPA 8260 MODIFIED
Lab Sample ID	: 237754	Data Type	: MS DATA
Job No	: 146818	Data Path	: D:\2V-DATA\JUNE02\2V050502\
Sample Location	: Celtic Technologies Ltd	Quant Type	: ISTD
Client Sample ID	: AQC BLANK	Accreditation Status	: UKAS
Sample Matrix	: SOIL	Dilution Factor	: 1
Vial No	: 11	Report Date	: 06/06/2002

CAS NO	Compound	MFL	Result	Flags
98-82-8	Isopropylbenzene ug/kg	5	ND	
78-34-5	1,1,2,2-tetrachloroethane ug/kg	5	ND	
98-18-4	1,2,3-trichloropropane ug/kg	5	ND	
103-85-1	n-propylbenzene ug/kg	5	ND	
108-86-1	Bromobenzene ug/kg	5	ND	
95-49-8	2-chlorotoluene ug/kg	5	ND	
108-67-8	1,3,5-trimethylbenzene ug/kg	5	ND	
106-43-4	4-chlorotoluene ug/kg	5	ND	
98-06-6	tert-butylbenzene ug/kg	5	ND	
95-63-6	1,2,4-trimethylbenzene ug/kg	5	ND	
135-98-8	sec-butylbenzene ug/kg	5	ND	
98-87-6	p-isopropyltoluene ug/kg	5	ND	
541-73-1	1,3-dichlorobenzene ug/kg	5	ND	
106-46-7	1,4-dichlorobenzene ug/kg	5	ND	
104-51-8	n-butylbenzene ug/kg	5	ND	
95-50-1	1,2-dichlorobenzene ug/kg	5	ND	
98-12-8	1,2-dibromo-3-chloropropane ug/kg	5	ND	
120-82-1	1,2,4-trichlorobenzene ug/kg	5	ND	
87-68-3	Hexachlorobutadiene ug/kg	5	ND	
91-20-3	Naphthalene ug/kg	5	ND	
87-61-6	1,2,3-trichlorobenzene ug/kg	5	ND	
Surrogate	Dibromofluoromethane %Recovered		108.4 Pass	
Surrogate	Toluene-d8 %Recovered		98.0 Pass	
Surrogate	4-bromofluorobenzene %Recovered		97.8 Pass	

VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237754
 Job No : 146818
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : AQC BLANK
 Sample Matrix : SOIL
 Vial No : 11

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\2V-DATA\UUNE02\2V0508021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 06/06/2002

GAS NO	Compound	MRL	Result	Flags
75-71-8	Dichlorodifluoromethane ug/kg	5	ND	
74-87-3	Chloromethane ug/kg	5	ND	
75-00-3	Chloroethane ug/kg	5	ND	
74-83-9	Bromomethane ug/kg	5	ND	
75-69-4	Trichlorofluoromethane ug/kg	5	ND	
75-35-4	1,1-Dichloroethene ug/kg	5	ND	
75-09-2	Dichloromethane ug/kg	5	ND	
156-80-9	Trans-1,2-dichloroethene ug/kg	5	ND	
156-59-2	1,1-Dichloroethane ug/kg	5	ND	
594-20-7	Cis-1,2-dichloroethene ug/kg	5	ND	
67-66-3	2,2-Dichloropropane ug/kg	5	ND	
74-87-5	Chloroform ug/kg	5	ND	
71-55-6	Bromochloromethane ug/kg	5	ND	
563-58-6	1,1,1-Trichloroethane ug/kg	5	ND	
107-08-2	1,1-Dichloropropene ug/kg	5	ND	
71-43-2	1,2-Dichloroethane ug/kg	5	ND	
78-87-5	Benzene ug/kg	5	ND	
79-01-6	1,2-Dichloropropane ug/kg	5	ND	
75-27-4	Trichloroethene ug/kg	5	ND	
74-95-3	Bromodichloromethane ug/kg	5	ND	
10061-01-5	Dibromomethane ug/kg	5	ND	
108-88-3	Cis-1,3-dichloropropene ug/kg	5	ND	
10061-02-6	Toluene ug/kg	5	ND	
75-01-5	Trans-1,3-dichloropropene ug/kg	5	ND	
58-23-5	1,1,2-trichloroethane ug/kg	5	ND	
75-01-4	Carbon Tetrachloride ug/kg	5	ND	
124-28-9	Vinyl Chloride ug/kg	5	ND	
127-18-4	1,3-dichloropropane ug/kg	5	ND	
124-48-1	Tetrachloroethene ug/kg	5	ND	
106-93-4	Dibromochloromethane ug/kg	5	ND	
108-90-7	1,2-dibromoethane ug/kg	5	ND	
630-20-6	Chlorobenzene ug/kg	5	ND	
100-41-4	1,1,1,2-tetrachloroethane ug/kg	5	ND	
1330-20-7	Ethylbenzene ug/kg	5	ND	
95-47-6	m,p-xylene ug/kg	10	ND	
100-42-5	o-xylene ug/kg	5	ND	
75-25-2	Styrene ug/kg	5	ND	
	Bromoform ug/kg	5	ND	

STL COVENTRY



VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name	: Celtic Technologies Ltd	Method	: EPA 8260 MODIFIED
Lab Sample ID	: 237753	Data Type	: MS DATA
Job No	: 146818	Data Path	: D:\2V-DATA\JUNE02\2V050602\
Sample Location	: Celtic Technologies Ltd	Quant Type	: ISTD
Client Sample ID	: AQC SPIKE	Accreditation Status	: UKAS
Sample Matrix	: SOIL	Dilution Factor	: 1
Vial No	: 12	Report Date	: 06/06/2002

CAS NO	Compound	MRL	Result	Flags
75-25-2	Bromoform ug/kg	5	ND	
98-82-8	Isopropylbenzene ug/kg	5	ND	
79-34-5	1,1,2,2-tetrachloroethane ug/kg	5	ND	
96-18-4	1,2,3-trichloropropane ug/kg	5	ND	
103-65-1	n-propylbenzene ug/kg	5	ND	
108-86-1	Bromobenzene ug/kg	5	ND	
95-49-8	2-chlorotoluene ug/kg	5	ND	
108-67-8	1,3,5-trimethylbenzene ug/kg	5	ND	
106-43-4	4-chlorotoluene ug/kg	5	ND	
98-06-8	tert-butylbenzene ug/kg	5	ND	
95-63-6	1,2,4-trimethylbenzene ug/kg	5	ND	
135-98-8	sec-butylbenzene ug/kg	5	ND	
99-87-8	p-isopropyltoluene ug/kg	5	ND	
541-73-1	1,3-dichlorobenzene ug/kg	5	ND	
106-46-7	1,4-dichlorobenzene ug/kg	5	ND	
104-51-8	n-butylbenzene ug/kg	5	ND	
95-50-1	1,2-dichlorobenzene ug/kg	5	ND	
96-12-8	1,2-dibromo-3-chloropropane ug/kg	5	ND	
120-82-1	1,2,4-trichlorobenzene ug/kg	5	ND	
87-88-3	Hexachlorobutadiene ug/kg	5	ND	
91-20-3	Naphthalene ug/kg	5	ND	
87-61-8	1,2,3-trichlorobenzene ug/kg	5	ND	
Surrogate	Dibromofluoromethane %Recovered		106.8 Pass	
Surrogate	Toluene-d8 %Recovered		98.2 Pass	
Surrogate	4-bromofluorobenzene %Recovered		97.4 Pass	

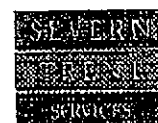
VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237753
 Job No : 146818
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : AQC SPIKE
 Sample Matrix : SOIL
 Vial No : 12

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\2V-DATA\JUNE02\2V0808021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 06/06/2002

CAS NO	Compound	MRI	Result	Flags
75-71-8	Dichlorodifluoromethane ug/kg	5	ND	
74-87-3	Chloromethane ug/kg	5	ND	
75-00-3	Chloroethane ug/kg	5	ND	
74-83-9	Bromomethane ug/kg	5	ND	
75-69-4	Trichlorofluoromethane ug/kg	5	ND	
75-35-4	1,1-Dichloroethene ug/kg	5	49.0	
75-09-2	Dichloromethane ug/kg	5	ND	
75-60-9	Trans-1,2-dichloroethene ug/kg	5	ND	
75-34-3	1,1-Dichloroethane ug/kg	5	ND	
156-59-2	Cis-1,2-dichloroethene ug/kg	5	ND	
594-20-7	2,2-Dichloropropane ug/kg	5	ND	
67-66-3	Chloroform ug/kg	5	ND	
74-97-5	Bromochloromethane ug/kg	5	ND	
71-55-5	1,1,1-Trichloroethane ug/kg	5	ND	
563-58-6	1,1-Dichloropropene ug/kg	5	ND	
107-06-2	1,2-Dichloroethane ug/kg	5	ND	
71-43-2	Benzene ug/kg	5	51.1	
78-57-5	1,2-Dichloropropane ug/kg	5	ND	
79-01-6	Trichloroethane ug/kg	5	49.7	
75-27-4	Bromodichloromethane ug/kg	5	ND	
74-95-3	Dibromomethane ug/kg	5	ND	
10061-01-6	Cis-1,3-dichloropropene ug/kg	5	ND	
108-88-3	Toluene ug/kg	5	48.6	
51-02-8	Trans-1,3-dichloropropene ug/kg	5	ND	
78-00-5	1,1,2-trichloroethane ug/kg	5	ND	
56-23-5	Carbon Tetrachloride ug/kg	5	ND	
75-01-4	Vinyl Chloride ug/kg	5	ND	
124-28-9	1,3-dichloropropane ug/kg	5	ND	
127-18-4	Tetrachloroethane ug/kg	5	ND	
124-48-1	Dibromochloromethane ug/kg	5	ND	
106-93-4	1,2-dibromoethane ug/kg	5	ND	
108-90-7	Chlorobenzene ug/kg	5	50.7	
630-20-6	1,1,1,2-tetrachloroethane ug/kg	5	ND	
100-41-4	Ethylbenzene ug/kg	5	ND	
1330-20-7	m,p-xylene ug/kg	10	ND	
95-47-8	o-xylene ug/kg	5	ND	
100-42-5	Styrene ug/kg	5	ND	

STL COVENTRY



TOTAL PETROLEUM HYDROCARBONS

Client Name: **CELTIC TECHNOLOGIES**

Lab. Sample ID: 237759
Job No.: 148818
Sample Location: NONE SUPPLIED
Client Sample ID: BH3/1.5
Sample Matrix: SOLID
Weight(g): 5.02
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 13-Jun-2002

CONCENTRATION UNITS: mg/kg

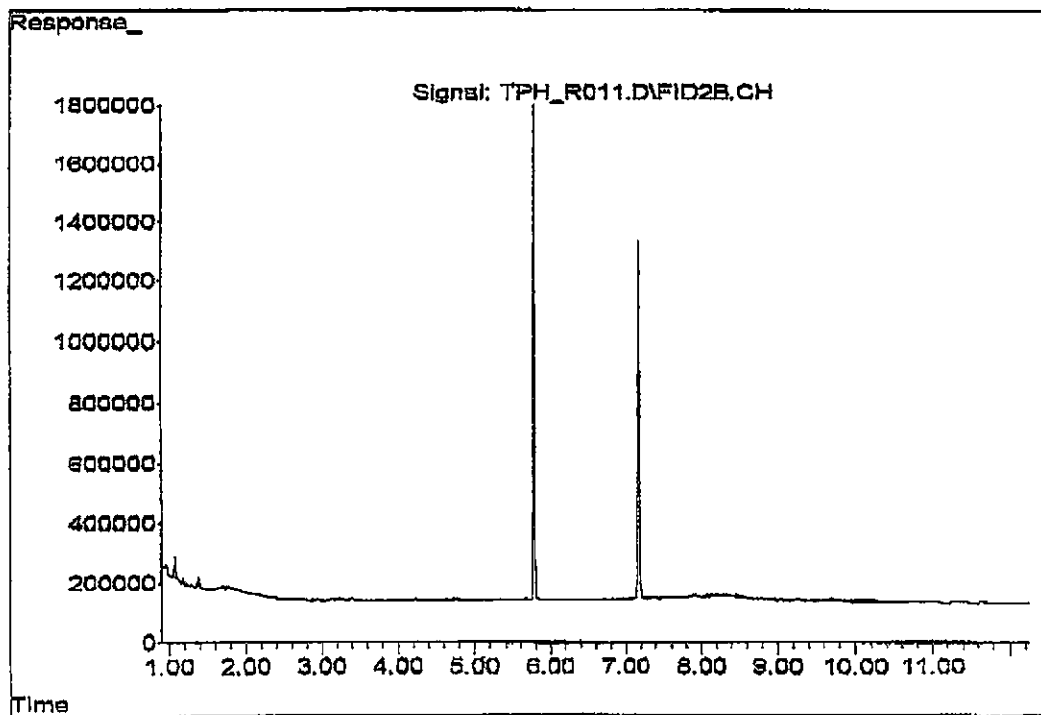
RESULTS

RANGE	MRL	RESULT
>C6 - C8	5	ND
>C8 - C10	5	ND
>C10 - C16	10	ND
>C16 - C24	10	ND
>C24 - C40	25	ND
TOTAL TPH >C6 - C40		ND

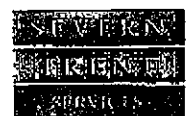
MRL = MINIMUM REPORTING LIMIT

ND = NOT DETECTED

CHROMATOGRAM



**SEVERN TRENT
LABORATORIES**



TOTAL PETROLEUM HYDROCARBONS

Client Name: **CELTIC TECHNOLOGIES**

Lab. Sample ID: 237758
Job No.: 148818
Sample Location: NONE SUPPLIED
Client Sample ID: TP5/0.5
Sample Matrix: SOLID
Weight(g): 4.99
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 13-Jun-2002

CONCENTRATION UNITS: mg/kg

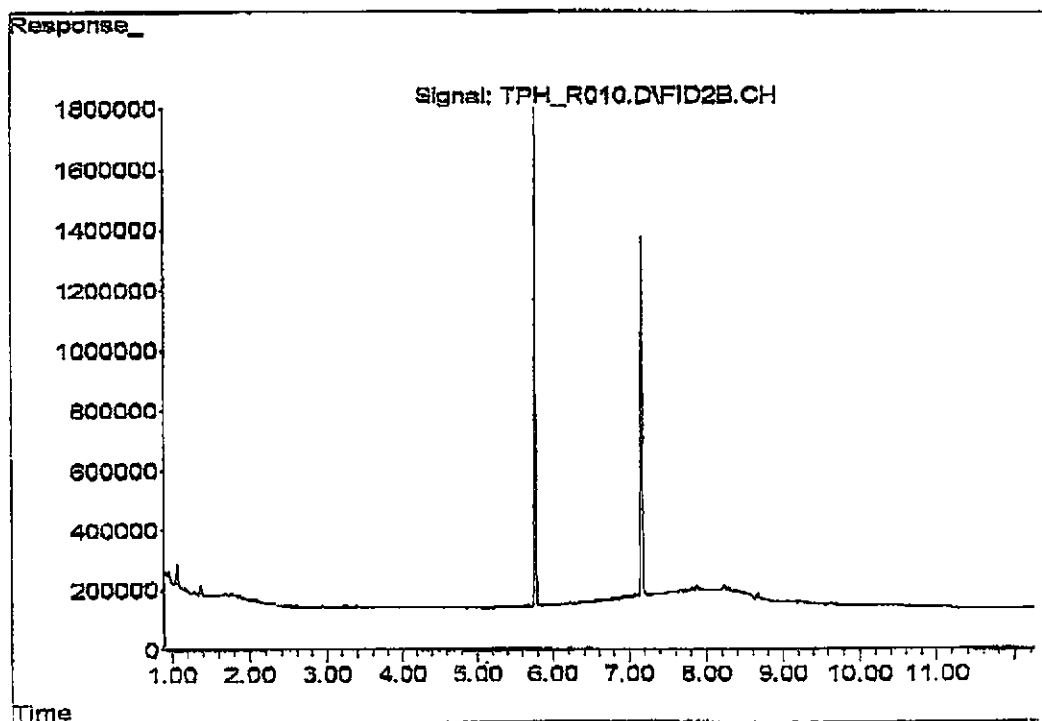
RESULTS

RANGE	MRL	RESULT
>C8 - C8	5	ND
>C8 - C10	5	ND
>C10 - C16	10	ND
>C16 - C24	10	16
>C24 - C40	25	62
TOTAL TPH >C8 - C40		78

MRL = MINIMUM REPORTING LIMIT

ND = NOT DETECTED

CHROMATOGRAM



**SEVERN TRENT
LABORATORIES**



TOTAL PETROLEUM HYDROCARBONS

Client Name: CELTIC TECHNOLOGIES

Lab. Sample ID: 237757
Job No.: 146818
Sample Location: NONE SUPPLIED
Client Sample ID: BH4/1.5
Sample Matrix: SOLID
Weight(g): 5
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 13-Jun-2002

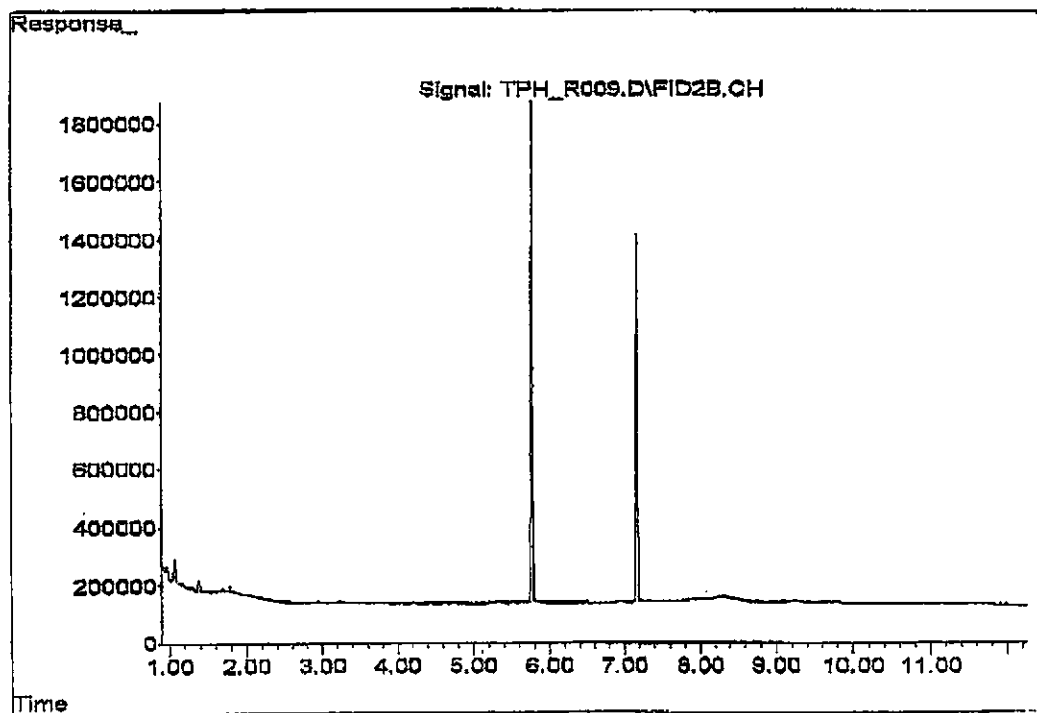
CONCENTRATION UNITS: mg/kg

RESULTS

RANGE	MRL	RESULT
>C6 - C8	5	ND
>C8 - C10	5	ND
>C10 - C16	10	ND
>C16 - C24	10	ND
>C24 - C40	25	ND
TOTAL TPH >C6 - C40		ND

MRL = MINIMUM REPORTING LIMIT
ND = NOT DETECTED

CHROMATOGRAM



SEVERN TRENT
LABORATORIES



TOTAL PETROLEUM HYDROCARBONS

Client Name: **CELTIC TECHNOLOGIES**

Lab. Sample ID: 237758
Job No.: 146818
Sample Location: NONE SUPPLIED
Client Sample ID: BH4/0.5
Sample Matrix: SOLID
Weight(g): 5
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 13-Jun-2002

CONCENTRATION UNITS: mg/kg

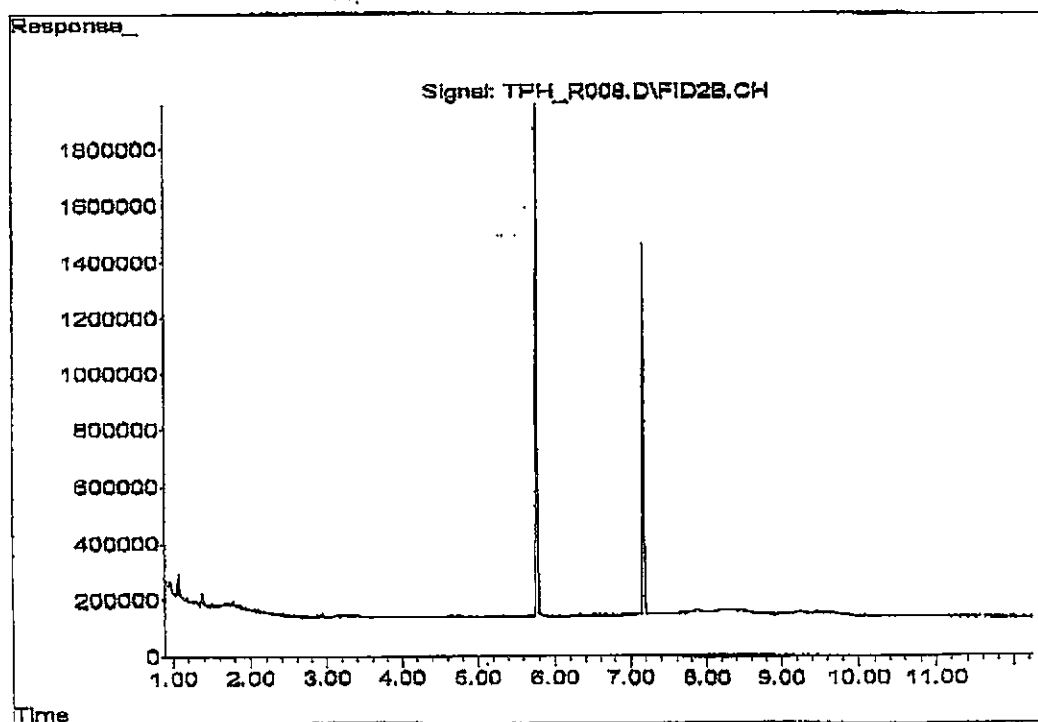
RESULTS

RANGE	MRL	RESULT
>C6 - C8	5	ND
>C8 - C10	5	ND
>C10 - C16	10	ND
>C16 - C24	10	ND
>C24 - C40	25	ND
TOTAL-TPH >C6 - C40		ND

MRL = MINIMUM REPORTING LIMIT

ND = NOT DETECTED

CHROMATOGRAM



**SEVERN TRENT
LABORATORIES**



TOTAL PETROLEUM HYDROCARBONS

Client Name: CELTIC TECHNOLOGIES

Lab. Sample ID: 237754
Job No.: 146818
Sample Location: NONE SUPPLIED
Client Sample ID: QC BLANK 120938
Sample Matrix: SOLID
Weight(g): 5
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 14-Jun-2002

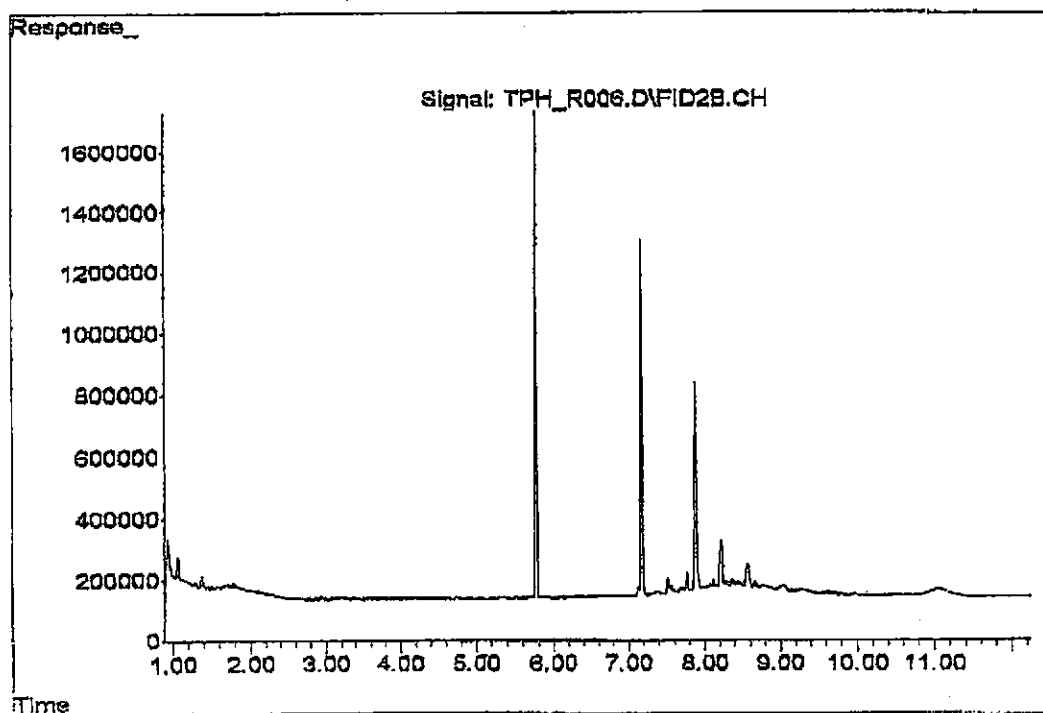
CONCENTRATION UNITS: mg/kg

RESULTS

RANGE	MRL	RESULT
>C6 - C8	5	ND
>C8 - C10	5	ND
>C10 - C16	10	ND
>C16 - C24	10	ND
>C24 - C40	25	84
TOTAL TPH >C6 - C40		84

MRL = MINIMUM REPORTING LIMIT
ND = NOT DETECTED

CHROMATOGRAM



SEVERN TRENT
LABORATORIES



TOTAL PETROLEUM HYDROCARBONS

Client Name: **CELTIC TECHNOLOGIES**

Lab. Sample ID: 237753
Job No.: 146818
Sample Location: NONE SUPPLIED
Client Sample ID: QC SPIKE 120935
Sample Matrix: SOLID
Weight(g): 5
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 14-Jun-2002

CONCENTRATION UNITS: mg/kg

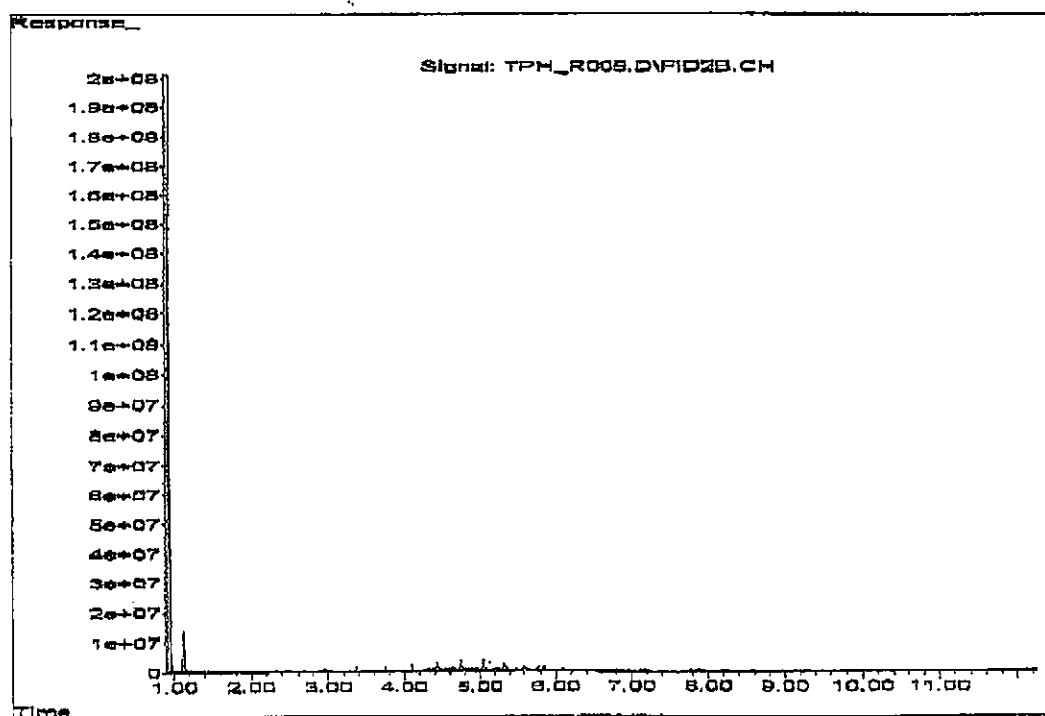
RESULTS

RANGE	MRL	RESULT
>C8 - C8	5	ND
>C8 - C10	5	107
>C10 - C18	10	1220
>C18 - C24	10	792
>C24 - C40	25	71
TOTAL TPH >C8 - C40		2190

MRL = MINIMUM REPORTING LIMIT

ND = NOT DETECTED

CHROMATOGRAM



**SEVERN TRENT
LABORATORIES**



Tentatively Identified Compound (LSC) Summary Report

Operator ID: AD Date Acquired: 6 Jun 2002 8:38 pm

Data File: D:\DATA\JUNE02\060602\SV008.D

Name: 236327

Misc:

Method: C:\HPCHEM\1\METHODS\JUNE02\060602.M (RTE Integrator)

Title: EPA Method 8270 SVOC's

Library Searched: C:\DATABASE\WILEY275.L

Compound name	CAS No.	Est. Conc Range	Quality
Benzene, 1,4-dimethoxy-	000150-78-7	6.43 mg/kg	72
Not Known		8.25 mg/kg	-
Not Known		1.66 mg/kg	-
Not Known		1.01 mg/kg	-
Not Known		1.59 mg/kg	-
Not Known		1.25 mg/kg	-
Not Known		1.10 mg/kg	-
Not Known		1.43 mg/kg	-
Not Known		1.41 mg/kg	-

D:\DATA\JUNE02\060602\SV008.D

SEVERN TRENT
LABORATORIES



SEMI-VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 236327
 Job No : 146588
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : TP3-1.3
 Sample Matrix : SOIL
 Vial No : 8

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\080802\
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

Sample No	Compound	Unit	Result	Flag
101-55-3	4-Bromophenyl phenyl ether mg/kg	1.0	ND	
118-74-1	Hexachlorobenzene mg/kg	1.0	ND	
87-86-5	Pentachlorophenol mg/kg	5.0	ND	
85-01-8	Phenanthrene mg/kg	1.0	ND	
120-12-7	Anthracene mg/kg	1.0	ND	
84-74-2	di-n-Butylphthalate mg/kg	1.0	ND	
206-44-0	Fluoranthene mg/kg	1.0	ND	
129-29-0	Pyrene mg/kg	1.0	ND	
85-60-7	Butylbenzylphthalate mg/kg	1.0	ND	
56-55-3	Benzo(a)anthracene mg/kg	1.0	ND	
218-01-9	Chrysene mg/kg	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate mg/kg	1.0	ND	
117-84-0	di-n-octylphthalate mg/kg	1.0	ND	
206-98-2	Benzo(b)fluoranthene mg/kg	1.0	ND	
207-08-9	Benzo(k)fluoranthene mg/kg	1.0	ND	
50-32-8	Benzo(a)pyrene mg/kg	1.0	ND	
193-38-5	Indeno(1,2,3-cd)pyrene mg/kg	1.0	ND	
53-70-3	Dibenz(a,h)anthracene mg/kg	1.0	ND	
191-24-2	Benzo(g,h,i)perylene mg/kg	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		97.6	Pass
Surrogate	Phenol-d8 %Recovered		100.5	Pass
Surrogate	Nitrobenzene-d5 %Recovered		100.3	Pass
Surrogate	2-Fluorobiphenyl %Recovered		103.1	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		75.4	Pass
Surrogate	Terphenyl-d14 %Recovered		84.0	Pass

Please note : Result of ND is Not Detectable

For Surrogate Compounds 50 ug/kg added, lower limit is 75% and higher limit is 125%

Explanation of compound flags :

J : Compound is detectable but is below normal reporting limit

E : Result is above the calibrated range and is therefore an estimate

B : Compound also detected in Blank extract

D : Sample was diluted and re-analysed to obtain a valid result for this compound

SEMI-VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 236327
 Job No : 146588
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : TP3-1.3
 Sample Matrix : SOIL
 Vial No : 8

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\0606021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

Lab No	Compound	1.0	2.0	5.0	10.0
108-95-2	Phenol mg/kg	1.0	ND		
111-44-4	Bis(2-chloroethyl)ether mg/kg	1.0	ND		
95-57-8	2-chlorophenol mg/kg	1.0	ND		
541-73-1	1,3-Dichlorobenzene mg/kg	1.0	ND		
106-46-7	1,4-Dichlorobenzene mg/kg	1.0	ND		
95-48-7	2-Methylphenol mg/kg	1.0	ND		
106-44-5	4-Methylphenol mg/kg	1.0	ND		
132-64-9	Dibenzofuran mg/kg	1.0	ND		
95-50-1	1,2-Dichlorobenzene mg/kg	1.0	ND		
108-60-1	bis(2-chloroisopropyl)ether mg/kg	1.0	ND		
621-64-7	N-nitroso-di-n-propylamine mg/kg	1.0	ND		
67-72-1	Hexachloroethane mg/kg	1.0	ND		
98-95-3	Nitrobenzene mg/kg	1.0	ND		
78-59-1	Isophorone mg/kg	1.0	ND		
105-67-9	2,4-dimethylphenol mg/kg	1.0	ND		
88-75-5	2-nitrophenol mg/kg	1.0	ND		
111-91-1	bis(2-chloroethoxy)methane mg/kg	1.0	ND		
120-83-2	2,4-Dichlorophenol mg/kg	1.0	ND		
120-82-1	1,2,4-Trichlorobenzene mg/kg	1.0	ND		
120-83-2	2,4-Dinitrophenol mg/kg	5.0	ND		
91-20-3	Naphthalene mg/kg	1.0	ND		
87-68-3	Hexachlorobutadiene mg/kg	1.0	ND		
59-50-7	4-Chloro-3-methylphenol mg/kg	2.0	ND		
91-57-6	2-Methylnaphthalene mg/kg	1.0	ND		
88-08-2	2,4,6-Trichlorophenol mg/kg	1.0	ND		
95-95-4	2,4,6-Trichlorophenol mg/kg	1.0	ND		
91-58-7	2-Chloronaphthalene mg/kg	1.0	ND		
131-11-3	Dimethylphthalate mg/kg	1.0	ND		
606-20-2	2,6-Dinitrotoluene mg/kg	1.0	ND		
208-96-8	Acenaphthylene mg/kg	1.0	ND		
83-32-9	Acenaphthene mg/kg	1.0	ND		
121-14-2	2,4-Dinitrotoluene mg/kg	1.0	ND		
84-86-2	Diethylphthalate mg/kg	1.0	ND		
100-02-7	4-Nitrophenol mg/kg	5.0	ND		
7005-72-3	4-Chlorophenyl phenyl ether mg/kg	1.0	ND		
86-73-7	Fluorene mg/kg	1.0	ND		
86-74-8	Carbazole mg/kg	1.0	ND		
86-30-6	n-Nitrosodiphenylamine mg/kg	1.0	ND		

STL COVENTRY



Tentatively Identified Compound (LSC) Summary Report

Operator ID: AD Date Acquired: 6 Jun 2002 8:04 pm
 Data File: D:\DATA\JUNE02\060602\SV007.D
 Sample Name: 236326
 Method: C:\HPCHEM\1\METHODS\JUNE02\060602.M (RTE Integrator)
 Title: EPA Method 8270 SVOC's
 Library Searched: C:\DATABASE\WILEY275.L

Compound name	CAS No.	Est. Conc Range	Quality
ot Known		1.33 mg/kg	-
ot Known		1.04 mg/kg	-
ot Known		2.86 mg/kg	-
ot Known		1.02 mg/kg	-
ot Known		1.21 mg/kg	-
ot Known		1.94 mg/kg	-
ot Known		1.06 mg/kg	-
ot Known		2.10 mg/kg	-

D:\DATA\JUNE02\060602\SV007.D

**SEVERN TRENT
LABORATORIES**



SEMI-VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 236326
 Job No : 146588
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : TP2-1.5
 Sample Matrix : SOIL
 Vial No : 7

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\060602\
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

CAS No	Compound	Conc	Result	Flags
101-55-3	4-Bromophenyl phenyl ether mg/kg	1.0	ND	
118-74-1	Hexachlorobenzene mg/kg	1.0	ND	
87-86-5	Pentachlorophenol mg/kg	5.0	ND	
85-01-8	Phenanthrene mg/kg	1.0	ND	
120-12-7	Anthracene mg/kg	1.0	ND	
84-74-2	di-n-Butylphthalate mg/kg	1.0	ND	
206-44-0	Fluoranthene mg/kg	1.0	ND	
129-00-0	Pyrene mg/kg	1.0	ND	
85-68-7	Butylbenzylphthalate mg/kg	1.0	ND	
56-55-3	Benzo(a)anthracene mg/kg	1.0	ND	
218-01-9	Chrysene mg/kg	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate mg/kg	1.0	ND	
117-84-0	di-n-octylphthalate mg/kg	1.0	ND	
206-99-2	Benzo(b)fluoranthene mg/kg	1.0	ND	
207-08-9	Benzo(k)fluoranthene mg/kg	1.0	ND	
50-32-8	Benzo(a)pyrene mg/kg	1.0	ND	
193-39-5	Indeno(1,2,3-cd)pyrene mg/kg	1.0	ND	
53-70-3	Dibenz(a,h)anthracene mg/kg	1.0	ND	
191-24-2	Benzo(g,h,i)perylene mg/kg	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		87.2	Pass
Surrogate	Phenol-d6 %Recovered		83.3	Pass
Surrogate	Nitrobenzene-d5 %Recovered		89.9	Pass
Surrogate	2-Fluorobiphenyl %Recovered		85.9	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		70.3	Pass
Surrogate	Terphenyl-d14 %Recovered		84.4	Pass

SEMI-VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 236326
 Job No : 146588
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : TP2-1.5
 Sample Matrix : SOIL
 Vial No : 7

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\080602\
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

Lab No	Compound	Unit	Result	Flag
108-95-2	Phenol mg/kg	1.0	ND	
111-44-4	Bis(2-chloroethyl)ether mg/kg	1.0	ND	
95-57-8	2-chlorophenol mg/kg	1.0	ND	
541-73-1	1,3-Dichlorobenzene mg/kg	1.0	ND	
108-46-7	1,4-Dichlorobenzene mg/kg	1.0	ND	
96-48-7	2-Methylphenol mg/kg	1.0	ND	
106-44-5	4-Methylphenol mg/kg	1.0	ND	
132-64-9	Dibenzofuran mg/kg	1.0	ND	
95-57-8	1,2-Dichlorobenzene mg/kg	1.0	ND	
108-60-1	bis(2-chloroisopropyl)ether mg/kg	1.0	ND	
621-64-7	N-nitroso-di-n-propylamine mg/kg	1.0	ND	
67-72-1	Hexachloroethane mg/kg	1.0	ND	
98-95-3	Nitrobenzene mg/kg	1.0	ND	
78-59-1	Isophorone mg/kg	1.0	ND	
105-67-9	2,4-dimethylphenol mg/kg	1.0	ND	
88-75-5	2-nitrophenol mg/kg	1.0	ND	
111-91-1	bis(2-chloroethoxy)methane mg/kg	1.0	ND	
120-83-2	2,4-Dichlorophenol mg/kg	1.0	ND	
120-82-1	1,2,4-Trichlorobenzene mg/kg	1.0	ND	
120-83-2	2,4-Dinitrophenol mg/kg	5.0	ND	
91-20-3	Naphthalene mg/kg	1.0	ND	
87-68-3	Hexachlorobutadiene mg/kg	1.0	ND	
59-50-7	4-Chloro-3-methylphenol mg/kg	2.0	ND	
91-06-6	2-Methylnaphthalene mg/kg	1.0	ND	
88-06-2	2,4,6-Trichlorophenol mg/kg	1.0	ND	
95-95-4	2,4,5-Trichlorophenol mg/kg	1.0	ND	
91-58-7	2-Chloronaphthalene mg/kg	1.0	ND	
131-11-3	Dimethylphthalate mg/kg	1.0	ND	
608-20-2	2,6-Dinitrotoluene mg/kg	1.0	ND	
208-96-8	Acenaphthylene mg/kg	1.0	ND	
83-32-9	Acenaphthene mg/kg	1.0	ND	
121-14-2	2,4-Dinitrotoluene mg/kg	1.0	ND	
84-66-2	Diethylphthalate mg/kg	1.0	ND	
100-02-7	4-Nitrophenol mg/kg	5.0	ND	
7005-72-3	4-Chlorophenyl phenyl ether mg/kg	1.0	ND	
86-73-7	Fluorene mg/kg	1.0	ND	
86-74-8	Carbazole mg/kg	1.0	ND	
86-30-6	n-Nitrosodiphenylamine mg/kg	1.0	ND	

SEMI-VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 236325
 Job No : 146568
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : AQQ BLANK
 Sample Matrix : SOIL
 Vial No : 13

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\0606021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

Sample No	Compound	Conc	Unit	Flags
101-55-3	4-Bromophenyl phenyl ether mg/kg	1.0	ND	
118-74-1	Hexachlorobenzene mg/kg	1.0	ND	
87-86-5	Pentachlorophenol mg/kg	5.0	ND	
85-01-8	Phenanthrene mg/kg	1.0	ND	
120-12-7	Anthracene mg/kg	1.0	ND	
84-74-2	di-n-Butylphthalate mg/kg	1.0	ND	
208-44-0	Fluoranthene mg/kg	1.0	ND	
129-00-0	*Pyrene mg/kg	1.0	ND	
85-88-7	Butylbenzylphthalate mg/kg	1.0	ND	
56-53-3	Benzo(a)anthracene mg/kg	1.0	ND	
218-01-9	Chrysene mg/kg	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate mg/kg	1.0	ND	
117-84-0	di-n-octylphthalate mg/kg	1.0	ND	
205-99-2	Benzo(b)fluoranthene mg/kg	1.0	ND	
207-08-9	Benzo(k)fluoranthene mg/kg	1.0	ND	
50-32-8	Benzo(a)pyrene mg/kg	1.0	ND	
193-39-5	Indeno(1,2,3-cd)pyrene mg/kg	1.0	ND	
53-70-3	Dibenz(a,h)anthracene mg/kg	1.0	ND	
191-24-2	Benzo(g,h,i)perylene mg/kg	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		85.9	Pass
Surrogate	Phenol-d6 %Recovered		86.7	Pass
Surrogate	Nitrobenzene-d5 %Recovered		92.4	Pass
Surrogate	2-Fluorobiphenyl %Recovered		90.8	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		51.0	Pass
Surrogate	Terphenyl-d14 %Recovered		81.3	Pass

SEMI-VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
Lab Sample ID : 236325
Job No : 146588
Sample Location : Celtic Technologies Ltd
Client Sample ID : AQG BLANK
Sample Matrix : SOIL
Vial No : 13

```
Method      : EPA 8270 MODIFIED
Data Type   : MS DATA
Data Path    : D:\DATA\JUNE02\060802\
Quant Type   : ISTD
Accreditation Status : UKAS
Dilution Factor : 1
Report Date  : 07/06/2002
```

Q.S. No.	Compound	M/L	Result
108-95-2	Phenol mg/kg	1.0	ND
111-44-4	Bis(2-chloroethyl)ether mg/kg	1.0	ND
95-57-8	2-chlorophenol mg/kg	1.0	ND
541-73-1	1,3-Dichlorobenzene mg/kg	1.0	ND
108-46-7	1,4-Dichlorobenzene mg/kg	1.0	ND
95-48-7	2-Methylphenol mg/kg	1.0	ND
105-44-5	4-Methylphenol mg/kg	1.0	ND
132-64-9	Dibenzofuran mg/kg	1.0	ND
95-57-1	1,2-Dichlorobenzene mg/kg	1.0	ND
108-60-1	bis(2-chloroisopropyl)ether mg/kg	1.0	ND
621-64-7	N-nitroso-di-n-propylamine mg/kg	1.0	ND
67-72-1	Hexachloroethane mg/kg	1.0	ND
98-95-3	Nitrobenzene mg/kg	1.0	ND
78-59-1	Isophorone mg/kg	1.0	ND
105-67-9	2,4-dimethylphenol mg/kg	1.0	ND
88-75-5	2-nitrophenol mg/kg	1.0	ND
111-91-1	bis(2-chloroethoxy)methane mg/kg	1.0	ND
120-83-2	2,4-Dichlorophenol mg/kg	1.0	ND
120-82-1	1,2,4-Trichlorobenzene mg/kg	1.0	ND
120-83-2	2,4-Dinitrophenol mg/kg	5.0	ND
91-20-3	Naphthalene mg/kg	1.0	ND
87-68-3	Hexachlorobutadiene mg/kg	1.0	ND
59-50-7	4-Chloro-3-methylphenol mg/kg	2.0	ND
91-57-6	2-Methylnaphthalene mg/kg	1.0	ND
88-75-5	2,4,6-Trichlorophenol mg/kg	1.0	ND
95-95-4	2,4,5-Trichlorophenol mg/kg	1.0	ND
91-58-7	2-Chloronaphthalene mg/kg	1.0	ND
131-11-3	Dimethylphthalate mg/kg	1.0	ND
608-20-2	2,6-Dinitrotoluene mg/kg	1.0	ND
208-96-8	Acenaphthylene mg/kg	1.0	ND
83-32-9	Acenaphthene mg/kg	1.0	ND
121-14-2	2,4-Dinitrotoluene mg/kg	1.0	ND
84-66-2	Diethylphthalate mg/kg	1.0	ND
100-02-7	4-Nitrophenol mg/kg	5.0	ND
7005-72-3	4-Chlorophenyl phenyl ether mg/kg	1.0	ND
86-73-7	Fluorene mg/kg	1.0	ND
86-74-8	Carbazole mg/kg	1.0	ND
86-30-6	n-Nitrosodiphenylamine mg/kg	1.0	ND

SEMI-VOLATILE ORGANIC COMPOUNDS IN SOLIDS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 236324
 Job No : 146588
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : AQQ SPIKE
 Sample Matrix : SOIL
 Vial No : 11

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\060602\1
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

AS No	Compound	RI	Result	Flag
86-30-6	n-Nitrosodiphenylamine mg/kg	1.0	ND	
101-55-3	4-Bromophenyl phenyl ether mg/kg	1.0	ND	
118-74-1	Hexachlorobenzene mg/kg	1.0	ND	
87-86-5	Pentachlorophenol mg/kg	5.0	12.0	
85-01-8	Phenanthrene mg/kg	1.0	ND	
120-12-7	Anthracene mg/kg	1.0	ND	
84-74-2	di-n-Butylphthalate mg/kg	1.0	ND	
206-44-0	Fluoranthene mg/kg	1.0	ND	
129-00-0	Pyrene mg/kg	1.0	18.2	
85-68-7	Butylbenzylphthalate mg/kg	1.0	ND	
56-55-3	Benzo(a)anthracene mg/kg	1.0	ND	
218-01-9	Chrysene mg/kg	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate mg/kg	1.0	ND	
117-84-0	di-n-octylphthalate mg/kg	1.0	ND	
205-99-2	Benzo(b)fluoranthene mg/kg	1.0	ND	
207-08-9	Benzo(k)fluoranthene mg/kg	1.0	ND	
50-32-8	Benzo(a)pyrene mg/kg	1.0	ND	
193-39-5	Indeno(1,2,3-cd)pyrene mg/kg	1.0	ND	
53-70-3	Dibenz(a,h)anthracene mg/kg	1.0	ND	
191-24-2	Benzo(g,h,i)perylene mg/kg	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		98.3	Pass
Surrogate	Phenol-d6 %Recovered		95.3	Pass
Surrogate	Nitrobenzene-d5 %Recovered		100.9	Pass
Surrogate	2-Fluorobiphenyl %Recovered		95.9	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		87.5	Pass
Surrogate	Terphenyl-d14 %Recovered		91.3	Pass

SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : **Celtic Technologies Ltd**
 Lab Sample ID : **237910**
 Job No : **146842**
 Sample Location : **Celtic Technologies Ltd**
 Client Sample ID : **BH1**
 Sample Matrix : **LIQUID**
 Vial No : **23**

Method : **EPA 8270 MODIFIED**
 Data Type : **MS DATA**
 Data Path : **D:\HPCHEM\DATA\JUNE02\050**
 Quant Type : **ISTD**
 Accreditation Status : **UKAS**
 Dilution Factor : **1**
 Report Date : **07/06/2002**

AS No	Compound	Conc	Result	Flag
86-30-6	n-Nitrosodiphenylamine ug/l	1.0	ND	
101-66-3	4-Bromophenyl phenyl ether ug/l	1.0	ND	
118-74-1	Hexachlorobenzene ug/l	1.0	ND	
87-86-5	Pentachlorophenol ug/l	5.0	ND	
85-01-8	Phenanthrene ug/l	1.0	ND	
120-12-7	Anthracene ug/l	1.0	ND	
84-74-2	di-n-Butyl phthalate ug/l	1.0	ND	
206-44-0	Fluoranthene ug/l	1.0	ND	
200-00-0	Pyrene ug/l	1.0	ND	
86-68-7	Butyl benzyl phthalate ug/l	1.0	ND	
56-55-3	Benzo(a)anthracene ug/l	1.0	ND	
218-01-9	Chrysene ug/l	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate ug/l	1.0	ND	
117-84-0	di-n-octyl phthalate ug/l	1.0	ND	
205-99-2	Benzo(b)fluoranthene ug/l	1.0	ND	
207-08-9	Benzo(k)fluoranthene ug/l	1.0	ND	
50-32-8	Benzo(a)pyrene ug/l	1.0	ND	
193-39-5	Indeno(1,2,3-cd)pyrene ug/l	1.0	ND	
53-70-3	Dibenz(a,h)anthracene ug/l	1.0	ND	
191-24-2	Benzo(ghi)perylene ug/l	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		25.7	Pass
Surrogate	Phenol-d8 %Recovered		13.7	Pass
Surrogate	Nitrobenzene-d5 %Recovered		90.7	Pass
Surrogate	2-Fluorobiphenyl %Recovered		87.9	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		88.6	Pass
Surrogate	Terphenyl-d14 %Recovered		88.0	Pass

Tentatively Identified Compound (LSC) Summary Report

Operator ID: BB Date Acquired: 6 Jun 2002 4:44 am
 Data File: D:\HPCHEM\DATA\JUNE02\050602\SV023.D
 Name: 237910
 LSC:
 Method: C:\HPCHEM\1\METHODS\JUNE02\050602.M (RTE Integrator)
 Title: EPA Method 8270 SVOC's
 Library Searched: C:\DATABASE\WILEY275.L

Compound name	CAS No.	Est. Conc Range	Quality
Unknown hydrocarbon		1.09 µg/L	-
Unknown hydrocarbon		0.47 µg/L	-
Unknown hydrocarbon		1.30 µg/L	-
Unknown hydrocarbon		0.57 µg/L	-
Unknown hydrocarbon		0.42 µg/L	-
Unknown hydrocarbon		0.43 µg/L	-
Not Known		0.45 µg/L	-
Not Known			-

D:\HPCHEM\DATA\JUNE02\050602\SV023.D

**SEVERN TRENT
LABORATORIES**



SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237911
 Job No : 146842
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH2
 Sample Matrix : LIQUID
 Vial No : 24

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\HPCHEM\DATA\JUNE02\050
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

AS	ug	Compound	ug/l	Result	Flag
108-95-2		Phenol ug/l	2.0	ND	
111-44-4		Bis(2-chloroethyl) ether ug/l	2.0	ND	
95-57-8		2-chlorophenol ug/l	2.0	ND	
541-73-1		1,3 Dichlorobenzene ug/l	2.0	ND	
108-46-7		1,4 Dichlorobenzene ug/l	2.0	ND	
95-48-7		2-Methylphenol ug/l	2.0	ND	
105-44-5		4-Methylphenol ug/l	2.0	ND	
132-64-9		*Dibenzofuran ug/l	2.0	ND	
108-90-1		1,2 Dichlorobenzene ug/l	2.0	ND	
108-60-1		bis(2-Chloroisopropyl) ether ug/l	2.0	ND	
621-84-7		N-nitrosodi-n-propylamine ug/l	2.0	ND	
67-72-1		Hexachloroethane ug/l	2.0	ND	
98-95-3		Nitrobenzene ug/l	2.0	ND	
78-59-1		Isophorone ug/l	2.0	ND	
105-67-9		2,4-dimethylphenol ug/l	2.0	ND	
88-75-5		2-nitrophenol ug/l	2.0	ND	
111-91-1		bis(2-chloroethoxy)methane ug/l	2.0	ND	
120-83-2		2,4-Dichlorophenol ug/l	2.0	ND	
120-82-1		1,2,4-Trichlorobenzene ug/l	2.0	ND	
120-83-2		2,4-Dinitrophenol ug/l	50.0	ND	
91-20-3		Naphthalene ug/l	2.0	ND	
87-68-3		Hexachlorobutadiene ug/l	2.0	ND	
59-50-7		4-Chloro-3-methylphenol ug/l	4.0	ND	
91-57-6		2-Methylnaphthalene ug/l	2.0	ND	
108-62-2		2,4,6-Trichlorophenol ug/l	2.0	ND	
95-95-4		2,4,5-Trichlorophenol ug/l	2.0	ND	
91-58-7		2-Chloronaphthalene ug/l	2.0	ND	
131-11-3		Dimethyl phthalate ug/l	2.0	ND	
606-20-2		2,6-Dinitrotoluene ug/l	2.0	ND	
208-96-8		Acenaphthylene ug/l	2.0	ND	
83-32-9		Acenaphthene ug/l	2.0	ND	
121-14-2		2,4-Dinitrotoluene ug/l	2.0	ND	
84-66-2		Diethyl phthalate ug/l	2.0	ND	
100-02-7		4-Nitrophenol ug/l	10.0	ND	
7005-72-3		4-Chlorophenyl phenylether ug/l	2.0	ND	
86-73-7		Fluorene ug/l	2.0	ND	
86-74-8		Carbazole ug/l	2.0	ND	
86-30-6		n-Nitrosodiphenylamine ug/l	2.0	ND	

STL COVENTRY



SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237911
 Job No : 146842
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH2
 Sample Matrix : LIQUID
 Vial No : 24

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\HPCHEM\DATA\JUNE02\080
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

AS No	Compound	MS	Result	Pass
101-55-3	4-Bromophenyl phenyl ether ug/l	2.0	ND	
118-74-1	Hexachlorobenzene ug/l	2.0	ND	
87-86-5	Pentachlorophenol ug/l	10.0	ND	
85-01-8	Phenanthrene ug/l	2.0	ND	
120-12-7	Anthracene ug/l	2.0	ND	
84-74-2	di-n-Butyl phthalate ug/l	2.0	ND	
206-44-0	Fluoranthene ug/l	2.0	ND	
129-00-0	Pyrene ug/l	2.0	ND	
85-68-7	Butyl benzyl phthalate ug/l	2.0	ND	
56-55-3	Benzo(a)anthracene ug/l	2.0	ND	
218-01-9	Chrysene ug/l	2.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate ug/l	2.0	ND	
117-84-0	di-n-octyl phthalate ug/l	2.0	ND	
205-99-2	Benzo(b)fluoranthene ug/l	2.0	ND	
207-08-9	Benzo(k)fluoranthene ug/l	2.0	ND	
50-32-8	Benzo(a)pyrene ug/l	2.0	ND	
193-38-5	Indeno(1,2,3-cd)pyrene ug/l	2.0	ND	
53-70-3	Dibenz(a,h)anthracene ug/l	2.0	ND	
191-24-2	Benzo(ghi)perylene ug/l	2.0	ND	
Surrogate	2-Fluorophenol %Recovered		24.3	Pass
Surrogate	Phenol-d5 %Recovered		11.9	Pass
Surrogate	Nitrobenzene-d5 %Recovered		100.7	Pass
Surrogate	2-Fluorobiphenyl %Recovered		99.4	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		101.4	Pass
Surrogate	Terphenyl-d14 %Recovered		98.5	Pass

Tentatively Identified Compound (LSC) Summary Report

Operator ID: BB Date Acquired: 6 Jun 2002 5:17 am
 Data File: D:\HPCHEM\DATA\JUNE02\050602\SV024.D
 Name: 237911
 Misc:
 Method: C:\HPCHEM\1\METHODS\JUNE02\050602.M (RTE Integrator)
 Title: EPA Method 8270 SVOC's
 Library Searched: C:\DATABASE\WILEY275.L

Compound name	CAS No.	Est. Conc Range	Quality
Not Known		2.95 µg/L	-
unknown hydrocarbon		0.47 µg/L	-
unknown hydrocarbon		1.57 µg/L	-
unknown hydrocarbon		0.57 µg/L	-
unknown hydrocarbon		0.57 µg/L	-
unknown hydrocarbon		0.43 µg/L	-
unknown hydrocarbon		0.56 µg/L	-
unknown hydrocarbon		0.51 µg/L	-
unknown hydrocarbon		0.50 µg/L	-
Not Known		0.65 µg/L	-

D:\HPCHEM\DATA\JUNE02\050602\SV024.D

SEVERN TRENT
LABORATORIES



SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237912
 Job No : 146842
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BLANK
 Sample Matrix : LIQUID
 Vial No : 27

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\VPCHEM\DATA\JUNE02\060
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

AS No	Compound	Unit	Result	Flags
108-95-2	Phenol ug/l	1.0	ND	
111-44-4	Bis(2-chloroethyl) ether ug/l	1.0	ND	
95-57-8	2-chlorophenol ug/l	1.0	ND	
541-73-1	1,3 Dichlorobenzene ug/l	1.0	ND	
106-46-7	1,4 Dichlorobenzene ug/l	1.0	ND	
95-48-7	2-Methylphenol ug/l	1.0	ND	
106-44-5	4-Methylphenol ug/l	1.0	ND	
132-84-9	Dibenzofuran ug/l	1.0	ND	
95-50-1	1,2 Dichlorobenzene ug/l	1.0	ND	
108-60-1	bis(2-Chloroisopropyl) ether ug/l	1.0	ND	
621-64-7	N-nitrosodi-n-propylamine ug/l	1.0	ND	
67-72-1	Hexachloroethane ug/l	1.0	ND	
98-96-3	Nitrobenzene ug/l	1.0	ND	
78-59-1	Isophorone ug/l	1.0	ND	
106-67-9	2,4-dimethylphenol ug/l	1.0	ND	
88-75-5	2-nitrophenol ug/l	1.0	ND	
111-91-1	bis(2-chloroethoxy)methane ug/l	1.0	ND	
120-83-2	2,4-Dichlorophenol ug/l	1.0	ND	
120-82-1	1,2,4-Trichlorobenzene ug/l	1.0	ND	
120-83-2	2,4-Dinitrophenol ug/l	25.0	ND	
91-20-3	Naphthalene ug/l	1.0	ND	
87-68-3	Hexachlorobutadiene ug/l	1.0	ND	
59-50-7	4-Chloro-3-methylphenol ug/l	2.0	ND	
91-57-6	2-Methylnaphthalene ug/l	1.0	ND	
88-08-2	2,4,6-Trichlorophenol ug/l	1.0	ND	
95-95-4	2,4,5-Trichlorophenol ug/l	1.0	ND	
91-58-7	2-Chloronaphthalene ug/l	1.0	ND	
131-11-3	Dimethyl phthalate ug/l	1.0	ND	
606-20-2	2,6-Dinitrotoluene ug/l	1.0	ND	
208-96-8	Acenaphthylene ug/l	1.0	ND	
83-32-9	Acenaphthene ug/l	1.0	ND	
121-14-2	2,4-Dinitrotoluene ug/l	1.0	ND	
84-68-2	Diethyl phthalate ug/l	1.0	ND	
100-02-7	4-Nitrophenol ug/l	5.0	ND	
7005-72-3	4-Chlorophenyl phenylether ug/l	1.0	ND	
86-73-7	Fluorene ug/l	1.0	ND	
88-74-8	Carbazole ug/l	1.0	ND	
86-30-6	n-Nitrosodiphenylamine ug/l	1.0	ND	

STL COVENTRY



SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237912
 Job No : 146842
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BLANK
 Sample Matrix : LIQUID
 Vial No : 27

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\HPCHEM\DATA\JUNE02\050
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

CAS NO	Compound	IR	Result	Flags
101-55-3	4-Bromophenyl phenyl ether ug/l	1.0	ND	
118-74-1	Hexachlorobenzene ug/l	1.0	ND	
87-86-5	Pentachlorophenol ug/l	5.0	ND	
85-01-8	Phenanthrene ug/l	1.0	ND	
120-12-7	Anthracene ug/l	1.0	ND	
84-74-2	di-n-Butyl phthalate ug/l	1.0	ND	
208-44-0	Fluoranthene ug/l	1.0	ND	
129-00-0	Pyrene ug/l	1.0	ND	
98-7	Butyl benzyl phthalate ug/l	1.0	ND	
50-53-3	Benzo(a)anthracene ug/l	1.0	ND	
218-01-9	Chrysene ug/l	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate ug/l	1.0	ND	
117-84-0	di-n-octyl phthalate ug/l	1.0	ND	
205-99-2	Benzo(b)fluoranthene ug/l	1.0	ND	
207-08-9	Benzo(k)fluoranthene ug/l	1.0	ND	
50-32-8	Benzo(a)pyrene ug/l	1.0	ND	
193-39-5	Indeno(1,2,3-cd)pyrene ug/l	1.0	ND	
53-70-3	Dibenz(a,h)anthracene ug/l	1.0	ND	
191-24-2	Benzo(ghi)perylene ug/l	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		26.2	Pass
Surrogate	Phenol-d6 %Recovered		13.6	Pass
Surrogate	Nitrobenzene-d5 %Recovered		98.5	Pass
Surrogate	2-Fluorobiphenyl %Recovered		97.5	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		101.5	Pass
Surrogate	Terphenyl-d14 %Recovered		90.4	Pass

SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237913
 Job No : 146842
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : SPIKE
 Sample Matrix : LIQUID
 Vial No : 26

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\HPCHEM\DATA\JUNE02\050
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

Sample No	Compound	Unit	Result	Flags
108-95-2	Phenol ug/l	1.0	2.6	
111-44-4	Bis(2-chloroethyl) ether ug/l	1.0	ND	
35-57-8	2-chlorophenol ug/l	1.0	9.1	
541-73-1	1,3 Dichlorobenzene ug/l	1.0	ND	
106-48-7	1,4 Dichlorobenzene ug/l	1.0	12.3	
95-48-7	2-Methylphenol ug/l	1.0	ND	
106-44-5	4-Methylphenol ug/l	1.0	ND	
132-84-9	Dibenzofuran ug/l	1.0	ND	
95-50-1	1,2 Dichlorobenzene ug/l	1.0	ND	
108-60-1	bis(2-Chloroisopropyl) ether ug/l	1.0	ND	
621-64-7	N-nitrosodi-n-propylamine ug/l	1.0	12.7	
67-72-1	Hexachloroethane ug/l	1.0	ND	
98-95-3	Nitrobenzene ug/l	1.0	ND	
78-59-1	Isophorone ug/l	1.0	ND	
105-67-9	2,4-dimethylphenol ug/l	1.0	ND	
88-75-5	2-nitrophenol ug/l	1.0	ND	
111-91-1	bis(2-chloroethoxy)methane ug/l	1.0	ND	
120-83-2	2,4-Dichlorophenol ug/l	1.0	ND	
120-82-1	1,2,4-Trichlorobenzene ug/l	1.0	14.4	
120-83-2	2,4-Dinitrophenol ug/l	25.0	ND	
91-20-3	Naphthalene ug/l	1.0	ND	
87-68-3	Hexachlorobutadiene ug/l	1.0	ND	
59-50-7	4-Chloro-3-methylphenol ug/l	2.0	11.6	
91-57-6	2-Methylnaphthalene ug/l	1.0	ND	
88-06-2	2,4,6-Trichlorophenol ug/l	1.0	ND	
95-95-4	2,4,6-Trichlorophenol ug/l	1.0	ND	
91-58-7	2-Chloronaphthalene ug/l	1.0	ND	
131-11-3	Dimethyl phthalate ug/l	1.0	ND	
606-20-2	2,6-Dinitrotoluene ug/l	1.0	ND	
208-96-8	Acenaphthylene ug/l	1.0	ND	
83-32-9	Acenaphthene ug/l	1.0	14.4	
121-14-2	2,4-Dinitrotoluene ug/l	1.0	15.6	
84-66-2	Diethyl phthalate ug/l	1.0	ND	
100-02-7	4-Nitrophenol ug/l	5.0	2.2	J
7005-72-3	4-Chlorophenyl phenylether ug/l	1.0	ND	
86-73-7	Fluorene ug/l	1.0	ND	
86-74-8	Carbazole ug/l	1.0	ND	
86-30-6	n-Nitrosodiphenylamine ug/l	1.0	ND	

SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd	Method : EPA 8270 MODIFIED
Lab Sample ID : 237913	Data Type : MS DATA
Job No : 146842	Data Path : D:\HPCHEM\DATA\JUNE02\050
Sample Location : Celtic Technologies Ltd	Quant Type : ISTD
Client Sample ID : SPIKE	Accreditation Status : UKAS
Sample Matrix : LIQUID	Dilution Factor : 1
Vial No : 26	Report Date : 07/06/2002

SAS No	Compound	Unit	Result	Flags
101-55-3	4-Bromophenyl phenyl ether ug/l	1.0	ND	
118-74-1	Hexachlorobenzene ug/l	1.0	ND	
87-86-5	Pentachlorophenol ug/l	5.0	13.4	
86-01-8	Phenanthrene ug/l	1.0	ND	
120-12-7	Anthracene ug/l	1.0	ND	
84-74-2	di-n-Butyl phthalate ug/l	1.0	ND	
206-44-0	Fluoranthene ug/l	1.0	ND	
129-00-0	Pyrene ug/l	1.0	15.3	
101-86-7	Butyl benzyl phthalate ug/l	1.0	ND	
100-55-3	Benzo(a)anthracene ug/l	1.0	ND	
218-01-9	Chrysene ug/l	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate ug/l	1.0	20.6	
117-84-0	di-n-octyl phthalate ug/l	1.0	ND	
205-99-2	Benzo(b)fluoranthene ug/l	1.0	ND	
207-08-9	Benzo(k)fluoranthene ug/l	1.0	ND	
50-32-8	Benzo(a)pyrene ug/l	1.0	ND	
193-39-5	Indeno(1,2,3-cd)pyrene ug/l	1.0	ND	
53-70-3	Dibenz(a,h)anthracene ug/l	1.0	ND	
191-24-2	Benzo(ghi)perylene ug/l	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		23.6	Pass
Surrogate	Phenol-d6 %Recovered		13.5	Pass
Surrogate	Nitrobenzene-d5 %Recovered		107.1	Pass
Surrogate	2-Fluorobiphenyl %Recovered		100.3	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		108.3	Pass
Surrogate	Terphenyl-d14 %Recovered		97.6	Pass

Please note : Result of ND is Not Detectable

Explanation of compound flags :

J : Compound is detectable but is below normal reporting limit

E : Result is above the calibrated range and is therefore an estimate

B : Compound also detected in Blank extract

D : Sample was diluted and re-analysed to obtain a valid result for this compound

VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237910
 Job No : 148842
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH1
 Sample Matrix : LIQUID
 Vial No : 25

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUN02\5V0508021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

CAS NO	Compound	MRL	Result	Flags
75-71-8	Dichlorodifluoromethane ug/l	5	ND	
74-87-3	Chloromethane ug/l	5	ND	
75-00-3	Chloroethane ug/l	5	ND	
74-83-9	Bromomethane ug/l	5	ND	
75-69-4	Trichlorofluoromethane ug/l	5	ND	
75-35-4	1,1-Dichloroethane ug/l	5	ND	
75-09-2	Dichloromethane ug/l	5	ND	
156-60-9	Trans-1,2-dichloroethene ug/l	5	ND	
75-34-3	1,1-Dichloroethane ug/l	5	ND	
156-59-2	Cis-1,2-dichloroethene ug/l	5	ND	
594-20-7	2,2-Dichloropropane ug/l	5	ND	
67-66-3	Chloroform ug/l	5	ND	
74-97-5	Bromochloromethane ug/l	5	ND	
71-55-6	1,1,1-Trichloroethane ug/l	5	ND	
563-58-6	1,1-Dichloropropene ug/l	5	ND	
107-06-2	1,2-Dichloroethane ug/l	5	ND	
71-43-2	Benzene ug/l	5	ND	
78-87-5	1,2-Dichloropropane ug/l	5	ND	
79-01-6	Trichloroethene ug/l	5	ND	
75-27-4	Bromodichloromethane ug/l	5	ND	
74-95-3	Dibromomethane ug/l	5	ND	
10061-01-5	Cis-1,3-dichloropropane ug/l	5	ND	
108-88-3	Toluene ug/l	5	5.6	
10061-02-6	Trans-1,3-dichloropropene ug/l	5	ND	
79-00-5	1,1,2-trichloroethane ug/l	5	ND	
58-23-5	Carbon Tetrachloride ug/l	5	ND	
75-01-4	Vinyl Chloride ug/l	5	ND	
124-28-9	1,3-dichloropropane ug/l	5	ND	
127-18-4	Tetrachloroethene ug/l	5	ND	
124-48-1	Dibromochloromethane ug/l	5	ND	
108-93-4	1,2-dibromoethane ug/l	5	ND	
108-90-7	Chlorobenzene ug/l	5	ND	
630-20-6	1,1,1,2-tetrachloroethane ug/l	5	ND	
100-41-4	Ethyl Benzene ug/l	5	ND	
1330-20-7	m,p-xylene ug/l	10	ND	
95-47-6	o-xylene ug/l	5	ND	
100-42-5	Styrene ug/l	5	ND	

STL COVENTRY



VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237910
 Job No : 146842
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH1
 Sample Matrix : LIQUID
 Vial No : 25

Method : EPA 8280 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUN02\SV080602\1
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

CAS NO	Compound	URL	Result	Flags
75-26-2	Bromoform ug/l	5	ND	
98-82-8	Isopropylbenzene ug/l	5	ND	
79-34-5	1,1,2,2-tetrachloroethane ug/l	5	ND	
96-18-4	1,2,3-trichloropropane ug/l	5	ND	
103-65-1	n-propylbenzene ug/l	5	ND	
108-86-1	Bromobenzene ug/l	5	ND	
95-49-8	2-chlorotoluene ug/l	5	ND	
108-67-8	1,3,5-trimethylbenzene ug/l	5	ND	
106-43-4	4-chlorotoluene ug/l	5	ND	
98-06-6	tert-butylbenzene ug/l	5	ND	
95-63-6	1,2,4-trimethylbenzene ug/l	5	ND	
135-98-8	sec-butylbenzene ug/l	5	ND	
99-87-6	p-isopropyltoluene ug/l	5	ND	
541-73-1	1,3-dichlorobenzene ug/l	5	ND	
106-46-7	1,4-dichlorobenzene ug/l	5	ND	
104-51-8	n-butylbenzene ug/l	5	ND	
95-50-1	1,2-dichlorobenzene ug/l	5	ND	
96-12-8	1,2-dibromo-3-chloropropane ug/l	5	ND	
120-82-1	1,2,4-trichlorobenzene ug/l	5	ND	
87-68-3	Hexachlorobutadiene ug/l	5	ND	
91-20-3	Naphthalene ug/l	5	ND	
87-61-6	1,2,3-trichlorobenzene ug/l	5	ND	
Surrogate	Dibromofluoromethane %Recovered		101.3 Pass	
Surrogate	Toluene-d8 %Recovered		101.1 Pass	
Surrogate	4-bromofluorobenzene %Recovered		93.5 Pass	

VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237911
 Job No : 146842
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH2
 Sample Matrix : LIQUID
 Vial No : 26

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUN02\5V0606021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

CAS NO	Compound	MRI	Result	Flags
75-71-8	Dichlorodifluoromethane ug/l	5	ND	
74-87-3	Chloromethane ug/l	5	ND	
75-00-3	Chloroethane ug/l	5	ND	
74-83-9	Bromomethane ug/l	5	ND	
75-69-4	Trichlorofluoromethane ug/l	5	ND	
75-35-4	1,1-Dichloroethene ug/l	5	ND	
75-09-2	Dichloromethane ug/l	5	ND	
156-80-9	Trans-1,2-dichloroethene ug/l	5	ND	
75-34-3	1,1-Dichloroethane ug/l	5	ND	
156-59-2	Cis-1,2-dichloroethene ug/l	5	ND	
594-20-7	2,2-Dichloropropane ug/l	5	ND	
67-66-3	Chloroform ug/l	5	ND	
74-97-5	Bromochloromethane ug/l	5	ND	
71-55-6	1,1,1-Trichloroethane ug/l	5	ND	
563-58-8	1,1-Dichloropropene ug/l	5	ND	
107-06-2	1,2-Dichloroethane ug/l	5	ND	
71-43-2	Benzene ug/l	5	ND	
78-87-5	1,2-Dichloropropane ug/l	5	ND	
79-01-6	Trichloroethene ug/l	5	ND	
75-27-4	Bromodichloromethane ug/l	5	ND	
74-95-3	Dibromomethane ug/l	5	ND	
10061-01-6	Cis-1,3-dichloropropene ug/l	5	ND	
106-88-3	Toluene ug/l	5	4.4	J
10061-02-6	Trans-1,3-dichloropropene ug/l	5	ND	
79-00-5	1,1,2-trichloroethane ug/l	5	ND	
56-23-5	Carbon Tetrachloride ug/l	5	ND	
75-01-4	Vinyl Chloride ug/l	5	ND	
124-28-9	1,3-dichloropropane ug/l	5	ND	
127-18-4	Tetrachloroethene ug/l	5	ND	
124-48-1	Dibromochloromethane ug/l	5	ND	
106-93-4	1,2-dibromoethane ug/l	5	ND	
108-90-7	Chlorobenzene ug/l	5	ND	
630-20-6	1,1,1,2-tetrachloroethane ug/l	5	ND	
100-41-4	Ethyl Benzene ug/l	5	ND	
1330-20-7	m,p-xylene ug/l	10	ND	
95-47-6	o-xylene ug/l	5	ND	
100-42-5	Styrene ug/l	5	ND	
75-25-2	Bromoform ug/l	5	ND	

VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237911
 Job No : 146842
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH2
 Sample Matrix : LIQUID
 Vial No : 26

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\UUN02\5V0506021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

CAS NO	Compound	MR	Result	Flags
98-82-8	Isopropylbenzene ug/l	5	ND	
79-34-5	1,1,2,2-tetrachloroethane ug/l	5	ND	
95-18-4	1,2,3-trichloropropane ug/l	5	ND	
103-65-1	n-propylbenzene ug/l	5	ND	
108-86-1	Bromobenzene ug/l	5	ND	
95-49-8	2-chlorotoluene ug/l	5	ND	
108-67-8	1,3,5-trimethylbenzene ug/l	5	ND	
106-43-4	4-chlorotoluene ug/l	5	ND	
98-06-6	tert-butylbenzene ug/l	5	ND	
95-63-6	1,2,4-trimethylbenzene ug/l	5	ND	
135-98-8	sec-butylbenzene ug/l	5	ND	
99-87-8	p-isopropyltoluene ug/l	5	ND	
541-73-1	1,3-dichlorobenzene ug/l	5	ND	
106-46-7	1,4-dichlorobenzene ug/l	5	ND	
104-51-8	n-butylbenzene ug/l	5	ND	
95-50-1	1,2-dichlorobenzene ug/l	5	ND	
96-12-8	1,2-dibromo-3-chloropropane ug/l	5	ND	
120-82-1	1,2,4-trichlorobenzene ug/l	5	ND	
87-68-3	Hexachlorobutadiene ug/l	5	ND	
91-20-3	Naphthalene ug/l	5	ND	
87-81-6	1,2,3-trichlorobenzene ug/l	5	ND	
Surrogate	Dibromofluoromethane %Recovered		101.6 Pass	
Surrogate	Toluene-d8 %Recovered		100.9 Pass	
Surrogate	4-bromofluorobenzene %Recovered		95.9 Pass	

VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237912
 Job No : 146842
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BLANK
 Sample Matrix : LIQUID
 Vial No : 15

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUN02\SV0508021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

GAS NO	Compound	MBL	Result	Flags
75-71-8	Dichlorodifluoromethane ug/l	5	ND	
74-87-3	Chloromethane ug/l	5	ND	
75-00-3	Chloroethane ug/l	5	ND	
74-83-9	Bromomethane ug/l	5	ND	
75-69-4	Trichlorofluoromethane ug/l	5	ND	
75-35-4	1,1-Dichloroethane ug/l	5	ND	
75-09-2	Dichloromethane ug/l	5	ND	
156-60-9	Trans-1,2-dichloroethene ug/l	5	ND	
75-34-3	1,1-Dichloroethane ug/l	5	ND	
156-59-2	Cis-1,2-dichloroethene ug/l	5	ND	
594-20-7	2,2-Dichloropropane ug/l	5	ND	
67-66-3	Chloroform ug/l	5	ND	
74-97-5	Bromochloromethane ug/l	5	ND	
71-55-6	1,1,1-Trichloroethane ug/l	5	ND	
563-58-6	1,1-Dichloropropene ug/l	5	ND	
107-08-2	1,2-Dichloroethane ug/l	5	ND	
71-43-2	Benzene ug/l	5	ND	
78-87-5	1,2-Dichloropropane ug/l	5	ND	
79-01-6	Trichloroethene ug/l	5	ND	
75-27-4	Bromodichloromethane ug/l	5	ND	
74-96-3	Dibromomethane ug/l	5	ND	
10081-01-5	Cis-1,3-dichloropropene ug/l	5	ND	
108-88-3	Toluene ug/l	5	ND	
10081-02-6	Trans-1,3-dichloropropene ug/l	5	ND	
79-00-5	1,1,2-trichloroethane ug/l	5	ND	
56-23-5	Carbon Tetrachloride ug/l	5	ND	
75-01-4	Vinyl Chloride ug/l	5	ND	
124-28-9	1,3-dichloropropane ug/l	5	ND	
127-18-4	Tetrachloroethene ug/l	5	ND	
124-48-1	Dibromochloromethane ug/l	5	ND	
106-93-4	1,2-dibromoethane ug/l	5	ND	
108-90-7	Chlorobenzene ug/l	5	ND	
630-20-6	1,1,1,2-tetrachloroethane ug/l	5	ND	
100-41-4	Ethyl Benzene ug/l	5	ND	
1330-20-7	m,p-xylene ug/l	10	ND	
96-47-6	o-xylene ug/l	5	ND	
100-42-5	Styrene ug/l	5	ND	
75-25-2	Bromoform ug/l	5	ND	

STL COVENTRY



VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237912
 Job No : 146842
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BLANK
 Sample Matrix : LIQUID
 Vial No : 15

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUN02\5V0506021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

CAS NO	Compound	MRL	Result	Flags
98-82-8	Isopropylbenzene ug/l	5	ND	
79-34-5	1,1,2,2-tetrachloroethane ug/l	5	ND	
96-18-4	1,2,3-trichloropropane ug/l	5	ND	
103-65-1	n-propylbenzene ug/l	5	ND	
108-86-1	Bromobenzene ug/l	5	ND	
95-49-8	2-chlorotoluene ug/l	5	ND	
108-67-8	1,3,5-trimethylbenzene ug/l	5	ND	
106-43-4	4-chlorotoluene ug/l	5	ND	
98-06-6	tert-butylbenzene ug/l	5	ND	
95-63-6	1,2,4-trimethylbenzene ug/l	5	ND	
135-98-8	sec-butylbenzene ug/l	5	ND	
99-87-8	p-isopropyltoluene ug/l	5	ND	
541-73-1	1,3-dichlorobenzene ug/l	5	ND	
106-46-7	1,4-dichlorobenzene ug/l	5	ND	
104-51-8	n-butylbenzene ug/l	5	ND	
95-50-1	1,2-dichlorobenzene ug/l	5	ND	
96-12-8	1,2-dibromo-3-chloropropane ug/l	5	ND	
120-82-1	1,2,4-trichlorobenzene ug/l	5	ND	
87-68-3	Hexachlorobutadiene ug/l	5	ND	
91-20-3	Naphthalene ug/l	5	ND	
87-61-6	1,2,3-trichlorobenzene ug/l	5	ND	
Surrogate	Dibromofluoromethane %Recovered		100.5 Pass	
Surrogate	Toluene-d8 %Recovered		98.6 Pass	
Surrogate	4-bromofluorobenzene %Recovered		94.9 Pass	

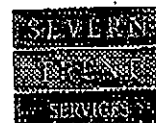
VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 237913
 Job No : 140842
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : SPIKE
 Sample Matrix : LIQUID
 Vial No : 16

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUN02\SV0506021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

CAS NO	Compound	MR	Result	Flags
75-71-8	Dichlorodifluoromethane ug/l	5	ND	
74-87-3	Chloromethane ug/l	5	ND	
75-00-3	Chloroethane ug/l	5	ND	
74-83-9	Bromomethane ug/l	5	ND	
75-69-4	Trichlorofluoromethane ug/l	5	ND	
75-35-4	1,1-Dichloroethene ug/l	5	55.0	
75-09-2	Dichloromethane ug/l	5	ND	
156-80-9	Trans-1,2-dichloroethene ug/l	5	ND	
75-34-3	1,1-Dichloroethane ug/l	5	ND	
156-59-2	Cis-1,2-dichloroethene ug/l	5	ND	
694-20-7	2,2-Dichloropropane ug/l	5	ND	
67-88-3	Chloroform ug/l	5	ND	
74-97-5	Bromochloromethane ug/l	5	ND	
71-55-6	1,1,1-Trichloroethane ug/l	5	ND	
663-58-6	1,1-Dichloropropene ug/l	5	ND	
107-08-2	1,2-Dichloroethane ug/l	5	ND	
71-43-2	Benzene ug/l	5	55.0	
78-87-5	1,2-Dichloropropane ug/l	5	ND	
79-01-6	Trichloroethene ug/l	5	55.2	
75-27-4	Bromodichloromethane ug/l	5	ND	
74-95-3	Dibromomethane ug/l	5	ND	
10061-01-5	Cis-1,3-dichloropropene ug/l	5	ND	
108-88-3	Toluene ug/l	5	54.0	
10061-02-6	Trans-1,3-dichloropropene ug/l	5	ND	
79-00-5	1,1,2-trichloroethane ug/l	5	ND	
56-23-5	Carbon Tetrachloride ug/l	5	ND	
75-01-4	Vinyl Chloride ug/l	5	ND	
124-28-9	1,3-dichloropropane ug/l	5	ND	
127-18-4	Tetrachloroethene ug/l	5	ND	
124-48-1	Dibromochloromethane ug/l	5	ND	
106-83-4	1,2-dibromoethane ug/l	5	ND	
108-90-7	Chlorobenzene ug/l	5	54.1	
630-20-6	1,1,1,2-tetrachloroethane ug/l	5	ND	
100-41-4	Ethyl Benzene ug/l	5	ND	
1330-20-7	m,p-xylene ug/l	10	ND	
95-47-6	o-xylene ug/l	5	ND	
100-42-5	Styrene ug/l	5	ND	
75-25-2	Bromoform ug/l	5	ND	

STL COVENTRY



VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name	: Celtic Technologies Ltd	Method	: EPA 8260 MODIFIED
Lab Sample ID	: 237913	Data Type	: MS DATA
Job No	: 146842	Data Path	: D:\DATA\JUN02\5V050802\
Sample Location	: Celtic Technologies Ltd	Quant Type	: ISTD
Client Sample ID	: SPIKE	Accreditation Status	: UKAS
Sample Matrix	: LIQUID	Dilution Factor	: 1
Vial No	: 16	Report Date	: 07/06/2002

GAS NO	Compound	MRI	Result	Flags
98-82-8	Isopropylbenzene ug/l	5	ND	
79-34-5	1,1,2,2-tetrachloroethane ug/l	5	ND	
98-18-4	1,2,3-trichloropropane ug/l	5	ND	
103-65-1	n-propylbenzene ug/l	5	ND	
108-88-1	Bromobenzene ug/l	5	ND	
95-49-8	2-chlorotoluene ug/l	5	ND	
108-67-8	1,3,5-trimethylbenzene ug/l	5	ND	
106-43-4	4-chlorotoluene ug/l	5	ND	
98-06-6	tert-butylbenzene ug/l	5	ND	
95-63-6	1,2,4-trimethylbenzene ug/l	5	ND	
136-98-8	sec-butylbenzene ug/l	5	ND	
99-87-6	p-isopropyltoluene ug/l	5	ND	
541-73-1	1,3-dichlorobenzene ug/l	5	ND	
106-46-7	1,4-dichlorobenzene ug/l	5	ND	
104-51-8	n-butylbenzene ug/l	5	ND	
95-50-1	1,2-dichlorobenzene ug/l	5	ND	
98-12-8	1,2-dibromo-3-chloropropane ug/l	5	ND	
120-82-1	1,2,4-trichlorobenzene ug/l	5	ND	
87-88-3	Hexachlorobutadiene ug/l	5	ND	
91-20-3	Naphthalene ug/l	5	ND	
87-61-6	1,2,3-trichlorobenzene ug/l	5	ND	
Surrogate	Dibromofluoromethane %Recovered		103.4	Pass
Surrogate	Toluene-d8 %Recovered		98.1	Pass
Surrogate	4-bromofluorobenzene %Recovered		91.2	Pass

Please note : Result of ND is Not Detectable

For Surrogate Compounds 50 ug/l added, lower limit is 75% and higher limit is 125%

Explanation of compound flags :

J : Compound is detectable but is below normal reporting limit

E : Result is above the calibrated range and is therefore an estimate

B : Compound also detected in Blank extract

D : Sample was diluted and re-analysed to obtain a valid result for this compound

TOTAL PETROLEUM HYDROCARBONS

Client Name: **CELTIC TECHNOLOGIES**

Lab. Sample ID: 237910
Job No.: 146842
Sample Location: NONE SUPPLIED
Client Sample ID: BH1
Sample Matrix: LIQUID
Vol. Extracted (mls): 202
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 14-Jun-2002

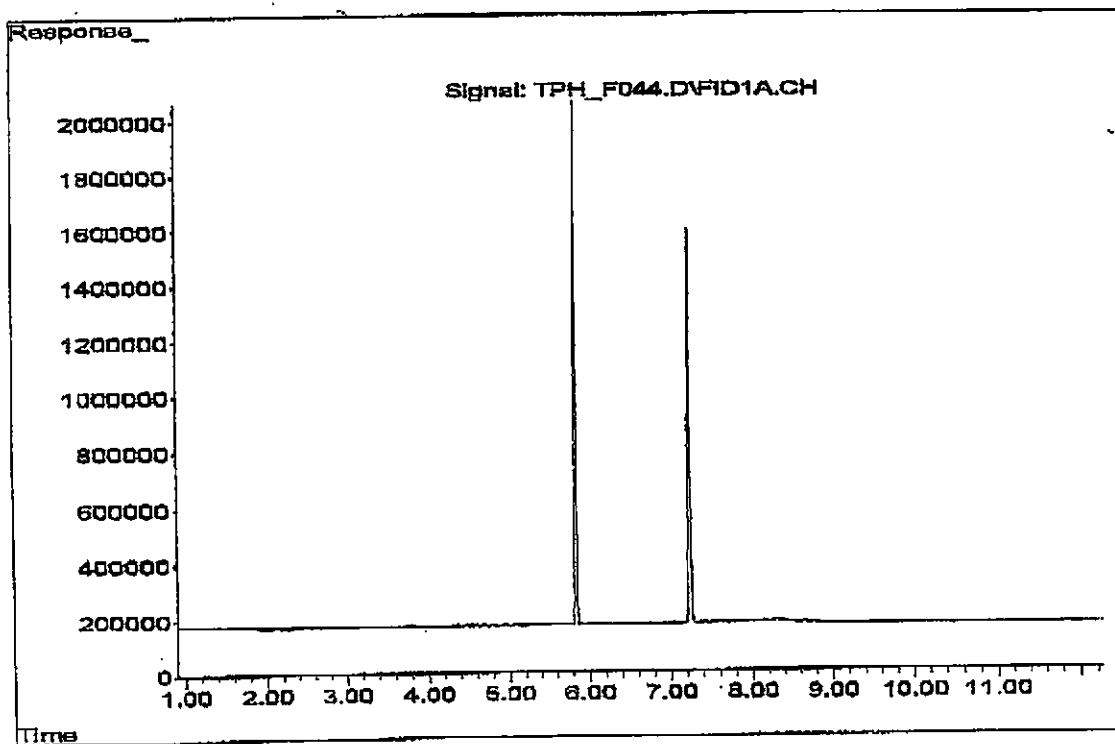
CONCENTRATION UNITS: ug/L

RESULTS

RANGE	MRL	RESULT
>C6 - C8	10	ND
>C8 - C10	10	ND
>C10 - C16	20	ND
>C16 - C24	20	ND
>C24 - C40	50	ND
TOTAL TPH >C6 - C40		ND

MRL = MINIMUM REPORTING LIMIT
ND = NOT DETECTED

CHROMATOGRAM



**SEVERN TRENT
LABORATORIES**



TOTAL PETROLEUM HYDROCARBONS

Client Name: CELTIC TECHNOLOGIES

Lab. Sample ID: 237911
Job No.: 146842
Sample Location: NONE SUPPLIED
Client Sample ID: BH2
Sample Matrix: LIQUID
Vol. Extracted (mls): 199
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 14-Jun-2002

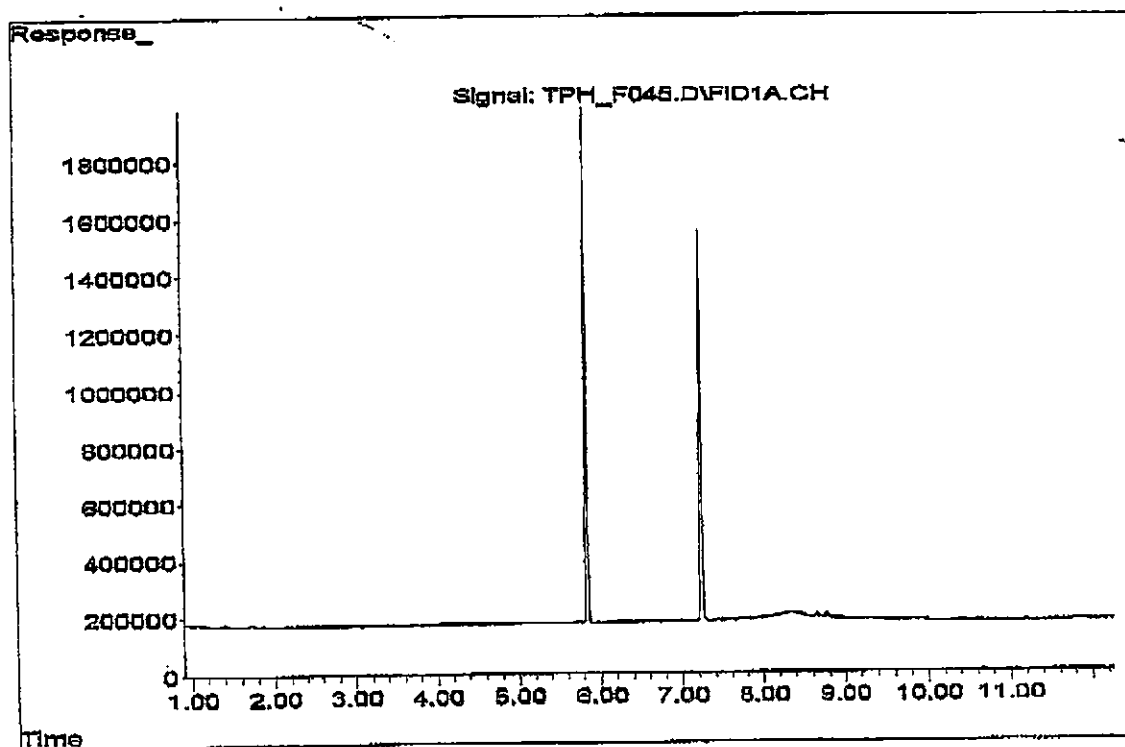
CONCENTRATION UNITS: ug/L

RESULTS

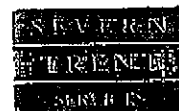
RANGE	MRL	RESULT
>C6 - C8	10	ND
>C8 - C10	10	ND
>C10 - C16	20	ND
>C16 - C24	20	ND
>C24 - C40	50	ND
TOTAL TPH >C6 - C40		ND

MRL = MINIMUM REPORTING LIMIT
ND = NOT DETECTED

CHROMATOGRAM



SEVERN TRENT
LABORATORIES



TOTAL PETROLEUM HYDROCARBONS

Client Name: **CELTIC TECHNOLOGIES**

Lab. Sample ID: 237912
Job No.: 146842
Sample Location: NONE SUPPLIED
Client Sample ID: QC BLANK 121143
Sample Matrix: LIQUID
Vol. Extracted (mls): 200
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 14-Jun-2002

CONCENTRATION UNITS: ug/L

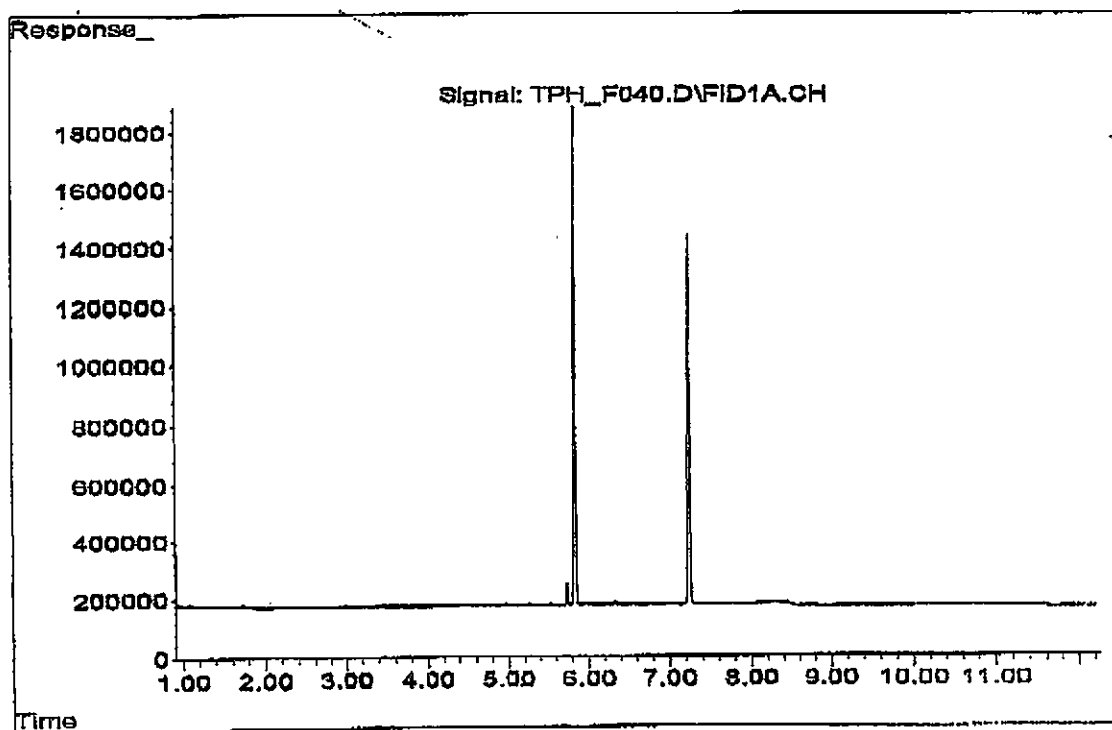
RESULTS

RANGE	MRL	RESULT
>C6 - C8	10	ND
>C8 - C10	10	ND
>C10 - C16	20	ND
>C16 - C24	20	ND
>C24 - C40	50	ND
TOTAL TPH >C6 - C40		ND

MRL = MINIMUM REPORTING LIMIT

ND = NOT DETECTED

CHROMATOGRAM



**SEVERN TRENT
LABORATORIES**



TOTAL PETROLEUM HYDROCARBONSClient Name: **CELTIC TECHNOLOGIES**

Lab. Sample ID: 237913
 Job No.: 146642
 Sample Location: NONE SUPPLIED
 Client Sample ID: QC SPIKE 121142
 Sample Matrix: LIQUID
 Vol. Extracted (mls): 200
 Dilution Factor: 1

Method: IN HOUSE
 Data Type: GC-FID
 Quant. Type: ISTD
 Accreditation Status: NONE

Report Date: 14-Jun-2002

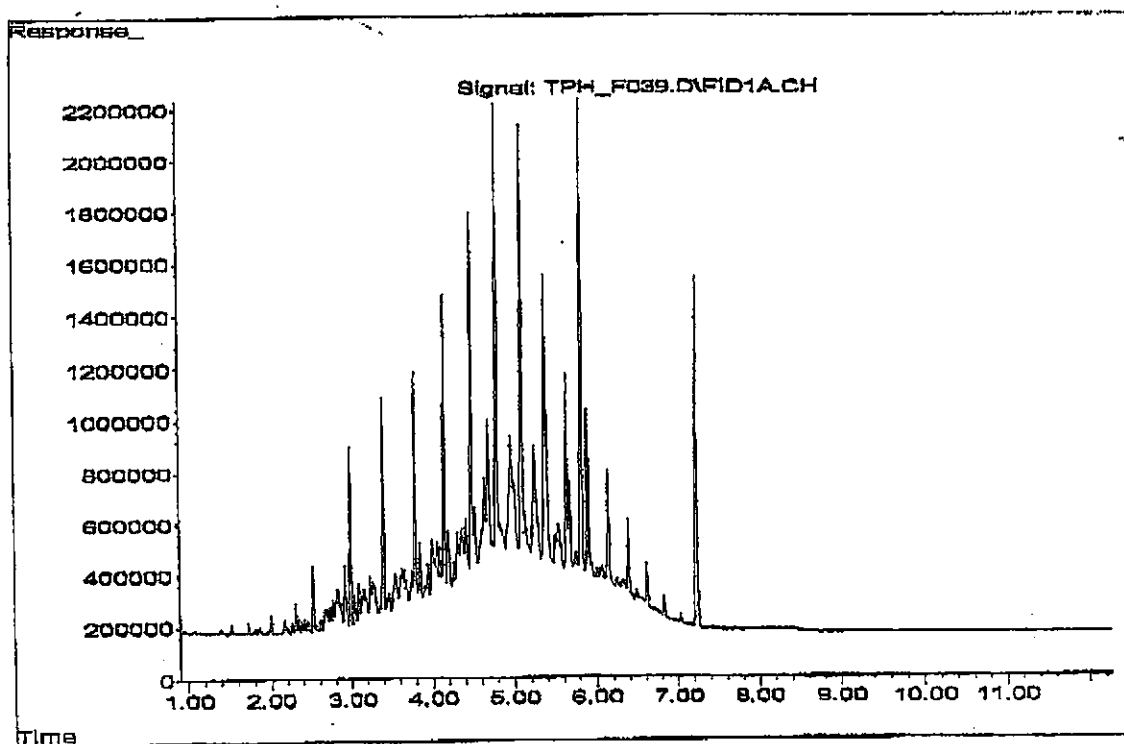
CONCENTRATION UNITS: ug/L

RESULTS

RANGE	MRL	RESULT
>C6 - C8	10	19
>C8 - C10	10	200
>C10 - C16	20	2250
>C16 - C24	20	1430
>C24 - C40	50	ND
TOTAL TPH >C6 - C40		3900

MRL = MINIMUM REPORTING LIMIT

ND = NOT DETECTED

CHROMATOGRAM
**SEVERN TRENT
LABORATORIES**


Report Summary



STL COVENTRY

SEVERN
TRENT
SERVICES

Mr Jon Freeman
Celtic Technologies Ltd
Cambrian Buildings
Mount Stuart Square
Cardiff

CF10 5QQ

INTERIM REPORT

Report Number : TH/147044/2002

Number of Samples
included in report

4

Job Received :

30 May 2002

Number of test results
included in report

352

Analysis Commenced :

31 May 2002

Signed :

Name :

Date : 13 June 2002

Title :

Unless otherwise stated Severn Trent Laboratories was not responsible for sampling
Information on the methods of analysis and performance characteristics are available on request
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory

Certificate of Analysis



1914
NAB7
1278

STL COVENTRY

SEVERN
TRENT
SERVICES

INTERIM REPORT

Sample 1 Laboratory Number : 238323
of 4 Report Number : TH/147044/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : BH3

Sample Date : 30 May 2002 Sample Received : 30 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
pH	7.3		C	WAS023
Chloride as Cl	36	mg/l	C	WAS036
Ammoniacal Nitrogen as N	0.7	mg/l	C	WAS036
Iron , Total as Fe	2.7	mg/l	C	WAS012
Manganese , Total as Mn	0.32	mg/l	C	WAS012
Aluminium, Total as Al	1.8	mg/l	C	WAS012
Cadmium , Total as Cd	0.002	mg/l	C	WAS012
Chromium , Total as Cr	<0.005	mg/l	C	WAS012
Copper, Total as Cu	0.016	mg/l	C	WAS012
Lead , Total as Pb	0.025	mg/l	C	WAS012
Nickel , Total as Ni	0.008	mg/l	C	WAS012
Zinc, Total as Zn	0.053	mg/l	C	WAS012
Calcium , Total as Ca	89	mg/l	C	WAS012
Magnesium as Mg	7.2	mg/l	C	WAS012
Sodium , Total as Na	17.8	mg/l	C	WAS012
Potassium , Total as K	24.8	mg/l	C	WAS012
Total Hardness as CaCO3	203	mg/l	C	WAS012
Hardness, Calcium as CaCO3	173	mg/l	C	WAS012
Detergents, anionic as NaLS	<0.3	mg/l	C	WAS020
Detergents, non-ionic	<0.5	mg/l	C	WAS032
NVM, light petroleum extract	98.3	mg/l	C	WAS026
Sulphide as S	<0.01	mg/l	C	WAS033
Silver , Total as Ag	<0.03	mg/l	C	WAS012
Arsenic , Total as As	0.002	mg/l	C	WAS014
Mercury , Total as Hg	0.0001	mg/l	C	WAS013
Selenium , Total as Se	0.003	mg/l	C	WAS015
Sulphate as SO4 (filt)	11	mg/l	C	WAS036
Tin , Total as Sn	<0.1	mg/l	C	WAS012
Cyanide , Total as CN	<0.1	mg/l	C	WAS018
Titanium , Total as Ti	<0.1	mg/l	C	WAS012
Bromide	122	ug/l	C	WAS012
TPH >C6-C40	Analyst Comment	ug/l	C	GE034
VOC	Analyst Comment	ug/l	C	GEO32
SVOC with TICs	Analyst Comment	ug/l	C	GEO31
Ethylene Glycol	<20	mg/l	C	SOL2
Triazophos	Analyst Comment	ug/l	C	GEO5
Phorate	<0.25	ug/l	C	GEO5
Propetamphos	<0.25	ug/l	C	GEO5
Phimiphos-methyl	<0.25	ug/l	C	GEO5
Fenthion	<0.25	ug/l	C	GEO5
Dichlorvos	<0.25	ug/l	C	GEO5
Mevinphos	Analyst Comment	ug/l	C	GEO6
Demeton-s-methyl	Analyst Comment	ug/l	C	GEO5
Dimethoate	<0.25	ug/l	C	GEO5
Diazinon	<0.25	ug/l	C	GEO5

Certificate of Analysis



1314
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1226

STL COVENTRY

SEVERN

TRENT

SERVICES

INTERIM REPORT

Sample 1 Laboratory Number : 239323
of 4 Report Number : TH/147044/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : BH3

Sample Date : 30 May 2002 Sample Received : 30 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Parathion-methyl	Analyst Comment	ug/l	C	GEO5
Disulphoton	<0.25	ug/l	C	GEO6
Fenitrothion	Analyst Comment	ug/l	C	GEO6
Malathion	<0.25	ug/l	C	GEO6
Parathion ethyl	<0.25	ug/l	C	GEO5
Chlorfenvinphos	<0.25	ug/l	C	GEO6
Carbophenothion	<0.25	ug/l	C	GEO3
Azinphos-methyl	Analyst Comment	ug/l	C	GEO6
Aldrin	<10	ng/l	C	GEO3
Dieldrin	<10	ng/l	C	GEO3
Heptachlor Epoxide	<10	ng/l	C	GEO3
Chlordane - alpha	<10	ng/l	C	GEO3
Dichlobenil	<10	ng/l	C	GEO3
Chlordane gamma	Analyst Comment	ng/l	C	GEO3
Endosulphan alpha	<10	ng/l	C	GEO3
Endrin	<10	ng/l	C	GEO3
HCH - alpha	<10	ng/l	C	GEO3
HCH - beta	<10	ng/l	C	GEO3
HCH - gamma	<10	ng/l	C	GEO3
Hexachlorobutadiene	Analyst Comment	ng/l	C	GEO3
Hexachlorobenzene	Analyst Comment	ng/l	C	GEO3
Isodrin	<10	ng/l	C	GEO3
o,p - DDE	Analyst Comment	ng/l	C	GEO3
o,p - DDT	Analyst Comment	ng/l	C	GEO3
o,p - TDE	<10	ng/l	C	GEO3
PCB 101	Analyst Comment	ng/l	C	GEO3
PCB 118	Analyst Comment	ng/l	C	GEO3
PCB 138	Analyst Comment	ng/l	C	GEO3
PCB 52	Analyst Comment	ng/l	C	GEO3
PCB 153	Analyst Comment	ng/l	C	GEO3
PCB 180	<10	ng/l	C	GEO3
PCB 28	Analyst Comment	ng/l	C	GEO3
p,p - DDE	<10	ng/l	C	GEO3
p,p - DDT	<10	ng/l	C	GEO3
p,p - TDE	<10	ng/l	C	GEO3
Tecnazene	<10	ng/l	C	GEO3
Triallate	<10	ng/l	C	GEO3
1,2,4-Trichlorobenzene	<10	ng/l	C	GEO3
Trifluralin	<10	ng/l	C	GEO3
Total Coliforms confirmed	2800	cfu/100ml	C	W10
Total Coliform presumpt	2800	cfu/100ml	C	W10
Faecal strep confirmed	1800	cfu/100ml	C	W7
Faecal strep presumptive	1800	cfu/100ml	C	W7

SEVERN
TRENT
SERVICES

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Sample Date : 30 May 2002 Sample Received : 30 May 2002 Analysis Complete :

Analyst Comment for 239323 : Please see attached report for VOC/SVOC-TIC results.
Please see attached report for TPH results.
No result reported for op's due to AQC breach. Indication for unreported compounds is <0.25.
Unable to report results for PCB 28, PCB 52, PCB 101, PCB 118, PCB 136, PCB 153, hcb, hcbd, op-
ddt, op-dde and g-chlordane due to AQC breaches, the indicated results are all <10 ng/l.

Accreditation Codes : * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcom S = Sub-contracted analysis
Microbiological determinands 0 = Not Detected

Certificate of Analysis



STL COVENTRY

SEVERN
TRENT
SERVICES

INTERIM REPORT

Sample 2 Laboratory Number : 238324
of 4 Report Number : TH/147044/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : BH4

Sample Date : 30 May 2002 Sample Received : 30 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
pH	7.2		C	WAS023
Chloride as Cl	30	mg/l	C	WAS036
Ammoniacal Nitrogen as N	0.5	mg/l	C	WAS036
Iron , Total as Fe	16.4	mg/l	C	WAS012
Manganese , Total as Mn	4.5	mg/l	C	WAS012
Aluminium, Total as Al	16.8	mg/l	C	WAS012
Cadmium , Total as Cd	0.003	mg/l	C	WAS012
Chromium , Total as Cr	0.016	mg/l	C	WAS012
Copper, Total as Cu	0.082	mg/l	C	WAS012
Lead , Total as Pb	0.19	mg/l	C	WAS012
Nickel , Total as Ni	0.039	mg/l	C	WAS012
Zinc, Total as Zn	0.18	mg/l	C	WAS012
Calcium , Total as Ca	147	mg/l	C	WAS012
Magnesium as Mg	15.3	mg/l	C	WAS012
Sodium , Total as Na	25.7	mg/l	C	WAS012
Potassium , Total as K	5.1	mg/l	C	WAS012
Total Hardness as CaCO3	431	mg/l	C	WAS012
Hardness, Calcium as CaCO3	368	mg/l	C	WAS012
Detergents, anionic as NaLS	<0.3	mg/l	C	WAS020
Detergents, non-ionic	5.3	mg/l	C	WAS032
NVM, light petroleum extract	27.0	mg/l	C	WAS026
Sulphide as S	<0.01	mg/l	C	WAS033
Silver , Total as Ag	<0.03	mg/l	C	WAS012
Arsenic , Total as As	0.061	mg/l	C	WAS014
Mercury , Total as Hg	0.0002	mg/l	C	WAS013
Selenium , Total as Se	0.005	mg/l	C	WAS015
Sulphate as SO4 (filt)	16	mg/l	C	WAS036
Tin , Total as Sn	<0.1	mg/l	C	WAS012
Cyanide , Total as CN	<0.1	mg/l	C	WAS018
Titanium , Total as Ti	<0.1	mg/l	C	WAS012
Bromide	291	ug/l	B	
TPH >C8-C40	Analyst Comment	ug/l	C	GE034
VOC	Analyst Comment	ug/l	C	GE032
SVOC with TICs	Analyst Comment	ug/l	C	GE031
Ethylene Glycol	<20	mg/l	C	SOL2
Triazophos	Analyst Comment	ug/l	C	GE05
Phorate	<0.25	ug/l	C	GE05
Propetamphos	<0.25	ug/l	C	GE05
Phiniphos-methyl	<0.25	ug/l	C	GE05
Fenthion	<0.25	ug/l	C	GE05
Dichlorvos	<0.25	ug/l	C	GE05
Mevinphos	Analyst Comment	ug/l	C	GE05
Demeton-s-methyl	Analyst Comment	ug/l	C	GE05
Dimethoate	<0.25	ug/l	C	GE05
Diazinon	<0.25	ug/l	C	GE05

Certificate of Analysis



STL COVENTRY

SEVERN
TRENT
SERVICES

INTERIM REPORT

Sample 2 Laboratory Number: 239324
of 4 Report Number: TH/147044/2002

Sample Source: Celtic Technologies Ltd
Sample Point Description: Celtic Technologies Ltd
Sample Description: BH4

Sample Date: 30 May 2002 Sample Received: 30 May 2002 Analysis Complete:

Test Description	Result	Units	Accreditation	Method
Parathion-methyl	Analyst Comment	ug/l	C	GEO6
Disulphoton	<0.25	ug/l	C	GEO6
Fenitrothion	Analyst Comment	ug/l	C	GEO6
Malathion	<0.25	ug/l	C	GEO6
Parathion ethyl	<0.25	ug/l	C	GEO6
Chlorfenvinphos	<0.25	ug/l	C	GEO6
Carbophenothion	<0.25	ug/l	C	GEO3
Azinphos-methyl	Analyst Comment	ug/l	C	GEO5
Aldrin	<10	ng/l	C	GEO3
Dieldrin	<10	ng/l	C	GEO3
Heptachlor Epoxide	<10	ng/l	C	GEO3
Chlordane - alpha	<10	ng/l	C	GEO3
Dichlobenil	<10	ng/l	C	GEO3
Chlordane gamma	Analyst Comment	ng/l	C	GEO3
Endosulphan alpha	<10	ng/l	C	GEO3
Endrin	<10	ng/l	C	GEO3
HCH - alpha	<10	ng/l	C	GEO3
HCH - beta	<10	ng/l	C	GEO3
HCH - gamma	<10	ng/l	C	GEO3
Hexachlorobutadiene	Analyst Comment	ng/l	C	GEO3
Hexachlorobenzene	Analyst Comment	ng/l	C	GEO3
Isodrin	<10	ng/l	C	GEO3
o,p - DDE	Analyst Comment	ng/l	C	GEO3
o,p - DDT	Analyst Comment	ng/l	C	GEO3
o,p - TDE	<10	ng/l	C	GEO3
PCB 101	Analyst Comment	ng/l	C	GEO3
PCB 118	Analyst Comment	ng/l	C	GEO3
PCB 138	Analyst Comment	ng/l	C	GEO3
PCB 52	Analyst Comment	ng/l	C	GEO3
PCB 153	Analyst Comment	ng/l	C	GEO3
PCB 180	<10	ng/l	C	GEO3
PCB 28	Analyst Comment	ng/l	C	GEO3
p,p - DDE	<10	ng/l	C	GEO3
p,p - DDT	<10	ng/l	C	GEO3
p,p - TDE	<10	ng/l	C	GEO3
Technazene	<10	ng/l	C	GEO3
Triallate	<10	ng/l	C	GEO3
1,2,4-Trichlorobenzene	<10	ng/l	C	GEO3
Trifluralin	<10	ng/l	C	GEO3
Total Coliforms confirmed	4100	cfu/100ml	C	W10
Total Coliform presumptive	4100	cfu/100ml	C	W10
Faecal strep confirmed	0	cfu/100ml	C	W7
Faecal strep presumptive	0	cfu/100ml	C	W7

Certificate of Analysis



STL COVENTRY

SEVERN
TRENT
SERVICES

INTERIM REPORT

Sample 2 Laboratory Number : 239324
of 4 Report Number : TH/147044/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : BH4

Sample Date : 30 May 2002 Sample Received : 30 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
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Analyst Comment for 239324 : Please see attached report for VOC/SVOC-TIC results. SVOC surrogate failures due to interferences from the sample matrix.
Please see attached report for TPH results.
No result reported for op's due to AQC breach. Indication for unreported compounds is <0.25.
Unable to report results for PCB 28, PCB 52, PCB 101, PCB 118, PCB 138, PCB 153, hcb, hcbd, op-ddt, op-dde and g-chlordane due to AQC breaches, the indicated results are all <10 ng/l.

Accreditation Codes : * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



1514
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STL COVENTRY

SEVERN

TRENT

SERVICES

INTERIM REPORT

Sample 3 Laboratory Number: 239333
of 4 Report Number: TH/147044/2002

Sample Source: Celtic Technologies Ltd
Sample Point Description: Celtic Technologies Ltd
Sample Description: BLANK

Sample Date: Sample Received: 30 May 2002 Analysis Complete:

Test Description	Result	Units	Accreditation	Method
pH	6.4		C	WAS023
Chloride as Cl	<2	mg/l	C	WAS036
Ammoniacal Nitrogen as N	<0.3	mg/l	C	WAS036
Iron, Total as Fe	<0.05	mg/l	C	WAS012
Manganese, Total as Mn	<0.04	mg/l	C	WAS012
Aluminium, Total as Al	<0.1	mg/l	C	WAS012
Cadmium, Total as Cd	<0.001	mg/l	C	WAS012
Chromium, Total as Cr	<0.005	mg/l	C	WAS012
Copper, Total as Cu	<0.02	mg/l	C	WAS012
Lead, Total as Pb	<0.01	mg/l	C	WAS012
Nickel, Total as Ni	<0.007	mg/l	C	WAS012
Zinc, Total as Zn	<0.03	mg/l	C	WAS012
Calcium, Total as Ca	<2	mg/l	C	WAS012
Magnesium as Mg	<1	mg/l	C	WAS012
Sodium, Total as Na	<2	mg/l	C	WAS012
Potassium, Total as K	<1	mg/l	C	WAS012
Total Hardness as CaCO ₃	<15	mg/l	C	WAS012
Hardness, Calcium as CaCO ₃	<6	mg/l	C	WAS012
Detergents, anionic as NaLS	<0.3	mg/l	C	WAS020
Detergents, non-ionic	<0.5	mg/l	C	WAS032
NVM, light petroleum extract	Analyst Comment	mg/l	C	WAS026
Sulphide as S	<0.01	mg/l	C	WAS033
Silver, Total as Ag	<0.02	mg/l	C	WAS012
Arsenic, Total as As	<0.001	mg/l	C	WAS014
Mercury, Total as Hg	<0.0001	mg/l	C	WAS013
Selenium, Total as Se	<0.001	mg/l	C	WAS016
Sulphate as SO ₄ (filt)	<0.3	mg/l	* C	WAS036
Tin, Total as Sn	<0.1	mg/l	C	WAS012
Cyanide, Total as CN	<0.1	mg/l	C	WAS018
Titanium, Total as Ti	<0.1	mg/l	C	WAS012
Bromide	Analyst Comment	ug/l	* B	
TPH >C6-C40	Analyst Comment	ug/l	* C	GE034
VOC	Analyst Comment	ug/l	C	GE032
SVOC with TICs	Analyst Comment	ug/l	* C	GE031
Ethylene Glycol	NO TESTS	mg/l	* C	SOL2
Triazophos	0	ug/l	C	GE05
Phorate	0	ug/l	C	GE05
Propetamphos	0	ug/l	C	GE05
Pirimiphos-methyl	0	ug/l	C	GE05
Fenthion	0	ug/l	C	GE05
Dichlorvos	0	ug/l	C	GE05
Mevinphos	0	ug/l	C	GE05
Demeton-s-methyl	0	ug/l	C	GE05
Dimethoate	0	ug/l	C	GE05
Diazinon	0	ug/l	C	GE05

Certificate of Analysis



STL COVENTRY

SEVERN
TRENT
SERVICES

INTERIM REPORT

Sample 3 Laboratory Number : 239333
of 4 Report Number : TH /147044/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : BLANK

Sample Date : Sample Received : 30 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Parathion-methyl	0	ug/l	C	GEO5
Disulphoton	0	ug/l	C	GEO5
Fenitrothion	0	ug/l	C	GEO5
Malathion	0	ug/l	C	GEO5
Parathion ethyl	0	ug/l	C	GEO5
Chlorfenvinphos	0	ug/l	C	GEO5
Carbophenothion	0	ug/l	C	GEO3
Azinphos-methyl	0	ug/l	C	GEO5
Aldrin	45	ng/l	C	GEO3
Dieldrin	45	ng/l	C	GEO3
Heptachlor Epoxide	6.6	ng/l	C	GEO3
Chlordane - alpha	45	ng/l	C	GEO3
Dichlobenil	24.5	ng/l	C	GEO3
Chlordane gamma	45	ng/l	C	GEO3
Endosulphan alpha	45	ng/l	C	GEO3
Endrin	45	ng/l	C	GEO3
HCH - alpha	45	ng/l	C	GEO3
HCH - beta	45	ng/l	C	GEO3
HCH - gamma	45	ng/l	C	GEO3
Hexachlorobutadiene	45	ng/l	C	GEO3
Hexachlorobenzene	45	ng/l	C	GEO3
Isodrin	45	ng/l	C	GEO3
o,p - DDE	45	ng/l	C	GEO3
o,p - DDT	31.9	ng/l	C	GEO3
o,p - TDE	45	ng/l	C	GEO3
PCB 101	45	ng/l	C	GEO3
PCB 118	45	ng/l	C	GEO3
PCB 138	45	ng/l	C	GEO3
PCB 52	45	ng/l	C	GEO3
PCB 153	45	ng/l	C	GEO3
PCB 180	45	ng/l	C	GEO3
PCB 28	45	ng/l	C	GEO3
p,p - DDE	45	ng/l	C	GEO3
p,p - DDT	45	ng/l	C	GEO3
p,p - TDE	45	ng/l	C	GEO3
Tecnazene	45	ng/l	C	GEO3
Triallate	5.8	ng/l	C	GEO3
1,2,4-Trichlorobenzene	45	ng/l	C	GEO3
Trifluralin	9.0	ng/l	C	GEO3
Total Coliforms confirmed	0	cfu/100ml	C	W10
Total Coliform presumptive	0	cfu/100ml	C	W10
Faecal strep confirmed	0	cfu/100ml	C	W7
Faecal strep presumptive	0	cfu/100ml	C	W7

Certificate of Analysis



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STL COVENTRY



INTERIM REPORT

Sample 3 Laboratory Number : 239333
of 4 Report Number : TH/147044/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : BLANK

Sample Date : Sample Received : 30 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Analyst Comment for 239333 : NVM- Unable to provide blank value as not available for analysis Please see attached report for VOC/SVOC AQC results. Please see attached report for TPH results. No sample for bromide				

Accreditation Codes : * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



1514
1997
1998

STL COVENTRY

SEVERN
TRENT
SERVICES

INTERIM REPORT

Sample 4 Laboratory Number: 238334
of 4 Report Number: TH/147044/2002

Sample Source: Celtic Technologies Ltd
Sample Point Description: Celtic Technologies Ltd
Sample Description: SPIKE

Sample Date: Sample Received: 30 May 2002 Analysis Complete:

Test Description	Result	Units	Accreditation	Method
pH	7.0		C	WAS023
Chloride as Cl	409	mg/l	C	WAS036
Ammoniacal Nitrogen as N	58.4	mg/l	C	WAS036
Iron, Total as Fe	39.16	mg/l	C	WAS012
Manganese, Total as Mn	40.34	mg/l	C	WAS012
Aluminium, Total as Al	42.7	mg/l	C	WAS012
Cadmium, Total as Cd	0.774	mg/l	C	WAS012
Chromium, Total as Cr	7.814	mg/l	C	WAS012
Copper, Total as Cu	8.52	mg/l	C	WAS012
Lead, Total as Pb	8.08	mg/l	C	WAS012
Nickel, Total as Ni	7.586	mg/l	C	WAS012
Zinc, Total as Zn	7.42	mg/l	C	WAS012
Calcium, Total as Ca	369	mg/l	C	WAS012
Magnesium as Mg	201	mg/l	C	WAS012
Sodium, Total as Na	169	mg/l	C	WAS012
Potassium, Total as K	126	mg/l	C	WAS012
Total Hardness as CaCO ₃	1756	mg/l	C	WAS012
Hardness, Calcium as CaCO ₃	924	mg/l	C	WAS012
Detergents, anionic as NaLS	1.9	mg/l	C	WAS020
Detergents, non-ionic	2.53	mg/l	C	WAS032
NVM, light petroleum extract	Analyst Comment	mg/l	C	WAS026
Sulphide as S	5.29	mg/l	C	WAS033
Silver, Total as Ag	7.98	mg/l	C	WAS012
Arsenic, Total as As	0.036	mg/l	C	WAS014
Mercury, Total as Hg	0.0009	mg/l	C	WAS013
Selenium, Total as Se	0.011	mg/l	C	WAS015
Sulphate as SO ₄ (filt)	634	mg/l	C	WAS036
Tin, Total as Sn	0.8	mg/l	C	WAS012
Cyanide, Total as CN	3.7	mg/l	C	WAS018
Titanium, Total as Ti	0.8	mg/l	C	WAS012
Bromide	Analyst Comment	ug/l	B	
TPH >C8-C40	Analyst Comment	ug/l	C	GE034
VOC	Analyst Comment	ug/l	C	GE032
SVOC with TICs	Analyst Comment	ug/l	C	GE031
Ethylene Glycol	NO TESTS	mg/l	C	SOL2
Triazophos	678.8	ug/l	C	GE05
Phorate	378.7	ug/l	C	GE05
Propetamphos	400.1	ug/l	C	GE05
Pirimiphos-methyl	401.4	ug/l	C	GE05
Fenthion	410.5	ug/l	C	GE05
Dichlorvos	425.4	ug/l	C	GE05
Mevinphos	365.7	ug/l	C	GE05
Demeton-s-methyl	439.0	ug/l	C	GE05
Dimethoate	392.1	ug/l	C	GE05
Diazinon	375.4	ug/l	C	GE05

Certificate of Analysis



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STL COVENTRY



INTERIM REPORT

Sample 4 Laboratory Number : 239334
of 4 Report Number : TH/147044/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : SPIKE

Sample Date : Sample Received : 30 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Parathion-methyl	399.6	ug/l	C	GEO5
Disulphoton	403.8	ug/l	C	GEO5
Fenitrothion	388.0	ug/l	C	GEO5
Malathion	467.7	ug/l	C	GEO5
Parathion ethyl	397.5	ug/l	C	GEO5
Chlorfenvinphos	438.5	ug/l	C	GEO5
Carbophenothion	407.0	ug/l	C	GEO3
Azinphos-methyl	527.0	ug/l	C	GEO5
Aldrin	105	ng/l	C	GEO3
Dieldrin	108	ng/l	C	GEO3
Heptachlor Epoxide	101	ng/l	C	GEO3
Chlordane - alpha	106	ng/l	C	GEO3
Dichlobenil	77.7	ng/l	C	GEO3
Chlordane gamma	75.9	ng/l	C	GEO3
Endosulphan alpha	101	ng/l	C	GEO3
Endrin	94.8	ng/l	C	GEO3
HCH - alpha	87.4	ng/l	C	GEO3
HCH - beta	96.4	ng/l	C	GEO3
HCH - gamma	88.7	ng/l	C	GEO3
Hexachlorobutadiene	74.6	ng/l	C	GEO3
Hexachlorobenzene	59.4	ng/l	C	GEO3
Isodrin	106	ng/l	C	GEO3
o,p - DDE	75.7	ng/l	C	GEO3
o,p - DDT	71.3	ng/l	C	GEO3
p,p - TDE	85.8	ng/l	C	GEO3
PCB 101	80.4	ng/l	C	GEO3
PCB 118	82.3	ng/l	C	GEO3
PCB 138	80.3	ng/l	C	GEO3
PCB 52	81.6	ng/l	C	GEO3
PCB 153	81.6	ng/l	C	GEO3
PCB 180	81.8	ng/l	C	GEO3
PCB 28	79.6	ng/l	C	GEO3
p,p - DDE	123	ng/l	C	GEO3
p,p - DDT	87.7	ng/l	C	GEO3
p,p - TDE	96.4	ng/l	C	GEO3
Tecnazene	92.6	ng/l	C	GEO3
Triallate	96.6	ng/l	C	GEO3
1,2,4-Trichlorobenzene	116	ng/l	C	GEO3
Trifluralin	94.5	ng/l	C	GEO3
Total Coliforms confirmed	Analyst Comment	cfu/100ml	C	W10
Total Coliform presumpt	Analyst Comment	cfu/100ml	C	W10
Faecal strep confirmed	Analyst Comment	cfu/100ml	C	W7
Faecal strep presumptive	Analyst Comment	cfu/100ml	C	W7

Certificate of Analysis


 1514
1997
1998
STL COVENTRY**SEVERN****TRENT****SERVICES****INTERIM REPORT**

Sample 4 Laboratory Number : 239334
 of 4 Report Number : TH/147044/2002

Sample Source : Celtic Technologies Ltd
 Sample Point Description : Celtic Technologies Ltd
 Sample Description : SPIKE

Sample Date : Sample Received : 30 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
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Analyst Comment for 239334 : NVM- Unable to provide AQC value as no suitable amount available for analysis
 Please see attached report for VOC/SVOC AQC results.
 Please see attached report for TPH results.
 no sample for bromide

Accreditation Codes : * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
 For Microbiological determinands D = Not Detected

Signed :

Name :

Date : 13 June 2002

Title :

VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 239323
 Job No : 147044
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH3
 Sample Matrix : LIQUID
 Vial No : 45

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUN02\5V0506021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

CAS NO	Compound	MRM	Result	Flags
75-71-8	Dichlorodifluoromethane ug/l	5	ND	
74-87-3	Chloromethane ug/l	5	ND	
75-00-3	Chloroethane ug/l	5	ND	
74-83-9	Bromomethane ug/l	5	ND	
75-69-4	Trichlorofluoromethane ug/l	5	ND	
75-35-4	1,1-Dichloroethene ug/l	5	ND	
75-09-2	Dichloromethane ug/l	5	ND	
156-60-9	Trans-1,2-dichloroethene ug/l	5	ND	
75-34-3	1,1-Dichloroethane ug/l	5	ND	
156-59-2	Cis-1,2-dichloroethene ug/l	5	ND	
594-20-7	2,2-Dichloropropane ug/l	5	ND	
67-66-3	Chloroform ug/l	5	ND	
74-97-5	Bromochloromethane ug/l	5	ND	
71-55-6	1,1,1-Trichloroethane ug/l	5	ND	
563-58-6	1,1-Dichloropropene ug/l	5	ND	
107-08-2	1,2-Dichloroethane ug/l	5	ND	
71-43-2	Benzene ug/l	5	ND	
78-87-5	1,2-Dichloropropane ug/l	5	ND	
79-01-6	Trichloroethene ug/l	5	ND	
75-27-4	Bromodichloromethane ug/l	5	ND	
74-95-3	Dibromomethane ug/l	5	ND	
10061-01-5	Cis-1,3-dichloropropene ug/l	5	ND	
108-88-3	Toluene ug/l	5	9.7	
10061-02-6	Trans-1,3-dichloropropene ug/l	5	ND	
79-00-5	1,1,2-trichloroethane ug/l	5	ND	
56-23-5	Carbon Tetrachloride ug/l	5	ND	
75-01-4	Vinyl Chloride ug/l	5	ND	
124-28-9	1,3-dichloropropane ug/l	5	ND	
127-18-4	Tetrachloroethene ug/l	5	ND	
124-48-1	Dibromochloromethane ug/l	5	ND	
106-93-4	1,2-dibromoethane ug/l	5	ND	
108-90-7	Chlorobenzene ug/l	5	ND	
630-20-6	1,1,1,2-tetrachloroethane ug/l	5	ND	
100-41-4	Ethyl Benzene ug/l	5	ND	
1330-20-7	m,p-xylene ug/l	10	ND	
95-47-6	o-xylene ug/l	5	ND	
100-42-5	Styrene ug/l	5	ND	

VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 239323
 Job No : 147044
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH3
 Sample Matrix : LIQUID
 Vial No : 45

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUN02\5V0506021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

CAS NO	Compound	MRL	Result	Flags
75-25-2	Bromoform ug/l	5	ND	
98-82-8	Isopropylbenzene ug/l	5	ND	
79-34-5	1,1,2,2-tetrachloroethane ug/l	5	ND	
98-18-4	1,2,3-trichloropropane ug/l	5	ND	
103-65-1	n-propylbenzene ug/l	5	ND	
108-86-1	Bromobenzene ug/l	5	ND	
95-49-8	2-chlorotoluene ug/l	5	ND	
108-87-8	1,3,5-trimethylbenzene ug/l	5	ND	
106-43-4	4-chlorotoluene ug/l	5	ND	
98-08-6	tert-butylbenzene ug/l	5	ND	
95-63-8	1,2,4-trimethylbenzene ug/l	5	ND	
135-98-8	sec-butylbenzene ug/l	5	ND	
99-87-8	p-isopropyltoluene ug/l	5	ND	
541-73-1	1,3-dichlorobenzene ug/l	5	ND	
108-46-7	1,4-dichlorobenzene ug/l	5	ND	
104-61-8	n-butylbenzene ug/l	5	ND	
95-50-1	1,2-dichlorobenzene ug/l	5	ND	
98-12-8	1,2-dibromo-3-chloropropane ug/l	5	ND	
120-82-1	1,2,4-trichlorobenzene ug/l	5	ND	
87-68-3	Hexachlorobutadiene ug/l	5	ND	
91-20-3	Naphthalene ug/l	5	ND	
87-61-6	1,2,3-trichlorobenzene ug/l	5	ND	
Surrogate	Dibromofluoromethane %Recovered		105.4	Pass
Surrogate	Toluene-d8 %Recovered		98.9	Pass
Surrogate	4-bromofluorobenzene %Recovered		95.9	Pass

VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 239324
 Job No : 147044
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH4
 Sample Matrix : LIQUID
 Vial No : 48

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUN02\5V050602\1
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

CAS NO	Compound	MRI	Result	Flags
75-71-8	Dichlorodifluoromethane ug/l	5	ND	
74-87-3	Chloromethane ug/l	5	ND	
75-00-3	Chloroethane ug/l	5	ND	
74-83-9	Bromomethane ug/l	5	ND	
75-69-4	Trichlorofluoromethane ug/l	5	ND	
75-35-4	1,1-Dichloroethene ug/l	5	ND	
75-09-2	Dichloromethane ug/l	5	ND	
156-60-9	Trans-1,2-dichloroethene ug/l	5	ND	
534-3	1,1-Dichloroethane ug/l	5	ND	
156-59-2	Cis-1,2-dichloroethene ug/l	5	ND	
594-20-7	2,2-Dichloropropane ug/l	5	ND	
67-66-3	Chloroform ug/l	5	2.0	J
74-97-5	Bromochloromethane ug/l	5	ND	
71-55-6	1,1,1-Trichloroethane ug/l	5	ND	
563-58-6	1,1-Dichloropropene ug/l	5	ND	
107-06-2	1,2-Dichloroethane ug/l	5	ND	
71-43-2	Benzene ug/l	5	ND	
78-87-5	1,2-Dichloropropane ug/l	5	ND	
79-01-6	Trichloroethene ug/l	5	ND	
75-27-4	Bromodichloromethane ug/l	5	ND	
74-86-3	Dibromomethane ug/l	5	ND	
10061-01-5	Cis-1,3-dichloropropene ug/l	5	ND	
108-88-3	Toluene ug/l	5	20.6	
10061-02-6	Trans-1,3-dichloropropene ug/l	5	ND	
900-5	1,1,2-trichloroethane ug/l	5	ND	
56-23-5	Carbon Tetrachloride ug/l	5	ND	
75-01-4	Vinyl Chloride ug/l	5	ND	
124-28-9	1,3-dichloropropane ug/l	5	ND	
127-18-4	Tetrachloroethane ug/l	5	ND	
124-48-1	Dibromochloromethane ug/l	5	ND	
106-93-4	1,2-dibromoethane ug/l	5	ND	
108-90-7	Chlorobenzene ug/l	5	ND	
630-20-6	1,1,1,2-tetrachloroethane ug/l	5	ND	
100-41-4	Ethyl Benzene ug/l	5	ND	
1330-20-7	m,p-xylene ug/l	10	ND	
95-47-6	o-xylene ug/l	5	ND	
100-42-5	Styrene ug/l	5	ND	
75-25-2	Bromoform ug/l	5	ND	

STL COVENTRY



VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 239324
 Job No : 147044
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH4
 Sample Matrix : LIQUID
 Vial No : 46

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUN02\5V050602\1
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/08/2002

GAS NO	Compound	MNL	Result	Flags
98-82-8	Isopropylbenzene ug/l	5	ND	
79-34-5	1,1,2,2-tetrachloroethane ug/l	5	ND	
98-18-4	1,2,3-trichloropropane ug/l	5	ND	
103-65-1	n-propylbenzene ug/l	5	ND	
108-86-1	Bromobenzene ug/l	5	ND	
95-49-8	2-chlorotoluene ug/l	5	ND	
108-67-8	1,3,5-trimethylbenzene ug/l	5	ND	
106-43-4	4-chlorotoluene ug/l	5	ND	
98-06-6	tert-butylbenzene ug/l	5	ND	
95-63-6	1,2,4-trimethylbenzene ug/l	5	ND	
135-98-8	sec-butylbenzene ug/l	5	ND	
99-87-6	p-isopropyltoluene ug/l	5	ND	
541-73-1	1,3-dichlorobenzene ug/l	5	ND	
106-46-7	1,4-dichlorobenzene ug/l	5	ND	
104-51-8	n-butylbenzene ug/l	5	ND	
95-50-1	1,2-dichlorobenzene ug/l	5	ND	
96-12-8	1,2-dibromo-3-chloropropane ug/l	5	ND	
120-82-1	1,2,4-trichlorobenzene ug/l	5	ND	
87-68-3	Hexachlorobutadiene ug/l	5	ND	
91-20-3	Naphthalene ug/l	5	ND	
87-61-6	1,2,3-trichlorobenzene ug/l	5	ND	
Surrogate	Dibromofluoromethane %Recovered		104.7 Pass	
Surrogate	Toluene-d8 %Recovered		101.7 Pass	
Surrogate	4-bromofluorobenzene %Recovered		94.1 Pass	

STL COVENTRY



VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 239333
 Job No : 147044
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BLANK
 Sample Matrix : LIQUID
 Vial No : 43

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\UN02\SV0508021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

CAS NO	Compound	MRL	Result	Flags
75-71-8	Dichlorodifluoromethane ug/l	5	ND	
74-87-3	Chloromethane ug/l	5	ND	
75-00-3	Chloroethane ug/l	5	ND	
74-83-9	Bromomethane ug/l	5	ND	
75-69-4	Trichlorofluoromethane ug/l	5	ND	
75-35-4	1,1-Dichloroethene ug/l	5	ND	
75-09-2	Dichloromethane ug/l	5	ND	
166-80-9	Trans-1,2-dichloroethene ug/l	5	ND	
5-34-3	1,1-Dichloroethane ug/l	5	ND	
156-59-2	Cis-1,2-dichloroethene ug/l	5	ND	
594-20-7	2,2-Dichloropropane ug/l	5	ND	
67-66-3	Chloroform ug/l	5	ND	
74-97-5	Bromochloromethane ug/l	5	ND	
71-55-8	1,1,1-Trichloroethane ug/l	5	ND	
563-58-6	1,1-Dichloropropane ug/l	5	ND	
107-06-2	1,2-Dichloroethane ug/l	5	ND	
71-43-2	Benzene ug/l	5	ND	
78-87-5	1,2-Dichloropropane ug/l	5	ND	
79-01-6	Trichloroethene ug/l	5	ND	
75-27-4	Bromodichloromethane ug/l	5	ND	
74-96-3	Dibromomethane ug/l	5	ND	
10081-01-5	Cis-1,3-dichloropropene ug/l	5	ND	
108-88-3	Toluene ug/l	5	ND	
10061-02-6	Trans-1,3-dichloropropene ug/l	5	ND	
9-00-5	1,1,2-trichloroethane ug/l	5	ND	
56-23-5	Carbon Tetrachloride ug/l	5	ND	
75-01-4	Vinyl Chloride ug/l	5	ND	
124-28-9	1,3-dichloropropane ug/l	5	ND	
127-18-4	Tetrachloroethene ug/l	5	ND	
124-48-1	Dibromochloromethane ug/l	5	ND	
106-93-4	1,2-dibromoethane ug/l	5	ND	
108-90-7	Chlorobenzene ug/l	5	ND	
630-20-6	1,1,1,2-tetrachloroethane ug/l	5	ND	
100-41-4	Ethyl Benzene ug/l	5	ND	
1330-20-7	m,p-xylene ug/l	10	ND	
96-47-6	o-xylene ug/l	5	ND	
100-42-5	Styrene ug/l	5	ND	
75-25-2	Bromoform ug/l	5	ND	

VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 239333
 Job No : 147044
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BLANK
 Sample Matrix : LIQUID
 Vial No : 43

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUN02\5V050602\
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

CAS NO	Compound	MRI	Result	Flags
98-82-8	Isopropylbenzene ug/l	5	ND	
79-34-6	1,1,2,2-tetrachloroethane ug/l	5	ND	
96-18-4	1,2,3-trichloropropane ug/l	5	ND	
103-85-1	n-propylbenzene ug/l	5	ND	
108-86-1	Bromobenzene ug/l	5	ND	
95-49-8	2-chlorotoluene ug/l	5	ND	
108-67-8	1,3,5-trimethylbenzene ug/l	5	ND	
106-43-4	4-chlorotoluene ug/l	5	ND	
98-06-6	tert-butylbenzene ug/l	5	ND	
95-83-6	1,2,4-trimethylbenzene ug/l	5	ND	
135-98-8	sec-butylbenzene ug/l	5	ND	
99-87-6	p-isopropyltoluene ug/l	5	ND	
541-73-1	1,3-dichlorobenzene ug/l	5	ND	
106-46-7	1,4-dichlorobenzene ug/l	5	ND	
104-51-8	n-butylbenzene ug/l	5	ND	
95-50-1	1,2-dichlorobenzene ug/l	5	ND	
96-12-8	1,2-dibromo-3-chloropropane ug/l	5	ND	
120-82-1	1,2,4-trichlorobenzene ug/l	5	ND	
87-68-3	Hexachlorobutadiene ug/l	5	ND	
91-20-3	Naphthalene ug/l	5	ND	
87-61-6	1,2,3-trichlorobenzene ug/l	5	ND	
Surrogate	Dibromofluoromethane %Recovered		106.4 Pass	
Surrogate	Toluene-d8 %Recovered		99.9 Pass	
Surrogate	4-bromofluorobenzene %Recovered		90.3 Pass	

VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 239334
 Job No : 147044
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : SPIKE
 Sample Matrix : LIQUID
 Vial No : 44

Method : EPA 8260 MODIFIED
 Data Type : MS DATA -
 Data Path : D:\DATA\JUN02\15V0508021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

CAS NO	Compound	UPL	Result	Flags
75-71-8	Dichlorodifluoromethane ug/l	5	ND	
74-87-3	Chloromethane ug/l	5	ND	
75-00-3	Chloroethane ug/l	5	ND	
74-83-9	Bromomethane ug/l	5	ND	
75-69-4	Trichlorofluoromethane ug/l	5	ND	
75-35-4	1,1-Dichloroethene ug/l	5	54.2	
75-09-2	Dichloromethane ug/l	5	ND	
156-80-9	Trans-1,2-dichloroethene ug/l	5	ND	
75-34-3	1,1-Dichloroethane ug/l	5	ND	
156-59-2	Cis-1,2-dichloroethene ug/l	5	ND	
594-20-7	2,2-Dichloropropane ug/l	5	ND	
67-66-3	Chloroform ug/l	5	ND	
74-97-5	Bromochloromethane ug/l	5	ND	
71-55-8	1,1,1-Trichloroethane ug/l	5	ND	
583-58-6	1,1-Dichloropropene ug/l	5	ND	
107-08-2	1,2-Dichloroethane ug/l	5	ND	
71-43-2	Benzene ug/l	5	54.0	
78-87-5	1,2-Dichloropropane ug/l	5	ND	
79-01-6	Trichloroethene ug/l	5	53.3	
75-27-4	Bromodichloromethane ug/l	5	ND	
74-95-3	Dibromomethane ug/l	5	ND	
10061-01-5	Cis-1,3-dichloropropene ug/l	5	ND	
108-88-3	Toluene ug/l	5	53.1	
10061-02-6	Trans-1,3-dichloropropene ug/l	5	ND	
79-00-5	1,1,2-trichloroethane ug/l	5	ND	
56-23-5	Carbon Tetrachloride ug/l	5	ND	
75-01-4	Vinyl Chloride ug/l	5	ND	
124-28-9	1,3-dichloropropane ug/l	5	ND	
127-18-4	Tetrachloroethene ug/l	5	ND	
124-48-1	Dibromochloromethane ug/l	5	ND	
106-93-4	1,2-dibromoethane ug/l	5	ND	
108-90-7	Chlorobenzene ug/l	5	54.0	
630-20-6	1,1,1,2-tetrachloroethane ug/l	5	ND	
100-41-4	Ethyl Benzene ug/l	5	ND	
1330-20-7	m,p-xylene ug/l	10	ND	
95-47-6	o-xylene ug/l	5	ND	
100-42-5	Styrene ug/l	5	ND	
76-25-2	Bromoform ug/l	5	ND	

VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 239334
 Job No : 147044
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : SPIKE
 Sample Matrix : LIQUID
 Vial No : 44

Method : EPA 8260 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUN02\SV050602\1
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 07/06/2002

GAS NO	Compound	MRL	Result	Flags
98-82-8	Isopropylbenzene ug/l	5	ND	
79-34-5	1,1,2,2-tetrachloroethane ug/l	5	ND	
96-18-4	1,2,3-trichloropropane ug/l	5	ND	
103-65-1	n-propylbenzene ug/l	5	ND	
106-86-1	Bromobenzene ug/l	5	ND	
96-49-8	2-chlorotoluene ug/l	5	ND	
106-67-8	1,3,5-trimethylbenzene ug/l	5	ND	
106-43-4	4-chlorotoluene ug/l	5	ND	
98-06-8	tert-butylbenzene ug/l	5	ND	
95-63-6	1,2,4-trimethylbenzene ug/l	5	ND	
136-98-8	sec-butylbenzene ug/l	5	ND	
99-87-8	p-isopropyltoluene ug/l	5	ND	
541-73-1	1,3-dichlorobenzene ug/l	5	ND	
106-46-7	1,4-dichlorobenzene ug/l	5	ND	
104-51-8	n-butylbenzene ug/l	5	ND	
95-50-1	1,2-dichlorobenzene ug/l	5	ND	
96-12-8	1,2-dibromo-3-chloropropane ug/l	5	ND	
120-82-1	1,2,4-trichlorobenzene ug/l	5	ND	
87-68-3	Hexachlorobutadiene ug/l	5	ND	
91-20-3	Naphthalene ug/l	5	ND	
87-61-6	1,2,3-trichlorobenzene ug/l	5	ND	
Surrogate	Dibromofluoromethane %Recovered		104.1 Pass	
Surrogate	Toluene-d8 %Recovered		98.1 Pass	
Surrogate	4-bromofluorobenzene %Recovered		91.6 Pass	

Please note : Result of ND is Not Detectable

For Surrogate Compounds 50 ug/l added, lower limit is 75% and higher limit is 125%

Explanation of compound flags : J : Compound is detectable but is below normal reporting limit

E : Result is above the calibrated range and is therefore an estimate

B : Compound also detected in Blank extract

D : Sample was diluted and re-analysed to obtain a valid result for this compound

STL COVENTRY



SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 239323
 Job No : 147044
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH3
 Sample Matrix : LIQUID
 Vial No : 24

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\0608021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 12/06/2002

CAS NO	Compound	Wt	Result	Flags
108-95-2	Phenol ug/l	3.0	ND	
111-44-4	Bis(2-chloroethyl) ether ug/l	3.0	ND	
95-57-8	2-chlorophenol ug/l	3.0	ND	
541-73-1	1,3 Dichlorobenzene ug/l	3.0	ND	
106-46-7	1,4 Dichlorobenzene ug/l	3.0	ND	
95-48-7	2-Methylphenol ug/l	3.0	ND	
106-44-5	4-Methylphenol ug/l	3.0	ND	
132-64-9	Dibenzofuran ug/l	3.0	ND	
60-1	1,2 Dichlorobenzene ug/l	3.0	ND	
108-60-1	bis(2-Chloroisopropyl) ether ug/l	3.0	ND	
621-64-7	N-nitrosodi-n-propylamine ug/l	3.0	ND	
67-72-1	Hexachloroethane ug/l	3.0	ND	
98-95-3	Nitrobenzene ug/l	3.0	ND	
78-59-1	Isophorone ug/l	3.0	ND	
105-67-9	2,4-dimethylphenol ug/l	3.0	ND	
88-75-5	2-nitrophenol ug/l	3.0	ND	
111-91-1	bis(2-chloroethoxy)methane ug/l	3.0	ND	
120-83-2	2,4-Dichlorophenol ug/l	3.0	ND	
120-82-1	1,2,4-Trichlorobenzene ug/l	3.0	ND	
120-83-2	2,4-Dinitrophenol ug/l	15.0	ND	
91-20-3	Naphthalene ug/l	3.0	ND	
87-88-3	Hexachlorobutadiene ug/l	3.0	ND	
59-60-7	4-Chloro-3-methylphenol ug/l	6.0	ND	
11-57-6	2-Methylnaphthalene ug/l	3.0	ND	
106-2	2,4,6-Trichlorophenol ug/l	3.0	ND	
95-95-4	2,4,5-Trichlorophenol ug/l	3.0	ND	
91-58-7	2-Chloronaphthalene ug/l	3.0	ND	
131-11-3	Dimethyl phthalate ug/l	3.0	ND	
606-20-2	2,6-Dinitrotoluene ug/l	3.0	ND	
208-96-8	Acenaphthylene ug/l	3.0	ND	
83-32-9	Acenaphthene ug/l	3.0	ND	
121-14-2	2,4-Dinitrotoluene ug/l	3.0	ND	
84-66-2	Diethyl phthalate ug/l	3.0	ND	
100-02-7	4-Nitrophenol ug/l	15.0	ND	
7005-72-3	4-Chlorophenyl phenylether ug/l	3.0	ND	
86-73-7	Fluorene ug/l	3.0	ND	
86-74-8	Carbazole ug/l	3.0	ND	

SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 239323
 Job No : 147044
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH3
 Sample Matrix : LIQUID
 Vial No : 24

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\060802\1
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 12/06/2002

AS NO	Compound	MR	Result	Flags
86-30-6	n-Nitrosodiphenylamine ug/l	3.0	ND	
101-55-3	4-Bromophenyl phenyl ether ug/l	3.0	ND	
118-74-1	Hexachlorobenzene ug/l	3.0	ND	
87-86-5	Pentachlorophenol ug/l	15.0	ND	
85-01-8	Phenanthrene ug/l	3.0	ND	
120-12-7	Anthracene ug/l	3.0	ND	
84-74-2	di-n-Butyl phthalate ug/l	3.0	ND	
206-44-0	Fluoranthene ug/l	3.0	ND	
129-00-0	Pyrene ug/l	3.0	ND	
85-68-7	Butyl benzyl phthalate ug/l	3.0	ND	
56-55-3	Benzo(a)anthracene ug/l	3.0	ND	
218-01-9	Chrysene ug/l	3.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate ug/l	3.0	ND	
117-84-0	di-n-octyl phthalate ug/l	3.0	ND	
205-99-2	Benzo(b)fluoranthene ug/l	3.0	ND	
207-08-9	Benzo(k)fluoranthene ug/l	3.0	ND	
50-32-8	Benzo(a)pyrene ug/l	3.0	ND	
193-39-5	Indeno(1,2,3-cd)pyrene ug/l	3.0	ND	
53-70-3	Dibenz(a,h)anthracene ug/l	3.0	ND	
191-24-2	Benzo(ghi)perylene ug/l	3.0	ND	
Surrogate	2-Fluorophenol %Recovered		23.7 Pass	
Surrogate	Phenol-d6 %Recovered		14.1 Pass	
Surrogate	Nitrobenzene-d5 %Recovered		94.0 Pass	
Surrogate	2-Fluorobiphenyl %Recovered		88.3 Pass	
Surrogate	2,4,6-Tribromophenol %Recovered		84.3 Pass	
Surrogate	Terphenyl-d14 %Recovered		93.2 Pass	

Tentatively Identified Compound (LSC) Summary Report

Operator ID: AD Date Acquired: 7 Jun 2002 5:31 am
 Data File: D:\DATA\JUNE02\060602\SV024.D
 Name: 239323
 Misc:
 Method: C:\HPCHEM\1\METHODS\JUNE02\060602.M (RTE Integrator)
 Title: EPA Method 8270 SVOC's
 Library Searched: C:\DATABASE\WILEY275.L

Compound name	CAS No.	Est. Conc Range	Quality
Not Known		0.95 µg/L	-
Not Known		0.41 µg/L	-
Not Known		0.61 µg/L	-

D:\DATA\JUNE02\060602\SV024.D

**SEVERN TRENT
LABORATORIES**

**SEVERN
TRENT
SERVICES**

SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
Lab Sample ID : 239324
Job No : 147044
Sample Location : Celtic Technologies Ltd
Client Sample ID : BH4
Sample Matrix : LIQUID
Vial No : 14

Method : EPA 8270 MODIFIED
Data Type : MS DATA
Data Path : D:\HPCHEM\DATA\JUNE02\110
Quant Type : ISTD
Accreditation Status : UKAS
Dilution Factor : 1
Report Date : 12/06/2002

BS No	Compound	MRL	Result	Flags
108-95-2	Phenol ug/l	1.0	ND	
111-44-4	Bis(2-chloroethyl) ether ug/l	1.0	ND	
95-57-8	2-chlorophenol ug/l	1.0	ND	
641-73-1	1,3 Dichlorobenzene ug/l	1.0	ND	
106-46-7	1,4 Dichlorobenzene ug/l	1.0	ND	
95-48-7	2-Methylphenol ug/l	1.0	ND	
108-44-5	4-Methylphenol ug/l	1.0	ND	
132-84-9	Dibenzofuran ug/l	1.0	ND	
95-50-1	1,2 Dichlorobenzene ug/l	1.0	ND	
108-60-1	bis(2-Chloroisopropyl) ether ug/l	1.0	ND	
621-64-7	N-nitrosodi-n-propylamine ug/l	1.0	ND	
67-72-1	Hexachloroethane ug/l	1.0	ND	
98-95-3	Nitrobenzene ug/l	1.0	ND	
78-59-1	Isophorone ug/l	1.0	ND	
105-67-9	2,4-dimethylphenol ug/l	1.0	ND	
88-75-5	2-nitrophenol ug/l	1.0	ND	
111-91-1	bis(2-chloroethoxy)methane ug/l	1.0	ND	
120-83-2	2,4-Dichlorophenol ug/l	1.0	ND	
120-82-1	1,2,4-Trichlorobenzene ug/l	1.0	ND	
120-83-2	2,4-Dinitrophenol ug/l	25.0	ND	
91-20-3	Naphthalene ug/l	1.0	ND	
87-68-3	Hexachlorobutadiene ug/l	1.0	ND	
59-50-7	4-Chloro-3-methylphenol ug/l	2.0	ND	
91-57-6	2-Methylnaphthalene ug/l	1.0	ND	
88-08-2	2,4,6-Trichlorophenol ug/l	1.0	ND	
95-95-4	2,4,5-Trichlorophenol ug/l	1.0	ND	
91-58-7	2-Chloronaphthalene ug/l	1.0	ND	
131-11-3	Dimethyl phthalate ug/l	1.0	ND	
606-20-2	2,6-Dinitrotoluene ug/l	1.0	ND	
208-96-8	Acenaphthylene ug/l	1.0	ND	
83-32-9	Acenaphthene ug/l	1.0	ND	
121-14-2	2,4-Dinitrotoluene ug/l	1.0	ND	
84-66-2	Diethyl phthalate ug/l	1.0	ND	
100-02-7	4-Nitrophenol ug/l	5.0	ND	
7005-72-3	4-Chlorophenyl phenylether ug/l	1.0	ND	
86-73-7	Fluorene ug/l	1.0	ND	
86-74-8	Carbazole ug/l	1.0	ND	
86-30-6	n-Nitrosodiphenylamine ug/l	1.0	ND	

SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 239324
 Job No : 147044
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BH4
 Sample Matrix : LIQUID
 Vial No : 14

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\HPCHEM\DATA\JUNE02\110
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 12/06/2002

CAS NO	Compound	Unit	Result	Flags
101-55-3	4-Bromophenyl phenyl ether ug/l	1.0	ND	
118-74-1	Hexachlorobenzene ug/l	1.0	ND	
87-86-5	Pentachlorophenol ug/l	5.0	ND	
85-01-8	Phenanthrene ug/l	1.0	ND	
120-12-7	Anthracene ug/l	1.0	ND	
84-74-2	di-n-Butyl phthalate ug/l	1.0	ND	
206-44-0	Fluoranthene ug/l	1.0	ND	
129-00-0	Pyrene ug/l	1.0	ND	
68-7	Butyl benzyl phthalate ug/l	1.0	ND	
205-35-3	Benzo(a)anthracene ug/l	1.0	ND	
218-01-9	Chrysene ug/l	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate ug/l	1.0	1.6	
117-84-0	di-n-octyl phthalate ug/l	1.0	ND	
206-98-2	Benzo(b)fluoranthene ug/l	1.0	ND	
207-08-9	Benzo(k)fluoranthene ug/l	1.0	ND	
50-32-8	Benzo(a)pyrene ug/l	1.0	ND	
193-39-5	Indeno(1,2,3-cd)pyrene ug/l	1.0	ND	
53-70-3	Dibenz(a,h)anthracene ug/l	1.0	ND	
191-24-2	Benzo(ghi)perylene ug/l	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		19.2	Fail
Surrogate	Phenol-d6 %Recovered		8.1	Fail
Surrogate	Nitrobenzene-d5 %Recovered		92.1	Pass
Surrogate	2-Fluorobiphenyl %Recovered		95.3	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		85.8	Pass
Surrogate	Terphenyl-d14 %Recovered		97.7	Pass

Tentatively Identified Compound (LSC) Summary Report

Operator ID: BB Date Acquired: 12 Jun 2002 1:01 am
 Data File: D:\HPCHEM\DATA\JUNE02\110602\SV016.D
 Sample Name: 239324
 LSC:
 Method: C:\HPCHEM\1\METHODS\JUNE02\110602.M (RTE Integrator)
 Title: EPA Method 8270 SVOC's
 Library Searched: C:\DATABASE\WILEY275.L

Compound name	CAS No.	Est. Conc Range	Quality
Not Known		0.50 µg/L	-
Not Known		7.31 µg/L	-
Not Known		0.50 µg/L	-
Not Known		2.90 µg/L	-
Not Known		0.44 µg/L	-
2-Pentanone	000107-87-9	1.00 µg/L	38
Not Known		0.85 µg/L	-
9-di-tert-butyl-1-oxaspiro[4.5]deca-6,9-	000000-00-0	0.66 µg/L	80
ene-2,8-dione			

D:\HPCHEM\DATA\JUNE02\110602\SV016.D

**SEVERN TRENT
LABORATORIES**



SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 239333
 Job No : 147044
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BLANK
 Sample Matrix : LIQUID
 Vial No : 27

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\060802\1
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 12/06/2002

CAS No	Compound	UPL	Result	Flags
108-95-2	Phenol ug/l	1.0	ND	
111-44-4	Bis(2-chloroethyl) ether ug/l	1.0	ND	
95-57-8	2-chlorophenol ug/l	1.0	ND	
541-73-1	1,3 Dichlorobenzene ug/l	1.0	ND	
106-46-7	1,4 Dichlorobenzene ug/l	1.0	ND	
95-48-7	2-Methylphenol ug/l	1.0	ND	
106-44-5	4-Methylphenol ug/l	1.0	ND	
132-84-9	Dibenzofuran ug/l	1.0	ND	
55-50-1	1,2 Dichlorobenzene ug/l	1.0	ND	
108-60-1	bis(2-Chloroisopropyl) ether ug/l	1.0	ND	
621-84-7	N-nitrosodi-n-propylamine ug/l	1.0	ND	
67-72-1	Hexachloroethane ug/l	1.0	ND	
98-95-3	Nitrobenzene ug/l	1.0	ND	
78-59-1	Isophorone ug/l	1.0	ND	
105-87-9	2,4-dimethylphenol ug/l	1.0	ND	
88-75-5	2-nitrophenol ug/l	1.0	ND	
111-91-1	bis(2-chloroethoxy)methane ug/l	1.0	ND	
120-83-2	2,4-Dichlorophenol ug/l	1.0	ND	
120-82-1	1,2,4-Trichlorobenzene ug/l	1.0	ND	
120-83-2	2,4-Dinitrophenol ug/l	5.0	ND	
91-20-3	Naphthalene ug/l	1.0	ND	
87-68-3	Hexachlorobutadiene ug/l	1.0	ND	
59-50-7	4-Chloro-3-methylphenol ug/l	2.0	ND	
91-57-6	2-Methylnaphthalene ug/l	1.0	ND	
108-60-2	2,4,6-Trichlorophenol ug/l	1.0	ND	
95-95-4	2,4,5-Trichlorophenol ug/l	1.0	ND	
91-58-7	2-Chloronaphthalene ug/l	1.0	ND	
131-11-3	Dimethyl phthalate ug/l	1.0	ND	
606-20-2	2,6-Dinitrotoluene ug/l	1.0	ND	
208-96-8	Acenaphthylene ug/l	1.0	ND	
83-32-9	Acenaphthene ug/l	1.0	ND	
121-14-2	2,4-Dinitrotoluene ug/l	1.0	ND	
84-66-2	Diethyl phthalate ug/l	1.0	ND	
100-02-7	4-Nitrophenol ug/l	5.0	ND	
7005-72-3	4-Chlorophenyl phenylether ug/l	1.0	ND	
86-73-7	Fluorene ug/l	1.0	ND	
86-74-8	Carbazole ug/l	1.0	ND	
86-30-6	n-Nitrosodiphenylamine ug/l	1.0	ND	

SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 239333
 Job No : 147044
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : BLANK
 Sample Matrix : LIQUID
 Vial No : 27

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\080802\
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 12/06/2002

Sample No	Compound	LOD	Result	Flags
101-55-3	4-Bromophenyl phenyl ether ug/l	1.0	ND	
118-74-1	Hexachlorobenzene ug/l	1.0	ND	
87-86-5	Pentachlorophenol ug/l	5.0	ND	
85-01-8	Phenanthrene ug/l	1.0	ND	
120-12-7	Anthracene ug/l	1.0	ND	
84-74-2	di-n-Butyl phthalate ug/l	1.0	ND	
206-44-0	Fluoranthene ug/l	1.0	ND	
129-00-0	Pyrene ug/l	1.0	ND	
85-68-7	Butyl benzyl phthalate ug/l	1.0	ND	
56-55-3	Benzo(a)anthracene ug/l	1.0	ND	
218-01-9	Chrysene ug/l	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate ug/l	1.0	ND	
117-84-0	di-n-octyl phthalate ug/l	1.0	ND	
206-99-2	Benzo(b)fluoranthene ug/l	1.0	ND	
207-08-9	Benzo(k)fluoranthene ug/l	1.0	ND	
50-32-8	Benzo(a)pyrene ug/l	1.0	ND	
193-39-5	Indeno(1,2,3-cd)pyrene ug/l	1.0	ND	
53-70-3	Dibenz(a,h)anthracene ug/l	1.0	ND	
191-24-2	Benzo(ghi)perylene ug/l	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		21.7	Pass
Surrogate	Phenol-d6 %Recovered		12.1	Pass
Surrogate	Nitrobenzene-d5 %Recovered		84.0	Pass
Surrogate	2-Fluorobiphenyl %Recovered		80.8	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		81.3	Pass
Surrogate	Terphenyl-d14 %Recovered		83.6	Pass

SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 239334
 Job No : 147044
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : SPIKE
 Sample Matrix : LIQUID
 Vial No : 26

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\060602\1
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 12/06/2002

CAS NO	Compound	Unit	Result	Flags
108-95-2	Phenol ug/l	1.0	2.5	
111-44-4	Bis(2-chloroethyl) ether ug/l	1.0	ND	
95-57-8	2-chlorophenol ug/l	1.0	10.3	
541-73-1	1,3 Dichlorobenzene ug/l	1.0	ND	
106-46-7	1,4 Dichlorobenzene ug/l	1.0	13.3	
95-48-7	2-Methylphenol ug/l	1.0	ND	
106-44-5	4-Methylphenol ug/l	1.0	ND	
132-64-9	Dibenzofuran ug/l	1.0	ND	
50-1	1,2 Dichlorobenzene ug/l	1.0	ND	
100-60-1	bis(2-Chloroisopropyl) ether ug/l	1.0	ND	
621-64-7	N-nitrosodi-n-propylamine ug/l	1.0	13.9	
87-72-1	Hexachloroethane ug/l	1.0	ND	
98-95-3	Nitrobenzene ug/l	1.0	ND	
78-59-1	Isophorone ug/l	1.0	ND	
105-87-9	2,4-dimethylphenol ug/l	1.0	ND	
88-75-5	2-nitrophenol ug/l	1.0	ND	
111-91-1	bis(2-chloroethoxy)methane ug/l	1.0	ND	
120-83-2	2,4-Dichlorophenol ug/l	1.0	ND	
120-82-1	1,2,4-Trichlorobenzene ug/l	1.0	14.8	
120-83-2	2,4-Dinitrophenol ug/l	5.0	ND	
91-20-3	Naphthalene ug/l	1.0	ND	
87-68-3	Hexachlorobutadiene ug/l	1.0	ND	
59-50-7	4-Chloro-3-methylphenol ug/l	2.0	11.1	
91-57-6	2-Methylnaphthalene ug/l	1.0	ND	
106-2	2,4,6-Trichlorophenol ug/l	1.0	ND	
95-95-4	2,4,5-Trichlorophenol ug/l	1.0	ND	
91-58-7	2-Chloronaphthalene ug/l	1.0	ND	
131-11-3	Dimethyl phthalate ug/l	1.0	ND	
606-20-2	2,6-Dinitrotoluene ug/l	1.0	ND	
208-96-8	Acenaphthylene ug/l	1.0	ND	
83-32-9	Acenaphthene ug/l	1.0	14.1	
121-14-2	2,4-Dinitrotoluene ug/l	1.0	14.3	
84-66-2	Diethyl phthalate ug/l	1.0	ND	
100-02-7	4-Nitrophenol ug/l	5.0	3.1	J
7005-72-3	4-Chlorophenyl phenylether ug/l	1.0	ND	
86-73-7	Fluorene ug/l	1.0	ND	
86-74-8	Carbazole ug/l	1.0	ND	
86-30-6	n-Nitrosodiphenylamine ug/l	1.0	ND	

STL COVENTRY



SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
Lab Sample ID : 239334
Job No : 147044
Sample Location : Celtic Technologies Ltd
Client Sample ID : SPIKE
Sample Matrix : LIQUID
Vial No : 26

Method : EPA 8270 MODIFIED
Data Type : MS DATA
Data Path : D:\DATA\JUNE02\080602\1
Quant Type : ISTD
Accreditation Status : UKAS
Dilution Factor : 1
Report Date : 12/06/2002

AS NO	Compound	MFL	Result	Flags
101-55-3	4-Bromophenyl phenyl ether ug/l	1.0	ND	
118-74-1	Hexachlorobenzene ug/l	1.0	ND	
87-86-5	Pentachlorophenol ug/l	5.0	15.9	
85-01-8	Phenanthrene ug/l	1.0	ND	
120-12-7	Anthracene ug/l	1.0	ND	
84-74-2	di-n-Butyl phthalate ug/l	1.0	ND	
206-44-0	Fluoranthene ug/l	1.0	ND	
129-00-0	* Pyrene ug/l	1.0	14.7	
85-88-7	Butyl benzyl phthalate ug/l	1.0	ND	
56-55-3	Benzo(a)anthracene ug/l	1.0	ND	
218-01-9	Chrysene ug/l	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate ug/l	1.0	ND	
117-84-0	di-n-octyl phthalate ug/l	1.0	ND	
205-99-2	Benzo(b)fluoranthene ug/l	1.0	ND	
207-08-9	Benzo(k)fluoranthene ug/l	1.0	ND	
50-32-8	Benzo(a)pyrene ug/l	1.0	ND	
193-39-5	Indeno(1,2,3-cd)pyrene ug/l	1.0	ND	
53-70-3	Dibenz(a,h)anthracene ug/l	1.0	ND	
191-24-2	Benzo(ghi)perylene ug/l	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		23.1	Pass
Surrogate	Phenol-d6 %Recovered		12.6	Pass
Surrogate	Nitrobenzene-d5 %Recovered		89.1	Pass
Surrogate	2-Fluorobiphenyl %Recovered		87.1	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		88.6	Pass
Surrogate	Terphenyl-d14 %Recovered		88.7	Pass

Please note : Result of ND is Not Detectable

Explanation of compound flags :

J : Compound is detectable but is below normal reporting limit

F: Result is above the calibrated range and is therefore an estimate

B : Compound also detected in Blank extract

D : Sample was diluted and re-analysed to obtain a valid result for this compound

TOTAL PETROLEUM HYDROCARBONS

Client Name: CELTIC TECHNOLOGIES

Lab. Sample ID: 239323
Job No.: 147044
Sample Location: NONE SUPPLIED
Client Sample ID: BH3
Sample Matrix: LIQUID
Vol. Extracted (mls): 201
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 13-Jun-2002

CONCENTRATION UNITS: ug/L

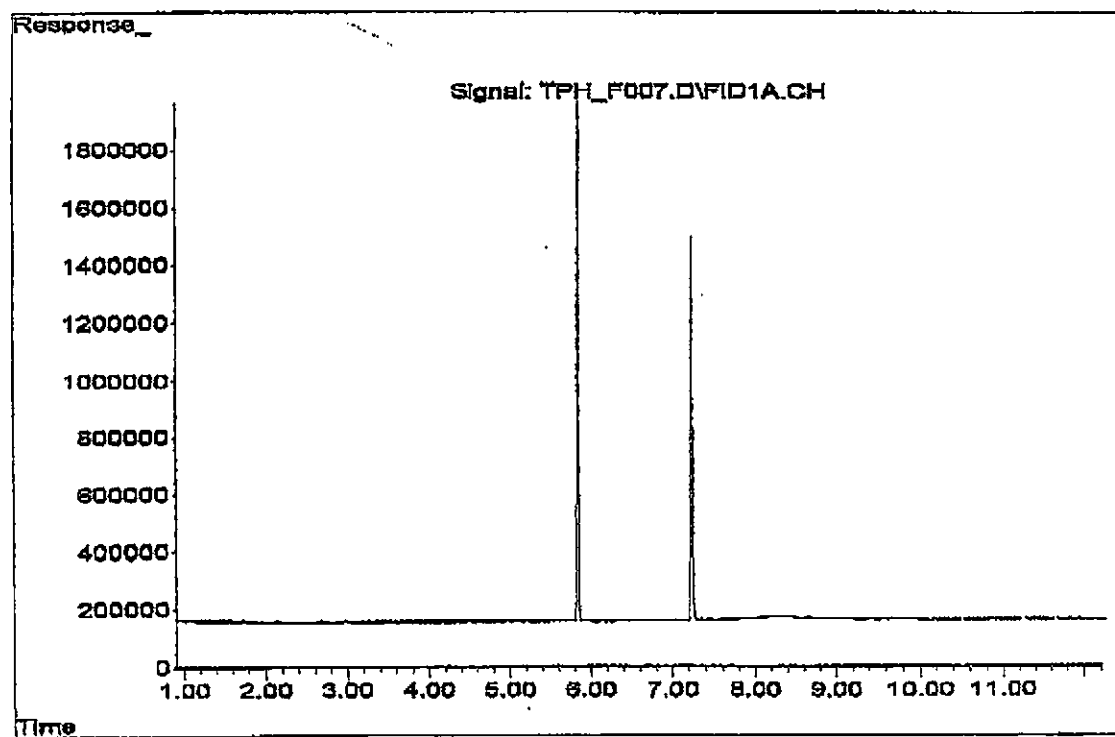
RESULTS

RANGE	MRL	RESULT
>C8 - C8	10	ND
>C8 - C10	10	ND
>C10 - C16	20	ND
>C16 - C24	20	ND
>C24 - C40	50	ND
TOTAL TPH >C8 - C40		ND

MRL = MINIMUM REPORTING LIMIT

ND = NOT DETECTED

CHROMATOGRAM



SEVERN TRENT
LABORATORIES



TOTAL PETROLEUM HYDROCARBONS

Client Name: **CELTIC TECHNOLOGIES**

Lab. Sample ID: 239324
Job No.: 147044
Sample Location: NONE SUPPLIED
Client Sample ID: BH4
Sample Matrix: LIQUID
Vol. Extracted (mls): 203.4
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 13-Jun-2002

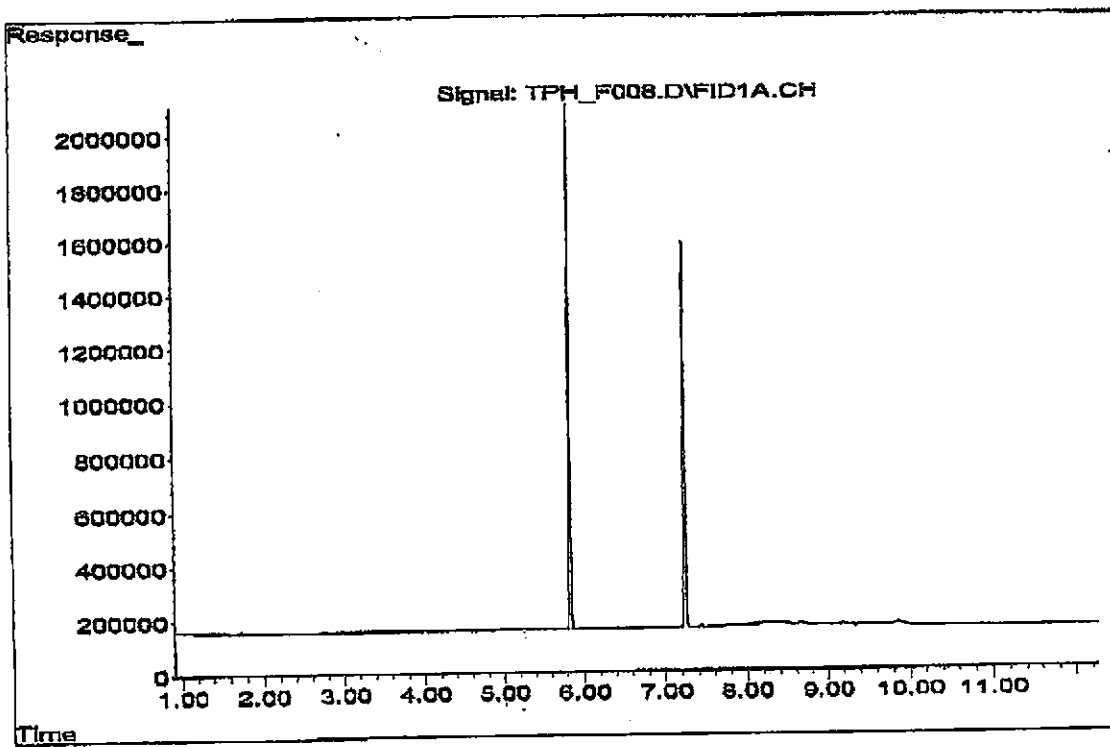
CONCENTRATION UNITS: ug/L

RESULTS

RANGE	MRL	RESULT
>C8 - C8	10	ND
>C8 - C10	10	ND
>C10 - C16	20	ND
>C16 - C24	20	ND
>C24 - C40	50	ND
TOTAL TPH >C8 - C40		ND

MRL = MINIMUM REPORTING LIMIT
ND = NOT DETECTED

CHROMATOGRAM



SEVERN TRENT
LABORATORIES

SEVERN
TRENT
SERVICES

TOTAL PETROLEUM HYDROCARBONS

Client Name: **CELTIC TECHNOLOGIES**

Lab. Sample ID: 239333
Job No.: 147044
Sample Location: NONE SUPPLIED
Client Sample ID: QC BLK 121217
Sample Matrix: LIQUID
Vol. Extracted (mls): 200
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 14-Jun-2002

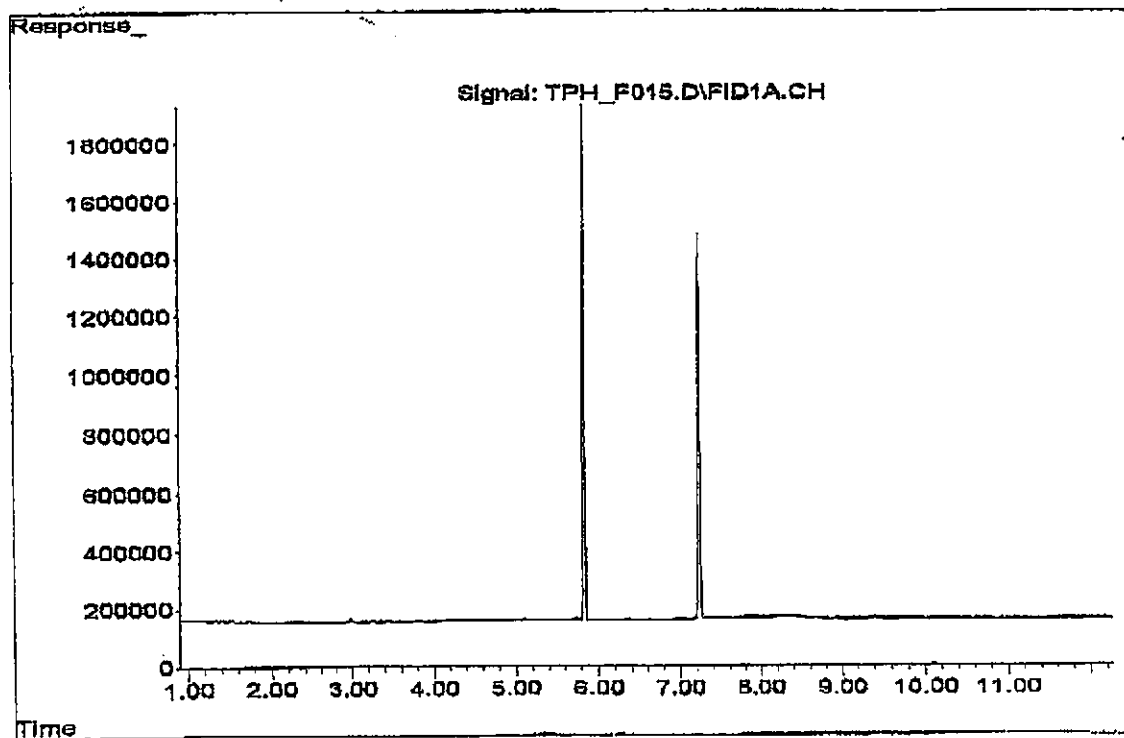
CONCENTRATION UNITS: ug/L

RESULTS

RANGE	MRL	RESULT
>C6 - C8	10	ND
>C8 - C10	10	ND
>C10 - C16	20	ND
>C16 - C24	20	ND
>C24 - C40	50	ND
TOTAL TPH >C6 - C40		ND

MRL = MINIMUM REPORTING LIMIT
ND = NOT DETECTED

CHROMATOGRAM



**SEVERN TRENT
LABORATORIES**



TOTAL PETROLEUM HYDROCARBONSClient Name: **CELTIC TECHNOLOGIES**

Lab. Sample ID: 239334
 Job No.: 147044
 Sample Location: NONE SUPPLIED
 Client Sample ID: QC SPK 121216
 Sample Matrix: LIQUID
 Vol. Extracted (mls): 200
 Dilution Factor: 1

Method: IN HOUSE
 Data Type: GC-FID
 Quant. Type: ISTD
 Accreditation Status: NONE

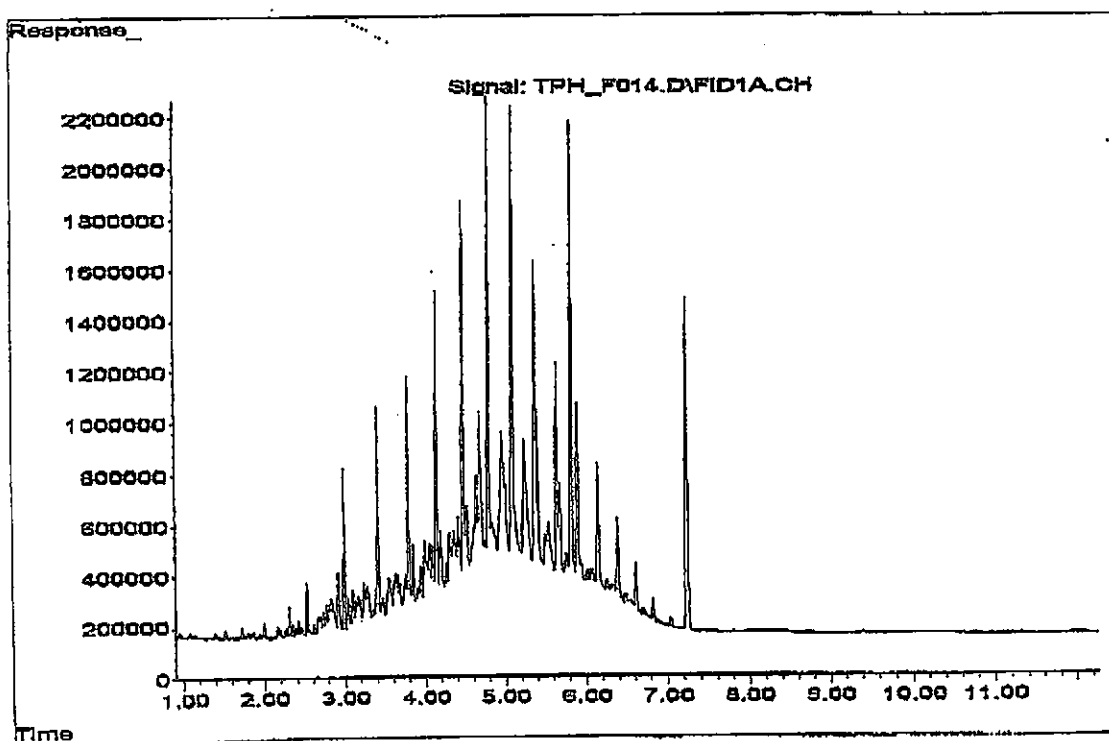
Report Date: 14-Jun-2002

CONCENTRATION UNITS: ug/L

RESULTS

RANGE	MRL	RESULT
>C8 - C8	10	18
>C8 - C10	10	188
>C10 - C16	20	2420
>C16 - C24	20	1600
>C24 - C40	50	ND
TOTAL TPH >C8 - C40 -		4230

MRL = MINIMUM REPORTING LIMIT
 ND = NOT DETECTED

CHROMATOGRAM

**SEVERN TRENT
LABORATORIES**



Leachate Analysis

Report Summary



1914
1987
1999

STL COVENTRY

SEVERN
TRENT
SERVICES

**Mr Jon Freeman
Celtic Technologies Ltd
Cambrian Buildings
Mount Stuart Square
Cardiff**

CF10 5QQ

INTERIM REPORT

Report Number : TH/146595/2002

Number of Samples
included in report

4

Job Received :

28 May 2002

Number of test results
included in report

300

Analysis Commenced :

29 May 2002

Signed :

Name :

Date : **13 June 2002**

Title :

Unless otherwise stated Severn Trent Laboratories was not responsible for sampling
Information on the methods of analysis and performance characteristics are available on request
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory

Certificate of Analysis



1514
0907
1778

STL COVENTRY

SEVERN
TRENT
SERVICES

INTERIM REPORT

Sample 1 Laboratory Number: 236378
of 4 Report Number: TH/146695/2002

Sample Source: Celtic Technologies Ltd
Sample Point Description: Celtic Technologies Ltd
Sample Description: AQC SPIKE

Sample Date: 26 May 2002 Sample Received: 28 May 2002 Analysis Complete:

Test Description	Result	Units	Accreditation	Method
pH	7.0		C	WAS023
Detergents, anionic	2100	ug/l	C	WSI041
Ammoniacal Nitrogen as N	60.5	mg/l	C	WAS036
Iron, Total as Fe	39.5	mg/l	C	WAS012
Manganese, Total as Mn	41.11	mg/l	C	WAS012
Aluminium, Total as Al	41.9	mg/l	C	WAS012
Cadmium, Total as Cd	0.774	mg/l	C	WAS012
Chromium, Total as Cr	7.237	mg/l	C	WAS012
Copper, Total as Cu	8.09	mg/l	C	WAS012
Lead, Total as Pb	7.33	mg/l	C	WAS012
Nickel, Total as Ni	7.59	mg/l	C	WAS012
Zinc, Total as Zn	7.42	mg/l	C	WAS012
Sulphate as SO4	626	mg/l	C	WAS036
NVM, light petroleum extract	Analyst Comment	mg/l	C	WAS026
Sulphide as S	5.29	mg/l	C	WAS033
Silver, Total as Ag	7.57	mg/l	C	WAS012
Arsenic, Total as As	0.039	mg/l	C	WAS014
Mercury, Total as Hg	0.0011	mg/l	C	WAS013
Selenium, Total as Se	0.011	mg/l	C	WAS015
Tin, Total as Sn	0.8	mg/l	C	WAS012
Cyanide, Total as CN	4.5	mg/l	C	WAS018
Titanium, Total as Ti	0.7	mg/l	C	WAS012
TPH >C6-C40	Analyst Comment	ug/l	*	GE034
SVOC with TICs	Analyst Comment	ug/l	*	GE031
Ethylene Glycol	NO TESTS	mg/l	*	SOL2
Triazophos	678.8	ug/l	C	GE05
Phorate	378.7	ug/l	C	GE05
Propetamphos	400.1	ug/l	C	GE05
Pirimiphos-methyl	401.4	ug/l	C	GE05
Fenthion	410.5	ug/l	C	GE05
Dichlorvos	425.4	ug/l	C	GE05
Mevinphos	355.7	ug/l	C	GE05
Demeton-s-methyl	439.0	ug/l	C	GE05
Dimethoate	392.1	ug/l	C	GE05
Diazinon	375.4	ug/l	C	GE05
Parathion-methyl	399.6	ug/l	C	GE05
Disulphoton	403.8	ug/l	C	GE05
Fenitrothion	388	ug/l	C	GE05
Malathion	467.7	ug/l	C	GE05
Parathion ethyl	397.5	ug/l	C	GE05
Chlorfenvinphos	438.5	ug/l	C	GE05
Carbophenothion	407.0	ug/l	C	GE03
Azinphos-methyl	527.0	ug/l	C	GE05
Aldrin	105	ng/l	C	GE03
Dieldrin	108	ng/l	C	GE03

Certificate of Analysis



1214
0907
1220

STL COVENTRY

SEVERN
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SERVICES

INTERIM REPORT

Sample 1 Laboratory Number: 236378
of 4 Report Number: TH/146695/2002

Sample Source: Celtic Technologies Ltd
Sample Point Description: Celtic Technologies Ltd
Sample Description: AQC SPIKE

Sample Date: 28 May 2002 Sample Received: 28 May 2002 Analysis Complete:

Test Description	Result	Units	Accreditation	Method
Heptachlor Epoxide	101	ng/l	C	GEO3
Chlordane - alpha	106	ng/l	C	GEO3
Dichlobenil	77.7	ng/l	C	GEO3
Chlordane gamma	75.9	ng/l	C	GEO3
Endosulphan alpha	101	ng/l	C	GEO3
Endrin	94.8	ng/l	C	GEO3
HCH - alpha	87.4	ng/l	C	GEO3
HCH - beta	98.4	ng/l	C	GEO3
HCH - gamma	88.7	ng/l	C	GEO3
Hexachlorobutadiene	74.6	ng/l	C	GEO3
Hexachlorobenzene	69.4	ng/l	C	GEO3
Isodrin	106	ng/l	C	GEO3
o,p - DDE	75.7	ng/l	C	GEO3
o,p - DDT	71.3	ng/l	C	GEO3
o,p - TDE	86.8	ng/l	C	GEO3
PCB 101	80.4	ng/l	C	GEO3
PCB 118	82.3	ng/l	C	GEO3
PCB 138	80.3	ng/l	C	GEO3
PCB 52	81.6	ng/l	C	GEO3
PCB 153	81.6	ng/l	C	GEO3
PCB 180	81.8	ng/l	C	GEO3
PCB 28	78.6	ng/l	C	GEO3
p,p - DDE	123	ng/l	C	GEO3
p,p - DDT	87.7	ng/l	C	GEO3
p,p - TDE	96.4	ng/l	C	GEO3
Technazene	92.6	ng/l	* C	GEO3
Triallate	96.6	ng/l	C	GEO3
1,2,4-Trichlorobenzene	116	ng/l	C	GEO3
Trifluralin	94.5	ng/l	C	GEO3
NRA Leachate			* C	

Analyst Comment

Analyst Comment for 236378: NVM- Unable to provide spike value as no AQC available to analyse.
Please see attached report for SVOC AQC spike analysis.
Please see attached report for TPH results.
Unable to report results for hcb, hcbd, op-ddt, op-dde and g-chlordane due to AQC breaches, the indicated results are all <25ng/l.
Unable to report results for the PCB Waters suite with the exception of PCB 180 due to AQC breach, the indicated results are all <25ng/l.

Accreditation Codes: * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



STL COVENTRY



INTERIM REPORT

Sample **2** Laboratory Number: **236379**
of **4** Report Number: **TH/146595/2002**

Sample Source: **Celtic Technologies Ltd**
Sample Point Description: **Celtic Technologies Ltd**
Sample Description: **AQC BLANK**

Sample Date: **28 May 2002** Sample Received: **28 May 2002** Analysis Complete:

Test Description	Result	Units	Accreditation	Method
pH	3.0		C	WAS023
Detergents, anionic	<300	ug/l	C	WSI041
Ammoniacal Nitrogen as N	<0.3	mg/l	C	WAS036
Iron, Total as Fe	<0.05	mg/l	C	WAS012
Manganese, Total as Mn	<0.04	mg/l	C	WAS012
Aluminium, Total as Al	<0.1	mg/l	C	WAS012
Cadmium, Total as Cd	<0.001	mg/l	C	WAS012
Chromium, Total as Cr	<0.005	mg/l	C	WAS012
Copper, Total as Cu	<0.02	mg/l	C	WAS012
Lead, Total as Pb	<0.01	mg/l	C	WAS012
Nickel, Total as Ni	<0.007	mg/l	C	WAS012
Zinc, Total as Zn	<0.03	mg/l	C	WAS012
Sulphate as SO4	<5	mg/l	C	WAS036
NVM, light petroleum extract	Analyst Comment	mg/l	C	WAS026
Sulphide as S	<0.01	mg/l	C	WAS033
Silver, Total as Ag	<0.02	mg/l	C	WAS012
Arsenic, Total as As	<0.001	mg/l	C	WAS014
Mercury, Total as Hg	<0.0001	mg/l	C	WAS013
Selenium, Total as Se	<0.001	mg/l	C	WAS015
Tin, Total as Sn	<0.1	mg/l	C	WAS012
Cyanide, Total as CN	<0.1	mg/l	C	WAS018
Titanium, Total as Ti	<0.1	mg/l	C	WAS012
TPH >C6-C40	Analyst Comment	ug/l	*	GE034
SVOC with TICs	Analyst Comment	ug/l	*	GE031
Ethylene Glycol	NO TESTS	mg/l	*	SOL2
Triazophos	0	ug/l	C	GE05
Phorate	0	ug/l	C	GE05
Propetamphos	0	ug/l	C	GE06
Phirimphos-methyl	0	ug/l	C	GE05
Fenthion	1.94	ug/l	C	GE05
Dichlorvos	0	ug/l	C	GE05
Mevinphos	0	ug/l	C	GE05
Demeton-s-methyl	0	ug/l	C	GE05
Dimethoate	0	ug/l	C	GE05
Diazinon	0	ug/l	C	GE06
Parathion-methyl	0	ug/l	C	GE05
Disulphoton	0	ug/l	C	GE06
Fenitrothion	0	ug/l	C	GE05
Malathion	0	ug/l	C	GE05
Parathion ethyl	0	ug/l	C	GE05
Chlorfenvinphos	0	ug/l	C	GE05
Carbophenothion	0	ug/l	C	GE03
Azinphos-methyl	0	ug/l	C	GE06
Aldrin	<5	ng/l	C	GE03
Dieldrin	<5	ng/l	C	GE03

Certificate of Analysis



1314
0507
1998

STL COVENTRY

SEVERN

TRENT

SERVICES

INTERIM REPORT

Sample 2 Laboratory Number: 236379
of 4 Report Number: TH/146595/2002

Sample Source: Celtic Technologies Ltd
Sample Point Description: Celtic Technologies Ltd
Sample Description: AQC BLANK

Sample Date: 28 May 2002 Sample Received: 28 May 2002 Analysis Complete:

Test Description	Result	Units	Accreditation	Method
Heptachlor Epoxide	6.6	ng/l	C	GEO3
Chlordane - alpha	<5	ng/l	C	GEO3
Dichlobenil	24.7	ng/l	C	GEO3
Chlordane gamma	<5	ng/l	C	GEO3
Endosulphan alpha	<5	ng/l	C	GEO3
Endrin	<5	ng/l	C	GEO3
HCH - alpha	<5	ng/l	C	GEO3
HCH - beta	<5	ng/l	C	GEO3
HCH - gamma	<5	ng/l	C	GEO3
Hexachlorobutadiene	<5	ng/l	C	GEO3
Hexachlorobenzene	<5	ng/l	C	GEO3
Isodrin	<5	ng/l	C	GEO3
o,p - DDE	<5	ng/l	C	GEO3
o,p - DDT	31.9	ng/l	C	GEO3
o,p - TDE	<5	ng/l	C	GEO3
PCB 101	<5	ng/l	C	GEO3
PCB 118	<5	ng/l	C	GEO3
PCB 138	<5	ng/l	C	GEO3
PCB 52	<5	ng/l	C	GEO3
PCB 153	<5	ng/l	C	GEO3
PCB 180	<5	ng/l	C	GEO3
PCB 28	<5	ng/l	C	GEO3
p,p - DDE	<5	ng/l	C	GEO3
p,p - DDT	<5	ng/l	C	GEO3
p,p - TDE	<5	ng/l	C	GEO3
Tecnazene	<5	ng/l	C	GEO3
Triallate	5.6	ng/l	C	GEO3
1,2,4-Trichlorobenzene	<5	ng/l	C	GEO3
Trifluralin	9.0	ng/l	C	GEO3
NRA Leachate	Analyst Comment		C	

Analyst Comment for 236379: NVM- Unable to provide value as no suitable AQC/Blank available for analysis
NRA LEACHATE
Please see attached report for SVOC AQC blank analysis.
Please see attached report for TPH results.

Accreditation Codes: * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



STL COVENTRY



INTERIM REPORT

Sample 3 Laboratory Number : 236380
of 4 Report Number : TH/146595/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : TP2 1.5

Sample Date : 28 May 2002 Sample Received : 28 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
pH	5.9		C	WAS023
Detergents, anionic	<300	ug/l	C	WSI041
Ammoniacal Nitrogen as N	<0.3	mg/l	C	WAS036
Iron, Total as Fe	0.88	mg/l	C	WAS012
Manganese, Total as Mn	<0.05	mg/l	C	WAS012
Aluminium, Total as Al	1.5	mg/l	C	WAS012
Cadmium, Total as Cd	0.001	mg/l	C	WAS012
Chromium, Total as Cr	<0.005	mg/l	C	WAS012
Copper, Total as Cu	0.013	mg/l	C	WAS012
Lead, Total as Pb	0.016	mg/l	C	WAS012
Nickel, Total as Ni	<0.005	mg/l	C	WAS012
Zinc, Total as Zn	0.034	mg/l	C	WAS012
Sulphate as SO4	185	mg/l	C	WAS036
NVM, light petroleum extract	84	mg/l	C	WAS026
Sulphide as S	<0.01	mg/l	C	WAS033
Silver, Total as Ag	<0.03	mg/l	C	WAS012
Arsenic, Total as As	<0.001	mg/l	C	WAS014
Mercury, Total as Hg	<0.0001	mg/l	C	WAS013
Selenium, Total as Se	0.001	mg/l	C	WAS015
Tin, Total as Sn	<0.1	mg/l	C	WAS012
Cyanide, Total as CN	<0.1	mg/l	C	WAS018
Titanium, Total as Ti	<0.1	mg/l	C	WAS012
TPH >C6-C40	Analyst Comment	ug/l	*	GE034
SVOC with TICs	Analyst Comment	ug/l	*	GE031
Ethylene Glycol	<20	mg/l	*	SOL2
Triazophos	Analyst Comment	ug/l	C	GE05
Phorate	<0.25	ug/l	C	GE05
Propetamphos	<0.25	ug/l	C	GE05
Phimiphos-methyl	<0.25	ug/l	C	GE06
Fenthion	<0.25	ug/l	C	GE08
Dichlorvos	<0.25	ug/l	C	GE05
Mevinphos	Analyst Comment	ug/l	C	GE05
Demeton-s-methyl	Analyst Comment	ug/l	C	GE06
Dimethoate	<0.25	ug/l	C	GE05
Diazinon	<0.25	ug/l	C	GE05
Parathion-methyl	Analyst Comment	ug/l	C	GE05
Disulphoton	<0.25	ug/l	C	GE05
Fenitrothion	Analyst Comment	ug/l	C	GE05
Malathion	<0.25	ug/l	C	GE06
Parathion ethyl	<0.25	ug/l	C	GE05
Chlorfenvinphos	<0.25	ug/l	C	GE05
Carbophenothion	<0.25	ug/l	C	GE03
Azinphos-methyl	Analyst Comment	ug/l	C	GE05
Aldrin	<25	ng/l	C	GE03
Dieldrin	<25	ng/l	C	GE03

Certificate of Analysis



STL COVENTRY

SEVERN
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SERVICES

INTERIM REPORT

Sample 3 Laboratory Number : 236380
of 4 Report Number : TH/146595/2002

Sample Source : Celtic Technologies Ltd
Sample Point/Description : Celtic Technologies Ltd
Sample Description : TP2 1.5

Sample Date : 28 May 2002 Sample Received : 28 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Heptachlor Epoxide	<25	ng/l	C	GEO3
Chlordane - alpha	<25	ng/l	C	GEO3
Dichlobenil	<25	ng/l	C	GEO3
Chlordane gamma	Analyst Comment	ng/l	C	GEO3
Endosulphan alpha	<25	ng/l	C	GEO3
Endrin	<25	ng/l	C	GEO3
HCH - alpha	<25	ng/l	C	GEO3
HCH - beta	<25	ng/l	C	GEO3
HCH - gamma	<25	ng/l	C	GEO3
Hexachlorobutadiene	Analyst Comment	ng/l	C	GEO3
Hexachlorobenzene	Analyst Comment	ng/l	C	GEO3
Isodrin	<25	ng/l	C	GEO3
o,p - DDE	Analyst Comment	ng/l	C	GEO3
o,p - DDT	Analyst Comment	ng/l	C	GEO3
o,p - TDE	<25	ng/l	C	GEO3
PCB 101	Analyst Comment	ng/l	C	GEO3
PCB 118	Analyst Comment	ng/l	C	GEO3
PCB 138	Analyst Comment	ng/l	C	GEO3
PCB 62	Analyst Comment	ng/l	C	GEO3
PCB 153	Analyst Comment	ng/l	C	GEO3
PCB 180	<25	ng/l	C	GEO3
PCB 28	Analyst Comment	ng/l	C	GEO3
p,p - DDE	<25	ng/l	C	GEO3
p,p - DDT	<25	ng/l	C	GEO3
p,p - TDE	<25	ng/l	C	GEO3
Technazene	<25	ng/l	C	GEO3
Triallate	<25	ng/l	C	GEO3
1,2,4-Trichlorobenzene	<25	ng/l	C	GEO3
Trifluralin	<25	ng/l	C	GEO3
NRA Leachate	Analyst Comment		C	

Analyst Comment for 236380 : NRA LEACHATE

Please see attached report for SVOC analysis.

Please see attached report for TPH results.

No result reported for op analysis due to aqc breach. the indication for the unreported compounds in the op analysis is <0.25.

Unable to report results for hcb, hcbd, g-chlordane, op-ddt and op-dda due to AQC breaches, the indicated results are all <25ng/l.

Unable to report results for the PCB Waters suite with the exception of PCB 180 due to AQC breach. the indicated results are all <25ng/l.

Accreditation Codes : * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Certificate of Analysis



1814
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1998

STL COVENTRY

SEVERN
TRENT
SERVICES

INTERIM REPORT

Sample 4 Laboratory Number : 236381
of 4 Report Number : TH/148595/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : TP3 1.3

Sample Date : 28 May 2002 Sample Received : 28 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
pH	5.7		C	WAS023
Detergents, anionic	<300	ug/l	C	WSI041
Ammoniacal Nitrogen as N	0.4	mg/l	C	WAS036
Iron, Total as Fe	0.77	mg/l	C	WAS012
Manganese, Total as Mn	<0.05	mg/l	C	WAS012
Aluminium, Total as Al	1.1	mg/l	C	WAS012
Cadmium, Total as Cd	0.001	mg/l	C	WAS012
Chromium, Total as Cr	<0.005	mg/l	C	WAS012
Copper, Total as Cu	0.013	mg/l	C	WAS012
Lead, Total as Pb	0.015	mg/l	C	WAS012
Nickel, Total as Ni	<0.005	mg/l	C	WAS012
Zinc, Total as Zn	0.050	mg/l	C	WAS012
Sulphate as SO4	110	mg/l	C	WAS038
NVM, light petroleum extract	9	mg/l	C	WAS026
Sulphide as S	<0.01	mg/l	C	WAS033
Silver, Total as Ag	<0.03	mg/l	C	WAS012
Arsenic, Total as As	<0.001	mg/l	C	WAS014
Mercury, Total as Hg	<0.0001	mg/l	C	WAS013
Selenium, Total as Se	<0.001	mg/l	C	WAS015
Tin, Total as Sn	<0.1	mg/l	C	WAS012
Cyanide, Total as CN	<0.1	mg/l	C	WAS018
Titanium, Total as Ti	<0.1	mg/l	C	WAS012
TPH >C6-C40	Analyst Comment	ug/l	*	GE034
SVOC with TICs	Analyst Comment	ug/l	*	GE031
Ethylene Glycol	<20	mg/l	*	SOL2
Triazophos	Analyst Comment	ug/l	C	GE08
Phorate	<0.25	ug/l	C	GE06
Propetamphos	<0.25	ug/l	C	GE05
Plimiphos-methyl	<0.25	ug/l	C	GE06
Fenthion	<0.25	ug/l	C	GE05
Dichlorvos	<0.25	ug/l	C	GE06
Mevinphos	Analyst Comment	ug/l	C	GE06
Demeton-s-methyl	Analyst Comment	ug/l	C	GE05
Dimethoate	<0.25	ug/l	C	GE06
Diazinon	<0.25	ug/l	C	GE05
Parathion-methyl	Analyst Comment	ug/l	C	GE05
Disulphoton	<0.25	ug/l	C	GE06
Fenitrothion	Analyst Comment	ug/l	C	GE06
Malathion	<0.25	ug/l	C	GE05
Parathion ethyl	<0.25	ug/l	C	GE05
Chlorfenvinphos	<0.25	ug/l	C	GE06
Carbophenothion	<0.25	ug/l	C	GE03
Azinphos-methyl	Analyst Comment	ug/l	C	GE06
Aldrin	<25	ng/l	C	GE03
Dieldrin	<25	ng/l	C	GE03

Certificate of Analysis



1814
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STL COVENTRY

SEVERN
TRENT
SERVICES

INTERIM REPORT

Sample 4 Laboratory Number : 236381
of 4 Report Number : TH/146695/2002

Sample Source : Celtic Technologies Ltd
Sample Point Description : Celtic Technologies Ltd
Sample Description : TP3 1.3

Sample Date : 28 May 2002 Sample Received : 28 May 2002 Analysis Complete :

Test Description	Result	Units	Accreditation	Method
Heptachlor Epoxide	<25	ng/l	C	GEO3
Chlordane - alpha	<25	ng/l	C	GEO3
Dichlobenil	<25	ng/l	C	GEO3
Chlordane gamma	Analyst Comment	ng/l	*	GEO3
Endosulphan alpha	<25	ng/l	C	GEO3
Endrin	<25	ng/l	C	GEO3
HCH - alpha	<25	ng/l	C	GEO3
HCH - beta	<25	ng/l	C	GEO3
HCH - gamma	<25	ng/l	C	GEO3
Hexachlorobutadiene	Analyst Comment	ng/l	C	GEO3
Hexachlorobenzene	Analyst Comment	ng/l	C	GEO3
Isodrin	<25	ng/l	C	GEO3
o,p - DDE	Analyst Comment	ng/l	C	GEO3
o,p - DDT	Analyst Comment	ng/l	C	GEO3
o,p - TDE	<25	ng/l	C	GEO3
PCB 101	Analyst Comment	ng/l	C	GEO3
PCB 118	Analyst Comment	ng/l	C	GEO3
PCB 138	Analyst Comment	ng/l	C	GEO3
PCB 52	Analyst Comment	ng/l	C	GEO3
PCB 153	Analyst Comment	ng/l	C	GEO3
PCB 180	<25	ng/l	C	GEO3
PCB 28	Analyst Comment	ng/l	C	GEO3
p,p - DDE	<25	ng/l	C	GEO3
p,p - DDT	<25	ng/l	C	GEO3
p,p - TDE	<25	ng/l	C	GEO3
Technazene	<25	ng/l	*	GEO3
Triallate	30.9	ng/l	C	GEO3
1,2,4-Trichlorobenzene	<25	ng/l	C	GEO3
Trifluralin	38	ng/l	C	GEO3
NRA Leachate	Analyst Comment		*	C

Analyst Comment for 236381 : NRA LEACHATE

Please see attached report for SVOC analysis.

Please see attached report for TPH results.

No result reported for op analysis due to aqc breach. the indication for the unreported compounds in the op analysis is <0.25.

Unable to report results for hcb, hcbd, g-chlordane, op-ddt and op-dde due to AQC breaches, the indicated results are all <25ng/l.

Unable to report results for the PCB Waters suite with the exception of PCB 180 due to AQC breach, the indicated results are all <25ng/l.

Accreditation Codes : * = Not UKAS accredited B = Analysed at Bridgend C = Analysed at Coventry R = Analysed at Runcorn S = Sub-contracted analysis
For Microbiological determinands 0 = Not Detected

Signed :

Name :

Date : 13 June 2002

Title :

SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd	Method : EPA 8270 MODIFIED
Lab Sample ID : 236378	Data Type : MS DATA
Job No : 146595	Data Path : D:\DATA\JUNE02\0606021
Sample Location : Celtic Technologies Ltd	Quant Type : ISTD
Client Sample ID : AQ6 SPIKE	Accreditation Status : UKAS
Sample Matrix : LIQUID	Dilution Factor : 1
Vial No : 26	Report Date : 10/06/2002

Sample No	Compound	Unit	Result	Flag
108-95-2	Phenol ug/l	1.0	2.5	
111-44-4	Bis(2-chloroethyl) ether ug/l	1.0	ND	
95-57-8	2-chlorophenol ug/l	1.0	10.3	
541-73-1	1,3 Dichlorobenzene ug/l	1.0	ND	
106-46-7	1,4 Dichlorobenzene ug/l	1.0	13.3	
95-48-7	2-Methylphenol ug/l	1.0	ND	
106-44-5	4-Methylphenol ug/l	1.0	ND	
132-64-9	Dibenzofuran ug/l	1.0	ND	
95-50-1	1,2 Dichlorobenzene ug/l	1.0	ND	
108-60-1	bis(2-Chloroisopropyl) ether ug/l	1.0	ND	
621-64-7	N-nitrosodi-n-propylamine ug/l	1.0	13.8	
67-72-1	Hexachloroethane ug/l	1.0	ND	
98-96-3	Nitrobenzene ug/l	1.0	ND	
78-59-1	Isophorone ug/l	1.0	ND	
105-67-9	2,4-dimethylphenol ug/l	1.0	ND	
88-75-5	2-nitrophenol ug/l	1.0	ND	
111-91-1	bis(2-chloroethoxy)methane ug/l	1.0	ND	
120-83-2	2,4-Dichlorophenol ug/l	1.0	ND	
120-82-1	1,2,4-Trichlorobenzene ug/l	1.0	14.6	
120-83-2	2,4-Dinitrophenol ug/l	5.0	ND	
91-20-3	Naphthalene ug/l	1.0	ND	
87-68-3	Hexachlorobutadiene ug/l	1.0	ND	
59-50-7	4-Chloro-3-methylphenol ug/l	2.0	11.1	
91-57-6	2-Methylnaphthalene ug/l	1.0	ND	
88-06-2	2,4,6-Trichlorophenol ug/l	1.0	ND	
95-95-4	2,4,5-Trichlorophenol ug/l	1.0	ND	
91-58-7	2-Chloronaphthalene ug/l	1.0	ND	
131-11-3	Dimethyl phthalate ug/l	1.0	ND	
608-20-2	2,6-Dinitrotoluene ug/l	1.0	ND	
208-96-8	Acenaphthylene ug/l	1.0	ND	
83-32-9	Acenaphthene ug/l	1.0	14.1	
121-14-2	2,4-Dinitrotoluene ug/l	1.0	14.4	
84-66-2	Diethyl phthalate ug/l	1.0	ND	
100-02-7	4-Nitrophenol ug/l	5.0	2.7	J
7005-72-3	4-Chlorophenyl phenylether ug/l	1.0	ND	
86-73-7	Fluorene ug/l	1.0	ND	
86-74-8	Carbazole ug/l	1.0	ND	

STL COVENTRY



SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name	: Celtic Technologies Ltd	Method	: EPA 8270 MODIFIED
Lab Sample ID	: 236378	Data Type	: MS DATA
Job No	: 146595	Data Path	: D:\DATA\JUNE02\060602\
Sample Location	: Celtic Technologies Ltd	Quant Type	: ISTD
Client Sample ID	: AQC SPIKE	Accreditation Status	: UKAS
Sample Matrix	: LIQUID	Dilution Factor	: 1
Vial No	: 26	Report Date	: 10/06/2002

86-30-6	n-Nitrosodiphenylamine ug/l	1.0	ND	
101-55-3	4-Bromophenyl phenyl ether ug/l	1.0	ND	
118-74-1	Hexachlorobenzene ug/l	1.0	ND	
87-86-6	Pentachlorophenol ug/l	5.0	16.3	
85-01-8	Phenanthrene ug/l	1.0	ND	
120-12-7	Anthracene ug/l	1.0	ND	
84-74-2	di-n-Butyl phthalate ug/l	1.0	ND	
208-44-0	*Fluoranthene ug/l	1.0	ND	
129-00-0	Pyrene ug/l	1.0	14.6	
85-68-7	Butyl benzyl phthalate ug/l	1.0	ND	
56-55-3	Benzo(a)anthracene ug/l	1.0	ND	
218-01-9	Chrysene ug/l	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate ug/l	1.0	ND	
117-84-0	di-n-octyl phthalate ug/l	1.0	ND	
205-99-2	Benzo(b)fluoranthene ug/l	1.0	ND	
207-08-9	Benzo(k)fluoranthene ug/l	1.0	ND	
60-32-8	Benzo(a)pyrene ug/l	1.0	ND	
193-39-6	Indeno(1,2,3-cd)pyrene ug/l	1.0	ND	
53-70-3	Dibenz(a,h)anthracene ug/l	1.0	ND	
191-24-2	Benzo(ghi)perylene ug/l	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		24.0	Pass
Surrogate	Phenol-d6 %Recovered		13.1	Pass
Surrogate	Nitrobenzene-d5 %Recovered		91.2	Pass
Surrogate	2-Fluorobiphenyl %Recovered		87.1	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		91.7	Pass
Surrogate	Terphenyl-d14 %Recovered		88.7	Pass

SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd	Method : EPA 8270 MODIFIED
Lab Sample ID : 236379	Data Type : MS DATA
Job No : 146595	Data Path : D:\DATA\JUNE02\060602\
Sample Location : Celtic Technologies Ltd	Quant Type : ISTD
Client Sample ID : AQC BLANK	Accreditation Status : UKAS
Sample Matrix : LIQUID	Dilution Factor : 1
Vial No : 27	Report Date : 10/06/2002

NO	Compound	MRI	Result	Flags
108-95-2	Phenol ug/l	1.0	ND	
111-44-4	Bis(2-chloroethyl) ether ug/l	1.0	ND	
95-57-8	2-chlorophenol ug/l	1.0	ND	
541-73-1	1,3 Dichlorobenzene ug/l	1.0	ND	
106-46-7	1,4 Dichlorobenzene ug/l	1.0	ND	
95-48-7	2-Methylphenol ug/l	1.0	ND	
105-44-5	4-Methylphenol ug/l	1.0	ND	
132-84-9	Dibenzofuran ug/l	1.0	ND	
95-50-1	1,2 Dichlorobenzene ug/l	1.0	ND	
108-60-1	bis(2-Chloroisopropyl) ether ug/l	1.0	ND	
621-64-7	N-nitrosodi-n-propylamine ug/l	1.0	ND	
67-72-1	Hexachloroethane ug/l	1.0	ND	
98-95-3	Nitrobenzene ug/l	1.0	ND	
78-59-1	Isophorone ug/l	1.0	ND	
105-57-9	2,4-dimethylphenol ug/l	1.0	ND	
88-75-5	2-nitrophenol ug/l	1.0	ND	
111-91-1	bis(2-chloroethoxy)methane ug/l	1.0	ND	
120-83-2	2,4-Dichlorophenol ug/l	1.0	ND	
120-82-1	1,2,4-Trichlorobenzene ug/l	1.0	ND	
120-83-2	2,4-Dinitrophenol ug/l	5.0	ND	
91-20-3	Naphthalene ug/l	1.0	ND	
87-68-3	Hexachlorobutadiene ug/l	1.0	ND	
59-50-7	4-Chloro-3-methylphenol ug/l	2.0	ND	
91-57-6	2-Methylnaphthalene ug/l	1.0	ND	
88-06-2	2,4,6-Trichlorophenol ug/l	1.0	ND	
95-95-4	2,4,5-Trichlorophenol ug/l	1.0	ND	
91-58-7	2-Chloronaphthalene ug/l	1.0	ND	
131-11-3	Dimethyl phthalate ug/l	1.0	ND	
606-20-2	2,6-Dinitrotoluene ug/l	1.0	ND	
208-96-8	Acenaphthylene ug/l	1.0	ND	
83-32-9	Acenaphthene ug/l	1.0	ND	
121-14-2	2,4-Dinitrotoluene ug/l	1.0	ND	
84-66-2	Diethyl phthalate ug/l	1.0	ND	
100-02-7	4-Nitrophenol ug/l	5.0	ND	
7005-72-3	4-Chlorophenyl phenylether ug/l	1.0	ND	
86-73-7	Fluorene ug/l	1.0	ND	
86-74-8	Carbazole ug/l	1.0	ND	
86-30-8	n-Nitrosodiphenylamine ug/l	1.0	ND	

SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name	: Celtic Technologies Ltd	Method	: EPA 8270 MODIFIED
Lab Sample ID	: 236379	Data Type	: MS DATA
Job No	: 146595	Data Path	: D:\DATA\JUNE02\060502\
Sample Location	: Celtic Technologies Ltd	Quant Type	: ISTD
Client Sample ID	: AQC BLANK	Accreditation Status	: UKAS
Sample Matrix	: LIQUID	Dilution Factor	: 1
Vial No	: 27	Report Date	: 10/06/2002

Sample No	Compound	MR	Result	Flags
101-55-3	4-Bromophenyl phenyl ether ug/l	1.0	ND	
118-74-1	Hexachlorobenzene ug/l	1.0	ND	
87-86-5	Pentachlorophenol ug/l	5.0	ND	
85-01-8	Phenanthrene ug/l	1.0	ND	
120-12-7	Anthracene ug/l	1.0	ND	
84-74-2	di-n-Butyl phthalate ug/l	1.0	ND	
206-44-0	Fluoranthene ug/l	1.0	ND	
129-00-0	Pyrene ug/l	1.0	ND	
85-68-7	Butyl benzyl phthalate ug/l	1.0	ND	
96-55-3	Benzo(a)anthracene ug/l	1.0	ND	
218-01-9	Chrysene ug/l	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate ug/l	1.0	ND	
117-84-0	di-n-octyl phthalate ug/l	1.0	ND	
205-99-2	Benzo(b)fluoranthene ug/l	1.0	ND	
207-08-9	Benzo(k)fluoranthene ug/l	1.0	ND	
50-32-8	Benzo(a)pyrene ug/l	1.0	ND	
193-39-5	Indeno(1,2,3-cd)pyrene ug/l	1.0	ND	
53-70-3	Dibenz(a,h)anthracene ug/l	1.0	ND	
191-24-2	Benzo(ghi)perylene ug/l	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		21.7	Pass
Surrogate	Phenol-d6 %Recovered		12.6	Pass
Surrogate	Nitrobenzene-d5 %Recovered		83.0	Pass
Surrogate	2-Fluorobiphenyl %Recovered		80.8	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		83.0	Pass
Surrogate	Terphenyl-d14 %Recovered		83.4	Pass

SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name	: Celtic Technologies Ltd	Method	: EPA 8270 MODIFIED
Lab Sample ID	: 236380	Data Type	: MS DATA
Job No	: 146596	Data Path	: D:\DATA\LINE02\060802\
Sample Location	: Celtic Technologies Ltd	Quant Type	: ISTD
Client Sample ID	: TP2 1.5	Accreditation Status	: UKAS
Sample Matrix	: LIQUID	Dilution Factor	: 1
Vial No	: 22	Report Date	: 10/06/2002

CAS No.	Compound	Unit	Result	Flags
108-95-2	Phenol ug/l	1.0	ND	
111-44-4	Bis(2-chloroethyl) ether ug/l	1.0	ND	
95-57-8	2-chlorophenol ug/l	1.0	ND	
541-73-1	1,3 Dichlorobenzene ug/l	1.0	ND	
106-46-7	1,4 Dichlorobenzene ug/l	1.0	ND	
95-48-7	2-Methylphenol ug/l	1.0	ND	
106-44-5	4-Methylphenol ug/l	1.0	ND	
132-84-9	Dibenzofuran ug/l	1.0	ND	
95-50-1	1,2 Dichlorobenzene ug/l	1.0	ND	
108-90-1	bis(2-Chloroisopropyl) ether ug/l	1.0	ND	
621-84-7	N-nitrosodi-n-propylamine ug/l	1.0	ND	
67-72-1	Hexachloroethane ug/l	1.0	ND	
98-95-3	Nitrobenzene ug/l	1.0	ND	
78-59-1	Isophorone ug/l	1.0	ND	
105-87-9	2,4-dimethylphenol ug/l	1.0	ND	
88-75-5	2-nitrophenol ug/l	1.0	ND	
111-91-1	bis(2-chloroethoxy)methane ug/l	1.0	ND	
120-83-2	2,4-Dichlorophenol ug/l	1.0	ND	
120-82-1	1,2,4-Trichlorobenzene ug/l	1.0	ND	
120-83-2	2,4-Dinitrophenol ug/l	5.0	ND	
91-20-3	Naphthalene ug/l	1.0	0.3	J
87-68-3	Hexachlorobutadiene ug/l	1.0	ND	
59-50-7	4-Chloro-3-methylphenol ug/l	2.0	ND	
91-57-8	2-Methylnaphthalene ug/l	1.0	ND	
88-06-2	2,4,6-Trichlorophenol ug/l	1.0	ND	
95-95-4	2,4,5-Trichlorophenol ug/l	1.0	ND	
91-58-7	2-Chloronaphthalene ug/l	1.0	ND	
131-11-3	Dimethyl phthalate ug/l	1.0	ND	
606-20-2	2,6-Dinitrotoluene ug/l	1.0	ND	
208-96-8	Acenaphthylene ug/l	1.0	ND	
83-32-9	Acenaphthene ug/l	1.0	ND	
121-14-2	2,4-Dinitrotoluene ug/l	1.0	ND	
84-68-2	Diethyl phthalate ug/l	1.0	0.4	J
100-02-7	4-Nitrophenol ug/l	5.0	ND	
7006-72-3	4-Chlorophenyl phenylether ug/l	1.0	ND	
86-73-7	Fluorene ug/l	1.0	ND	
86-74-8	Carbazole ug/l	1.0	ND	
86-30-6	n-Nitrosodiphenylamine ug/l	1.0	ND	

SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 236380
 Job No : 146595
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : TP2 1.5
 Sample Matrix : LIQUID
 Vial No : 22

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\060602\1
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 10/06/2002

		MP	Result	Flag
101-56-3	4-Bromophenyl phenyl ether ug/l	1.0	ND	
118-74-1	Hexachlorobenzene ug/l	1.0	ND	
87-86-5	Pentachlorophenol ug/l	5.0	ND	
85-01-8	Phenanthrene ug/l	1.0	ND	
120-12-7	Anthracene ug/l	1.0	ND	
84-74-2	di-n-Butyl phthalate ug/l	1.0	ND	
206-44-0	Fluoranthene ug/l	1.0	ND	
129-00-0	*Pyrene ug/l	1.0	ND	
85-88-7	Butyl benzyl phthalate ug/l	1.0	ND	
55-55-3	Benzo(a)anthracene ug/l	1.0	ND	
218-01-9	Chrysene ug/l	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate ug/l	1.0	7.2	
117-84-0	di-n-octyl phthalate ug/l	1.0	ND	
206-99-2	Benzo(b)fluoranthene ug/l	1.0	ND	
207-08-9	Benzo(k)fluoranthene ug/l	1.0	ND	
50-32-8	Benzo(a)pyrene ug/l	1.0	ND	
193-39-5	Indeno(1,2,3-cd)pyrene ug/l	1.0	ND	
53-70-3	Dibenz(a,h)anthracene ug/l	1.0	ND	
191-24-2	Benzo(ghi)perylene ug/l	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		20.5	Fail
Surrogate	Phenol-d8 %Recovered		11.2	Pass
Surrogate	Nitrobenzene-d5 %Recovered		79.0	Pass
Surrogate	2-Fluorobiphenyl %Recovered		72.8	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		76.5	Pass
Surrogate	Terphenyl-d14 %Recovered		79.3	Pass

Tentatively Identified Compound (LSC) Summary Report

Operator ID: AD Date Acquired: 7 Jun 2002 4:25 am
 Data File: D:\DATA\JUNE02\060602\SV022.D
 Name: 236380
 Misc:
 Method: C:\HPCHEM\1\METHODS\JUNE02\060602.M (RTE Integrator)
 Title: EPA Method 8270 SVOC's
 Library Searched: C:\DATABASE\WILEY275.L

Compound name	CAS No.	Est. Conc Range	Quality
Not Known		0.47 µg/L	-
Tetradecanoic acid	000544-63-8	4.85 µg/L	99
Not Known		0.52 µg/L	-
Not Known		0.46 µg/L	-
Not Known		0.30 µg/L	-
Di(2-ethylhexyl) adipate	000103-23-1	0.98 µg/L	53

D:\DATA\JUNE02\060602\SV022.D

**SEVERN TRENT
LABORATORIES**



SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 236381
 Job No : 146585
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : TP3 1.3
 Sample Matrix : LIQUID
 Vial No : 23

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\060602\1
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 10/06/2002

Ref	Compound	Unit	Result	Flags
108-95-2	Phenol ug/l	1.0	ND	
111-44-4	Bis(2-chloroethyl) ether ug/l	1.0	ND	
96-67-8	2-chlorophenol ug/l	1.0	ND	
541-73-1	1,3 Dichlorobenzene ug/l	1.0	ND	
106-46-7	1,4 Dichlorobenzene ug/l	1.0	ND	
95-48-7	2-Methylphenol ug/l	1.0	ND	
106-44-5	4-Methylphenol ug/l	1.0	ND	
132-64-9	7-Dibenzofuran ug/l	1.0	ND	
95-50-1	1,2 Dichlorobenzene ug/l	1.0	ND	
58-60-1	bis(2-Chloroisopropyl) ether ug/l	1.0	ND	
621-64-7	N-nitrosodi-n-propylamine ug/l	1.0	ND	
67-72-1	Hexachloroethane ug/l	1.0	ND	
98-95-3	Nitrobenzene ug/l	1.0	ND	
78-59-1	Isophorone ug/l	1.0	ND	
105-87-9	2,4-dimethylphenol ug/l	1.0	ND	
88-75-5	2-nitrophenol ug/l	1.0	ND	
111-91-1	bis(2-chloroethoxy)methane ug/l	1.0	ND	
120-83-2	2,4-Dichlorophenol ug/l	1.0	ND	
120-82-1	1,2,4-Trichlorobenzene ug/l	1.0	ND	
120-83-2	2,4-Dinitrophenol ug/l	5.0	ND	
91-20-3	Naphthalene ug/l	1.0	ND	
87-68-3	Hexachlorobutadiene ug/l	1.0	ND	
59-50-7	4-Chloro-3-methylphenol ug/l	2.0	ND	
91-57-6	2-Methylnaphthalene ug/l	1.0	ND	
88-06-2	2,4,6-Trichlorophenol ug/l	1.0	ND	
85-95-4	2,4,5-Trichlorophenol ug/l	1.0	ND	
91-58-7	2-Chloronaphthalene ug/l	1.0	ND	
131-11-3	Dimethyl phthalate ug/l	1.0	ND	
606-20-2	2,6-Dinitrotoluene ug/l	1.0	ND	
208-96-8	Acenaphthylene ug/l	1.0	ND	
83-32-9	Acenaphthene ug/l	1.0	ND	
121-14-2	2,4-Dinitrotoluene ug/l	1.0	ND	
84-56-2	Diethyl phthalate ug/l	1.0	0.4	J
100-02-7	4-Nitrophenol ug/l	5.0	ND	
7005-72-3	4-Chlorophenyl phenylether ug/l	1.0	ND	
86-73-7	Fluorene ug/l	1.0	ND	
86-74-8	Carbazole ug/l	1.0	ND	
86-30-6	n-Nitrosodiphenylamine ug/l	1.0	ND	

SEMI-VOLATILE ORGANIC COMPOUNDS IN WATERS

Client Name : Celtic Technologies Ltd
 Lab Sample ID : 236381
 Job No : 146595
 Sample Location : Celtic Technologies Ltd
 Client Sample ID : TP3 1.3
 Sample Matrix : LIQUID
 Vial No : 23

Method : EPA 8270 MODIFIED
 Data Type : MS DATA
 Data Path : D:\DATA\JUNE02\0806021
 Quant Type : ISTD
 Accreditation Status : UKAS
 Dilution Factor : 1
 Report Date : 10/06/2002

Sample No	Compound	Unit	Result	Flags
101-55-3	4-Bromophenyl phenyl ether ug/l	1.0	ND	
118-74-1	Hexachlorobenzene ug/l	1.0	ND	
87-86-5	Pentachlorophenol ug/l	5.0	ND	
85-01-8	Phenanthrene ug/l	1.0	ND	
120-12-7	Anthracene ug/l	1.0	ND	
84-74-2	di-n-Butyl phthalate ug/l	1.0	ND	
208-44-0	Fluoranthene ug/l	1.0	ND	
129-00-0	Pyrene ug/l	1.0	ND	
85-88-7	Butyl benzyl phthalate ug/l	1.0	ND	
58-55-3	Benzo(a)anthracene ug/l	1.0	ND	
218-01-9	Chrysene ug/l	1.0	ND	
117-81-7	bis(2-ethylhexyl)phthalate ug/l	1.0	5.2	
117-84-0	di-n-octyl phthalate ug/l	1.0	ND	
205-99-2	Benzo(b)fluoranthene ug/l	1.0	ND	
207-08-9	Benzo(k)fluoranthene ug/l	1.0	ND	
50-32-8	Benzo(a)pyrene ug/l	1.0	ND	
193-39-5	Indeno(1,2,3-cd)pyrene ug/l	1.0	ND	
53-70-3	Dibenz(a,h)anthracene ug/l	1.0	ND	
191-24-2	Benzo(ghi)perylene ug/l	1.0	ND	
Surrogate	2-Fluorophenol %Recovered		20.9	Fail
Surrogate	Phenol-d6 %Recovered		11.5	Pass
Surrogate	Nitrobenzene-d5 %Recovered		80.4	Pass
Surrogate	2-Fluorobiphenyl %Recovered		77.8	Pass
Surrogate	2,4,6-Tribromophenol %Recovered		84.5	Pass
Surrogate	Terphenyl-d14 %Recovered		79.7	Pass

Please note : Result of ND is Not Detectable

Explanation of compound flags :
 J : Compound is detectable but is below normal reporting limit
 E : Result is above the calibrated range and is therefore an estimate
 B : Compound also detected in Blank extract
 D : Sample was diluted and re-analysed to obtain a valid result for this compound

Tentatively Identified Compound (LSC) Summary Report

Operator ID: AD Date Acquired: 7 Jun 2002 4:58 am
 Data File: D:\DATA\JUNE02\060602\SV023.D
 Name: 236381
 Misc:
 Method: C:\HPCHEM\1\METHODS\JUNE02\060602.M (RTE Integrator)
 Title: EPA Method 8270 SVOC's
 Library Searched: C:\DATABASE\WILEY275.L

Compound name	CAS No.	Est. Conc Range	Quality
Not Known		0.43 µg/L	-
Not Known		1.02 µg/L	-

D:\DATA\JUNE02\060602\SV023.D

**SEVERN TRENT
LABORATORIES**



TOTAL PETROLEUM HYDROCARBONS

Client Name: CELTIC TECHNOLOGIES

Lab. Sample ID: 236378
Job No.: 146595
Sample Location: NONE SUPPLIED
Client Sample ID: QC SPIKE 121142
Sample Matrix: LIQUID
Vol. Extracted (mls): 200
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 14-Jun-2002

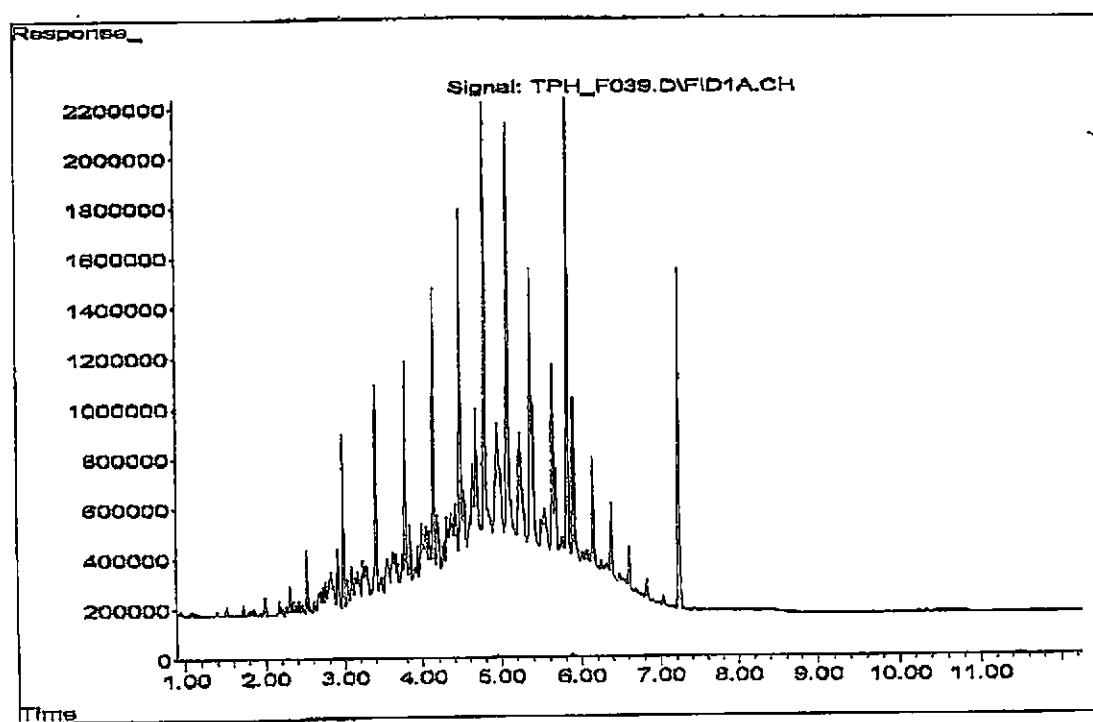
CONCENTRATION UNITS: ug/L

RESULTS

RANGE	MRL	RESULT
>C8 - C8	10	19
>C8 - C10	10	200
>C10 - C16	20	2250
>C16 - C24	20	1430
>C24 - C40	50	ND
TOTAL TPH >C8 - C40		3900

MRL = MINIMUM REPORTING LIMIT
ND = NOT DETECTED

CHROMATOGRAM



SEVERN TRENT
LABORATORIES



TOTAL PETROLEUM HYDROCARBONS

Client Name: CELTIC TECHNOLOGIES

Lab. Sample ID: 236379
Job No.: 148595
Sample Location: NONE SUPPLIED
Client Sample ID: QC BLANK 121143
Sample Matrix: LIQUID
Vol. Extracted (mls): 200
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 14-Jun-2002

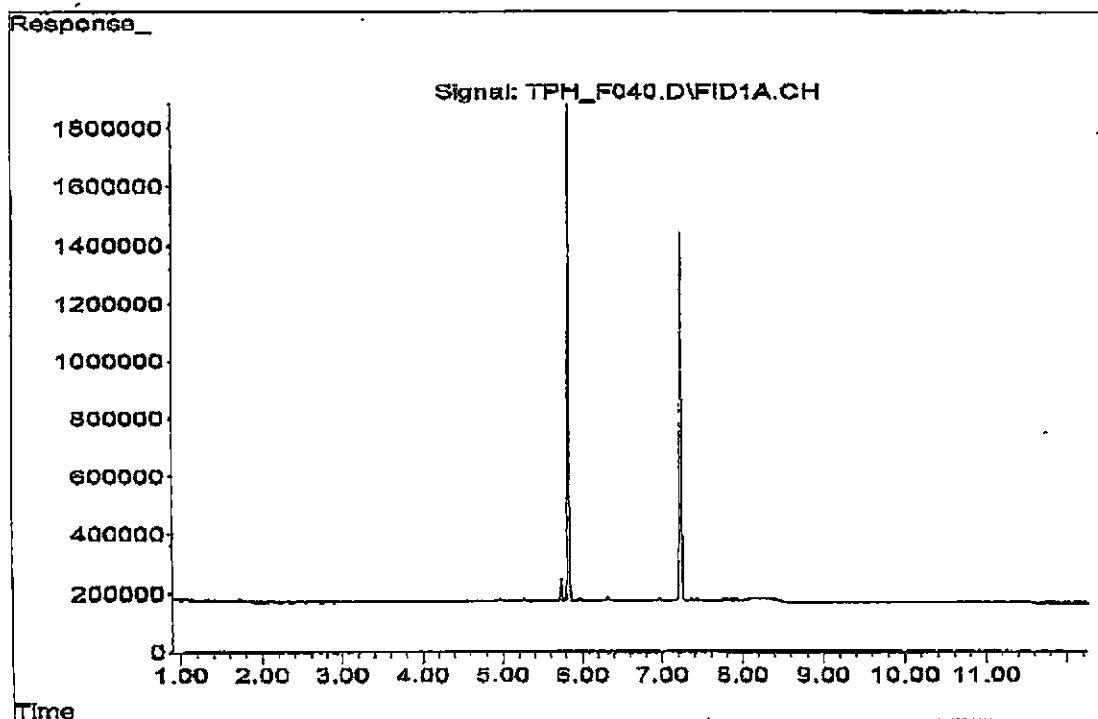
CONCENTRATION UNITS: ug/L

RESULTS

RANGE	MRL	RESULT
>C8 - C8	10	ND
>C8 - C10	10	ND
>C10 - C16	20	ND
>C16 - C24	20	ND
>C24 - C40	50	ND
TOTAL TPH >C6 - C40		ND

MRL = MINIMUM REPORTING LIMIT
ND = NOT DETECTED

CHROMATOGRAM



SEVERN TRENT
LABORATORIES



TOTAL PETROLEUM HYDROCARBONS

Client Name: **CELTIC TECHNOLOGIES**

Lab. Sample ID: 236380
Job No.: 148686
Sample Location: NONE SUPPLIED
Client Sample ID: TP2 1.5
Sample Matrix: LIQUID
Vol. Extracted (mls): 202
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 14-Jun-2002

CONCENTRATION UNITS: ug/L

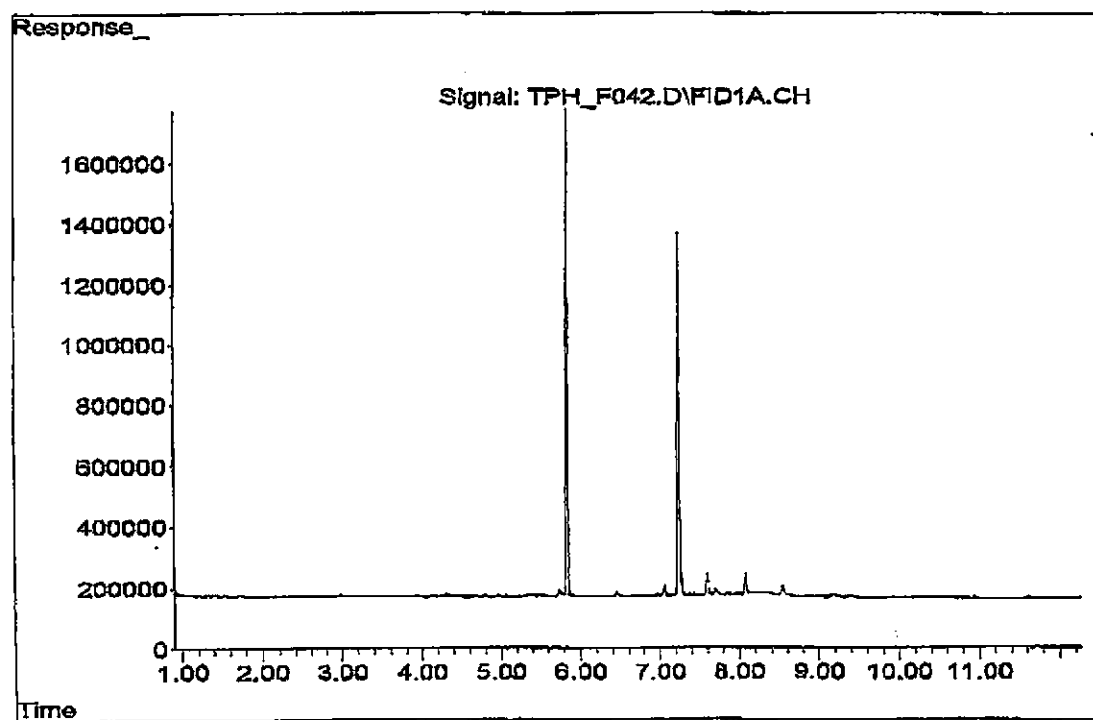
RESULTS

RANGE	MRL	RESULT
>C8 - C8	10	ND
>C8 - C10	10	ND
>C10 - C16	20	ND
>C16 - C24	20	ND
>C24 - C40	50	ND
TOTAL TPH >C8 - C40		ND

MRL = MINIMUM REPORTING LIMIT

ND = NOT DETECTED

CHROMATOGRAM



**SEVERN TRENT
LABORATORIES**



TOTAL PETROLEUM HYDROCARBONS

Client Name: CELTIC TECHNOLOGIES

Lab. Sample ID: 236381
Job No.: 146696
Sample Location: NONE SUPPLIED
Client Sample ID: TP3 1.3
Sample Matrix: LIQUID
Vol. Extracted (mls): 200
Dilution Factor: 1

Method: IN HOUSE
Data Type: GC-FID
Quant. Type: ISTD
Accreditation Status: NONE

Report Date: 14-Jun-2002

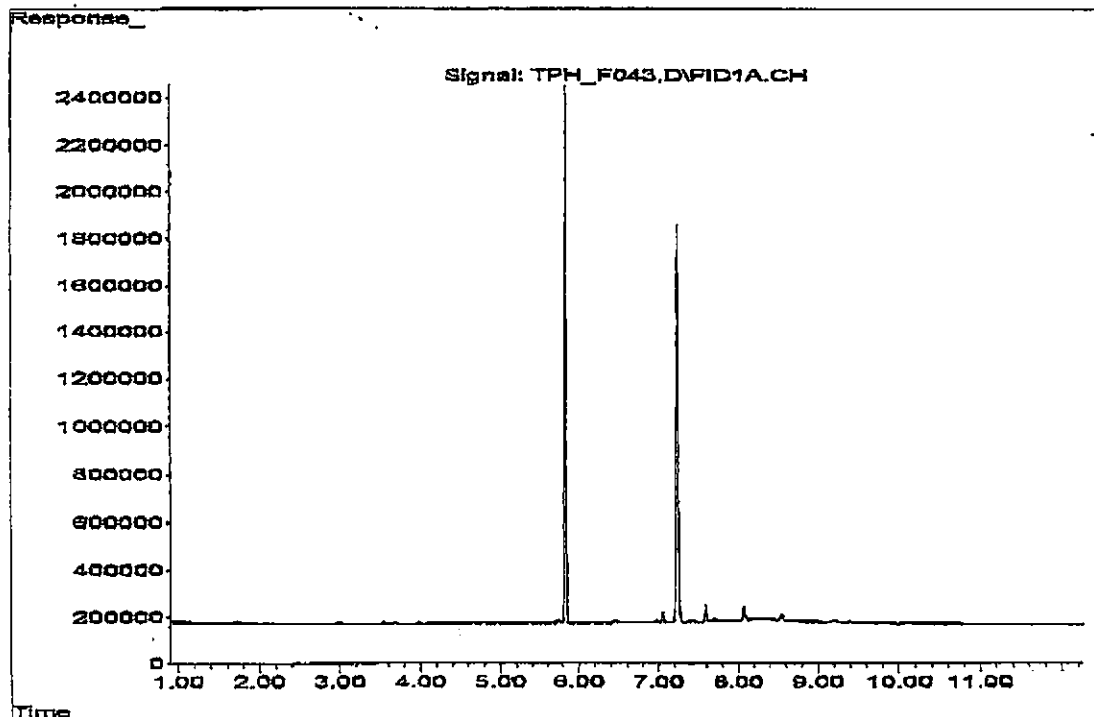
CONCENTRATION UNITS: ug/L

RESULTS

RANGE	MRL	RESULT
>C8 - C8	10	ND
>C8 - C10	10	ND
>C10 - C16	20	ND
>C16 - C24	20	ND
>C24 - C40	50	ND
TOTAL TPH >C8 - C40		ND

MRL = MINIMUM REPORTING LIMIT
ND = NOT DETECTED

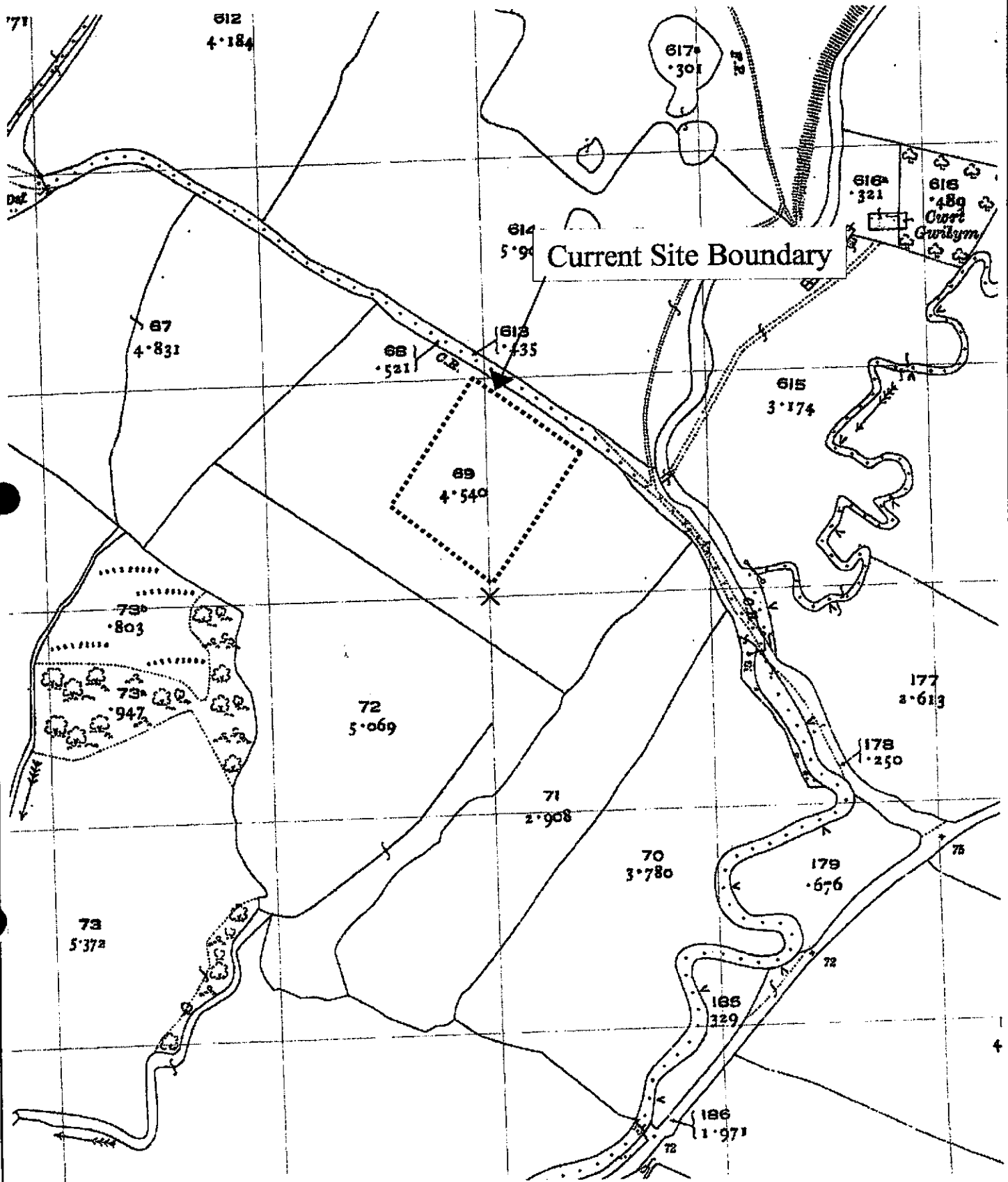
CHROMATOGRAM



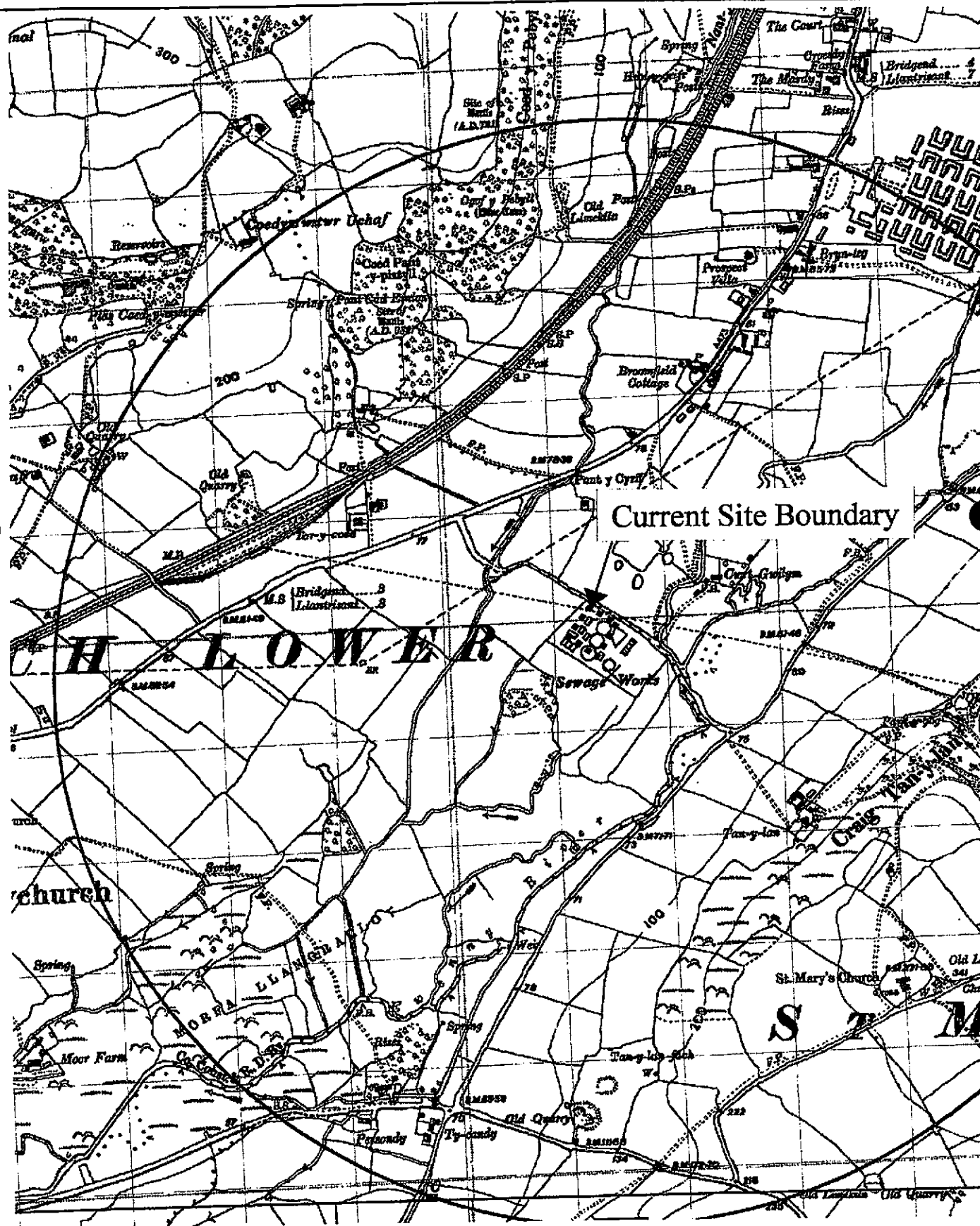
SEVERN TRENT
LABORATORIES



APPENDIX E HISTORICAL MAPS



Date: June 2002	Scale: NTS	Title: Historical Map 1919	
 CELTIC TECHNOLOGIES		Client: United Utilities	
		Project: Bridgend WTC	Job No.: C712B
		Figure: F1	



Date:
June 2002

Scale:
NTS

Title: Historical Map 1951

Client: United Utilities

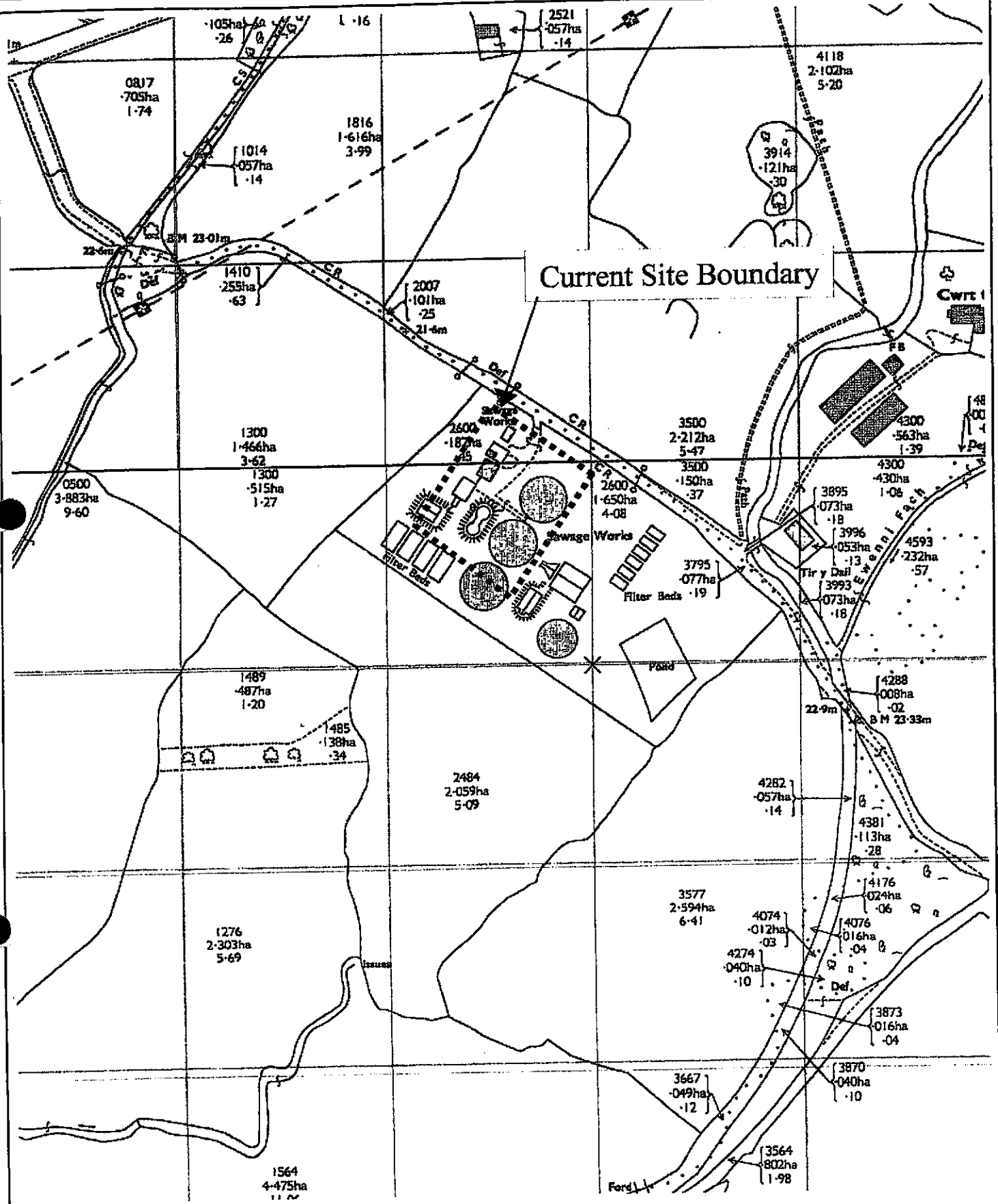
Project: Bridgend WTC

Job No.: C712B



CELTIC
TECHNOLOGIES

Figure: F2



Date:
June 2002

Scale:
NTS

Title: Historical Map 1972

Client: United Utilities

Project: Bridgend WTC

Job No.: C712B



CELTIC
TECHNOLOGIES

Figure: F3

APPENDIX F INFORMATION SOURCES

United Utilities Scope of Works

UNITED UTILITIES IPPC APPLICATION – SITE REPORT

**Bridgend Waste Treatment Centre (BWTC) - Site Survey
linked to IPPC Application - Notes for Contractor**

CONTENTS

- 1.0 Purpose
 - 2.0 Background
 - 3.0 Objectives of survey
 - 4.0 Key elements to contractor works
 - 5.0 Report format
-

UNITED UTILITIES IPPC APPLICATION – SITE REPORT

Bridgend Waste Treatment Centre (BWTC) - Site Survey linked to IPPC Application - Notes for Contractor

1.0 Purpose

The purpose of this specification is to ensure that the works carried out by the Contaminated Land Contractor on behalf of United Utilities meet the requirements of the IPPC application process and are in a suitable format for submission as part of the complete application package. Should clarification or additional information relating to any of following be required, please contact Adrian Belcham on 01873 850822 or 07980825185 or Simon Longley on 07887 988685.

2.0 Background

United Utilities proposes to construct a new effluent treatment facility adjacent to the existing works at the BWTC. Planning permission for the works has been granted by Bridgend County Borough Council. An application is currently being prepared for an IPPC authorisation for the site, which will cover both the existing facility and the new plant. As part of that application a site report is required. The purpose of the report is twofold :

1. to establish the baseline conditions of the whole site in terms of contamination
2. to develop an understanding of the actual and potential environmental consequences of the authorised activities on the site (in IPPC parlance – to develop a 'conceptual model' of the site)

The site report is therefore required to be both a contamination review and an assessment of risk to identified receptors based on an understanding of the hydrogeological conditions at the site.

Initial investigations of the site have provided the following information :

- the whole site area has been used as an effluent treatment plant – initially as a sewage treatment plant and subsequently as a sewer discharge facility – since the 1940's
- a soil sampling survey conducted in 1995 identified areas of contamination but did not assess the likelihood of contaminant transfer or of groundwater pollution
- key receptors in relation to the facility are the nearby River Ewenny and possibly the Nant Heol y geifr stream. The risk of contamination to the Ewenny is seen as one of the key issues in determining the IPPC application. A request for information on nearby surface and groundwater abstraction points has been made to the Environment Agency. At this stage it is thought that the nearest groundwater abstraction points are situated over a kilometre away on the Waterton and Bridgend Industrial Estates.

3.0 Objectives of survey

1. Identify and assess nature and distribution of contamination at the BWTC
2. Identify the presence of any pathways and receptors that could give rise to pollution from any identified contamination.
3. To install 4 No. appropriate permanent sampling points for long term monitoring of site contamination

UNITED UTILITIES IPPC APPLICATION – SITE REPORT**4.0 Key Elements to contractor works**

These notes are not intended to be a complete scope of work but should be used by the Contractor and UU project manager as a guide to the level and type of detail required during the site assessment. The Contractor should use their own experience to determine the appropriate detail in terms of parameters sampled, sampling and analysis techniques, and pollution prevention precautions (particularly in relation to borehole sampling and reinstatement).

Existing Contaminants

1. Obtain soil and groundwater samples from a number of trial pits and boreholes providing representative site coverage (number and positions to be confirmed with UU project manager)
2. Analysis of the samples for the parameters profiled in the DETR guidance on contaminants associated with sewage treatment works.
3. Analysis of the samples for any additional parameters associated with the United Utilities effluent discharge activities currently taking place on the site (to be supplied by UU project manager)
4. Produce a site map, if appropriate, illustrating current distribution of key contaminants identified
5. Provide an indication of contaminant characteristics including :
 - a. Concentration and distribution
 - b. mobility based on solubility, volatility and persistence
 - c. toxicity
 - d. potential for biodegradation or bioaccumulation

Pathways

1. Provide an indicative assessment of groundwater vulnerability based on identification of hydrogeological characteristics including depth, flow and confinement
2. Assess the risk of contamination of groundwater and transfer to adjacent surface water courses :
 - a. From any existing contamination identified
 - b. From any contamination that could occur from the proposed development area (the scenario being long term release of contaminants from surface sources)

Sampling point installation

1. With reference to the findings in relation to the above works, the contractor should recommend a location and design for a permanent sampling point(s) to enable ongoing monitoring of groundwater contamination associated with site operations. On agreement with United Utilities the sampling point(s) should be installed with due consideration to any hydrogeological confinement issues that may exist.

UNITED UTILITIES IPPC APPLICATION – SITE REPORT

5.0 Report format

In order to fit with the IPPC application, it is important that the Contractor's report is compiled in accordance with the statutory guidance. As a minimum the following elements should be included :

1. Introduction

- a. Site details
- b. Summary of current and historic activities on site (*based on the information provided by United Utilities*)

2. Objectives of the assessment

- a. Links to the IPPC process
- b. Description of general approach
- c. Types of contaminants considered

3. Site Investigation (Data Collection) Details***Description of site condition evaluation***

- Geology and hydrogeology
- Site observation
- Receptors

Description of site investigation

- Details of and reasoning for sampling strategy
- Sampling methods
- Number, location and type of samples collected
- In situ testing details (if applicable)
- Sample handling, shipment and storage details
- Field QA/QC data
- Limitations / constraints on field work

Description of laboratory analysis

- Details of and reasoning for selection of test parameters
- Sample preparation and analysis methods
- Limitations / constraints on laboratory analysis

4. Summary of Findings

- a. On site observations
- b. In situ testing results (if applicable)
- c. Laboratory test data
- d. Laboratory QA/QC data
- e. Identification of invalid data
- f. Data summaries

5. Data Interpretation

- a. Baseline conditions of site
- b. Assessment of risk to sensitive receptors
- c. Main limitations / constraints on the findings

6. Conclusion**7. References**

Technical Appendices / Supporting Information eg :

UNITED UTILITIES IPPC APPLICATION - SITE REPORT

- Site investigation details
- Laboratory analysis data, methods, QA/QC Info etc

Envirocheck

Envirocheck[®] Report On:

Report on:
Pecored Site

National Grid Reference :

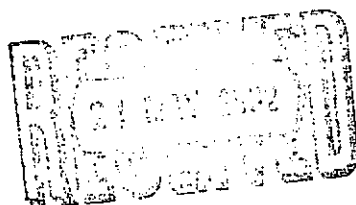
295300, 179900

Prepared For :

CELTIC Technologies Ltd
Cambrian Buildings
Mount Stuart Square
CARDIFF
CF10 5QQ

Your Reference:

Jon Freeman, 01-Pecored-JF-
Envirocheck-_EC



Summary

Agency & Hydrological

Waste

Hazardous Substances

Geological

Industrial Land Use

Sensitive Land Use

Data Currency

Data Suppliers & Copyright Statements

Useful Contacts

BGS Borehole Order Form

Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination. For this reason, Landmark's Site Sensitivity Data Sheet places great emphasis on statutory data provided by the Environment Agency and the Scottish Environment Protection Agency; it also incorporates data from English Nature (and the Scottish and Welsh equivalents), the Environment Agency (and the Scottish equivalent) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the legend database to 1km from a single point provided by the client

In the attached datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers

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Data Type	0 to 50m	51 to 250m	251 to 500m	501 to 1000m (up to 2000m)
Agency & Hydrological				
Air Pollution Controls				
Discharge Consents	1	1	1	
Enforcement and Prohibition Notices				
Integrated Pollution Controls				
Nearest Surface Water Feature		Yes		
Pollution Incidents to Controlled Waters		2	4	3
Prosecutions Relating to Authorised Processes				
Prosecutions Relating to Controlled Waters				
Red List Discharge Consents				
Registered Radioactive Substances				
River Quality		3		
Water Abstractions			1	(*5)
Groundwater Vulnerability	Yes			
Fluvial Indicative Floodplains	Yes			
Tidal Indicative Floodplains				
Source Protection Zones	1			
Waste				
BGS Recorded Landfill Sites				
Integrated Pollution Control Registered Waste Sites				
Licensed Waste Management Facilities (Landfills)				
Registered Landfill Sites				
Registered Waste Transfer Sites				
Registered Waste Treatment or Disposal Sites		1		
Hazardous Substances				
Control of Major Accident Hazards Sites (COMAH)				
Explosive Sites				
Notification of Installations Handling Hazardous Substances (NI-IHS)				
Planning Hazardous Substance Consents				
Planning Hazardous Substance Enforcements				

Data Type	0 to 50m	51 to 250m	251 to 500m	501 to 1000m Up to 2000m
Geological				
BGS Boreholes		1	8	26
BGS Recorded Mineral Sites				
BGS 1:625,000 Solid Geology	Yes			
Coal Mining Affected Areas				
Shallow Mining Hazards	Yes			
Natural Subsidence Hazards	Yes			
Radon Affected Areas	Yes			
Radon Protection Measures	Yes			
Industrial Land Use				
Contemporary Trade Directory Entries		1		
Fuel Station Entries				
Post 1995 Planning Applications (of possible contaminative use)				
Sensitive Land Uses				
Areas of Adopted Green Belt				
Areas of Unadopted Green Belt				
Areas of Outstanding Natural Beauty				
Environmentally Sensitive Areas				
Forest Parks				
Local Nature Reserves				
Marine Nature Reserves				
National Nature Reserves				
National Parks				
National Scenic Areas				
Nitrate Sensitive Areas				
Nitrate Vulnerable Zones				
Ramsar Sites				
Sites of Special Scientific Interest				1
Special Areas of Conservation				
Special Protection Areas				

Details		Compass Direction	Estimated Distance From Site	Contract No.	
Discharge Consents					
1	Operator: Dwr Cymru Cyfyngedig Property Type: Sewage Disposal Works - Water Company Location: Pencoed Str (Now Connected To Authority: Environment Agency, Welsh Region Catchment Area: River Ogmere Reference: Ba2022501 Permit Version: 1 Effective Date: 10th March 1984 Issued Date: 10th March 1984 Revocation Date: 18th October 1992 Discharge Type: Unspecified Discharge: Freshwater Stream/River Environment: Receiving Water: River Ewenny Status: Consent expired Positional Accuracy: Located by supplier to within 100m	-	0	1	295300 179900
Discharge Consents					
2	Operator: Rees I Property Type: Domestic Property (Single) Location: Tan Y Lan Farm Pencoed Authority: Environment Agency, Welsh Region Catchment Area: Not Supplied Reference: Bp0214401 Permit Version: 1 Effective Date: 31st October 1991 Issued Date: 31st October 1991 Revocation Date: Not Supplied Discharge Type: Unspecified Discharge: Onto Land Environment: Receiving Water: Land Status: Consent expired Positional Accuracy: Located by supplier to within 100m	SE	142	1	295400 179800
Discharge Consents					
3	Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Swo.Fairview Pt 53 Pencoed Authority: Environment Agency, Welsh Region Catchment Area: River Ogmere Reference: 6W3201101 Permit Version: 1 Effective Date: 10th March 1984 Issued Date: 10th March 1984 Revocation Date: Not Supplied Discharge Type: Unspecified Discharge: Freshwater Stream/River Environment: Receiving Water: Nant Y Geifr Status: New Consent, by Application (Water Resources Act 1991, Section 88) Positional Accuracy: Located by supplier to within 100m	N	431	1	295280 180330
Pollution Incidents to Controlled Waters					
4	Property Type: Not Given Location: PENCOED Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Not Supplied Incident Date: 4th April 1991 Incident Reference: 472 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Severity of Incident: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	NE	140	1	295400 180000

Map ID	Details	Compass Direction	Estimated Distance from Site	Contact	NR
Pollution Incidents to Controlled Waters					
4	Property Type: Not Given Location: PENCOED Authority: Environment Agency, Welsh Region Pollutant: Farm Effluent/Slurry Note: Not Supplied Incident Date: 4th April 1991 Incident Reference: 84 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Severity of Incident: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	NE	143	1	295400 180000
Pollution Incidents to Controlled Waters					
5	Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, Welsh Region Pollutant: Chlorinated Water Note: Not Supplied Incident Date: 14th September 1994 Incident Reference: 21286 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Severity of Incident: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	S	300	1	295300 179600
Pollution Incidents to Controlled Waters					
6	Property Type: Not Given Location: Tan-Y-Lan Weir, Off A473 Authority: Environment Agency, Welsh Region Pollutant: Agricultural: Carcasses Note: Not Supplied Incident Date: 20th April 1992 Incident Reference: 4548 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Severity of Incident: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	S	413	1	295200 179600
Pollution Incidents to Controlled Waters					
8	Property Type: Not Given Location: Tanylan Weir Authority: Environment Agency, Welsh Region Pollutant: Agricultural: Carcasses Note: Not Supplied Incident Date: 20th April 1992 Incident Reference: 4548 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Severity of Incident: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	S	418	1	295200 179600
Pollution Incidents to Controlled Waters					
7	Property Type: Not Given Location: Fords Garage, BRIDGEND Authority: Environment Agency, Welsh Region Pollutant: Unknown Note: Deliberate; River Ewenny Incident Date: 16th November 1993 Incident Reference: 37147 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Severity of Incident: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	N	413	1	295400 180300

Map ID	Details	Compass Direction	Estimated Distance from Site	Contact	NGR
8	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Slipway Of Junction 35, Off M4 Motorway, Pencoed To Miskin Authority: Environment Agency, Welsh Region Pollutant: Oils - Diesel (Including Agricultural) Note: River Ewenny; Spillage Incident Date: 8th November 1997 Incident Reference: 34080 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Accidental Spillage/Leakage Severity of Incident: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	NE	944	1	298100 180400
9	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Down Stream Of Junction 35, On M4 Authority: Environment Agency, Welsh Region Pollutant: Sewage - Treated Effluent Note: Deliberate Act Incident Date: 2nd June 1991 Incident Reference: 778 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Direct Discharge Severity of Incident: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	NE	985	1	298200 180300
10	Pollution Incidents to Controlled Waters Property Type: Private Sewage (Non-PLC): Other Location: Pantrhuthyn Farm Pub, PENCOED Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Blocked Sewer Incident Date: 30th November 1986 Incident Reference: 26820 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Overflow Severity of Incident: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	NE	1000	1	298100 180500
	River Quality Description: River Quality B	E	52	2	295350 179900
	River Quality Description: River Quality A	SE	129	2	295380 179800
	River Quality Description: River Quality A	NE	178	2	295410 180030
11	Water Abstractions Operator: Aid Landscapes Ltd Licence Number: 21/58/44/0017 Permit Version: Not Supplied Location: Location Description Not Available Authority: Environment Agency, Welsh Region Abstraction: Spray Irrigation Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 9 Yearly Rate (m3): 1136 Details: River Ewenny Feeth Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	E	318	1	295600 180000

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGN
	Water Abstractions Operator: Dwr Cymru Cyf Licence Number: 21/58/44/0005 Permit Version: 100 Location: Borehole At Bridgend Industrial Estate Authority: Environment Agency, Welsh Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Borehole At Bridgend Industrial Estate Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 10th November 1989 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	W	1868	1	293620 179370
	Water Abstractions Operator: Dwr Cymru Cyf Licence Number: 21/58/44/0012 Permit Version: 100 Location: Borehole At East End Of Bridgend Industrial Est. Authority: Environment Agency, Welsh Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Borehole At East End Of Bridgend Industrial Est. Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 10th November 1989 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	W	1979	1	293360 179510
	Water Abstractions Operator: Messrs A Fairfax & Evans Licence Number: 21/58/44/0025 Permit Version: 100 Location: Underground Limestone Strata At Coychurch Lower Authority: Environment Agency, Welsh Region Abstraction: Golf Courses: Make-Up Or Top Up Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Undergrnd Limestone Strata At Coychurch Lower Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 28th July 1994 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	W	1525	1	293850 180370
	Water Abstractions Operator: Messrs A Fairfax & Evans Licence Number: 21/58/44/0025 Permit Version: 100 Location: Underground Limestone Strata At Coychurch Lower Authority: Environment Agency, Welsh Region Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Licenced from 01-Apr to 30-Oct Authorised Start: 01 April Authorised End: 30 October Permit Start Date: 28th July 1994 Permit End Date: Not Supplied Positional Accuracy: Approximate location provided by supplier	W	1523	1	293850 180370

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NCH
	Water Abstractions				
	Operator: Messrs A Fairfax & Evans	W	1518	1	293880
	Licence Number: 21/58/44/0028				180370
	Permit Version: 100				
	Location: Underground Limestone Strata At Coychurch Lower				
	Authority: Environment Agency, Welsh Region				
	Abstraction: Household Water Supply: Drinking; Cooking; Sanitary; Washing; (Small Garden)				
	Abstraction Type: Water may be abstracted from a single point				
	Source: Groundwater				
	Daily Rate (m3): Not Supplied				
	Yearly Rate (m3): Not Supplied				
	Details: Licenced from 01-Jan to 31-Dec				
	Authorised Start: 01 January				
	Authorised End: 31 December				
	Permit Start Date: 28th July 1994				
	Permit End Date: Not Supplied				
	Positional Accuracy: Approximate location provided by supplier				
	Groundwater Vulnerability				
	Geological Classification: Minor Aquifer (Variably permeable) - These can be fractured or potentially fractured rocks, which do not have a high primary permeability, or other formations of variable permeability including unconsolidated deposits. Although not producing large quantities of water for abstraction, they are important for local supplies and in supplying base flow to rivers	-	0	2	295300
	Soil Classification: Soils of High Leaching Potential (H1) - Soils which readily transmit liquid discharges because they are either shallow, or susceptible to rapid by-pass flow directly to rock, gravel or groundwater				179800
	Map Sheet: Sheet 36 Mid Glamorgan				
	Scale: 1:100,000				
	Drift Deposits				
	Description: None	-	-	-	-
	Fluvial Indicative Floodplains				
	Type: Fluvial Indicative Flood Zone	-	0	2	295300
	Source: Environment Agency, Head Office				179800
	Tidal Indicative Floodplains				
	Description: None	-	-	-	-
	Source Protection Zones				
	Name: Not Supplied	-	0	2	295300
	Source: Environment Agency, Head Office				179800
	Reference: Not Supplied				
	Type: Zone III (Total Catchment): The total area needed to support the discharge from the protected groundwater source.				

Map		Details	Compass Direction	Estimated Distance From Site	Contact No.
		Registered Waste Treatment or Disposal Sites			
12	Licence Holder: Welsh Water Industrial Services Licence Reference: 31 Site Location: Pencoed Sewage Treatment Works, Pencoed, Bridgend, Mid Glamorgan Operator Location: Plas Y Ffynion, Cambrian Way, BRECON, Powys, LD3 7HP Authority: Environment Agency - Welsh Region, South West Area Site Category: Treatment Maximum Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year) Waste Source: No known restriction on source of waste Restrictions: Licence Status: Operational as far as is known Dated: 12th May 1995 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Manually positioned to the address or location Waste Types on Site: Authorised Waste: Animal Processing Wastes Cellulose Wastes (Natural/Synth.) Contaminated Water (Contents include) Dyestuffs Waste Food Processing Wastes/Starch Glue Wastes Industrial Effluent Treatment Sludge Latex, Latex/Rubber Scr/Ns/Susp/Ns Max. Waste Permitted By Licence Mixed Inorganic Compounds Mixed Organic Compounds Other Organic Compounds Oxygen Containing Organic Compounds Paint Waste (Water Based) Pharmaceutical/Cosmetic Products Phenols, Analogues/Derivatives Polymeric Material, Products/Scrap Soaps & Detergents Synthetic Adhesive Wastes Prohibited Waste: Percussive/Explosive/Similar Waste Spec. Waste (Epa'90: S62/1998 Regs) Sub'S Control. Radioactive Subs Act'60 Waste Cont. Flam. Solvents Waste Contained in Drums Waste N.O.S.	NW	112	3	295250 180000

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NCR
	BGS Boreholes				
13	BGS Reference: Ss97na31 Drilled Length (m): 8.45 Borehole Name: Coychurch Sewage Works, Bh.11	E	90	4	295390 179900
	BGS Boreholes				
14	BGS Reference: Ss98se69 Drilled Length (m): 5 Borehole Name: M4, Capel Llaniterno-Pencoed, Bh.38	N	385	4	295400 180250
	BGS Boreholes				
15	BGS Reference: Ss98se68 Drilled Length (m): 8.5 Borehole Name: M4, Capel Llaniterno-Pencoed, Bh.37a	N	375	4	295240 180270
	BGS Boreholes				
16	BGS Reference: Ss98se66 Drilled Length (m): .55 Borehole Name: M4, Capel Llaniterno-Pencoed, Tp.36	NW	389	4	295020 180170
	BGS Boreholes				
17	BGS Reference: Ss98se67 Drilled Length (m): 10 Borehole Name: M4, Capel Llaniterno-Pencoed, Tp.37	NW	390	4	295130 180260
	BGS Boreholes				
18	BGS Reference: Ss98se70 Drilled Length (m): 9.6 Borehole Name: M4, Capel Llaniterno-Pencoed, Bh.39	NE	435	4	295570 180240
	BGS Boreholes				
18	BGS Reference: Ss98se71 Drilled Length (m): 9.9 Borehole Name: M4, Capel Llaniterno-Pencoed, Bh.40	NE	455	4	295590 180250
	BGS Boreholes				
19	BGS Reference: Ss98sw72 Drilled Length (m): 1.6 Borehole Name: M4 London, Capel Llaniterno-Pencoed, Tp.35	NW	519	4	294830 180120
	BGS Boreholes				
20	BGS Reference: Ss98sw71 Drilled Length (m): 2.1 Borehole Name: M4 London, Capel Llaniterno-Pencoed, Tp.34	W	668	4	294650 180050
	BGS Boreholes				
21	BGS Reference: Ss98se72 Drilled Length (m): 5 Borehole Name: M4, Capel Llaniterno-Pencoed, Bh.43	NE	711	4	295900 180280
	BGS Boreholes				
22	BGS Reference: Ss97nw181 Drilled Length (m): Not Supplied Borehole Name: Bridgend Ind. Estate, M4 Extn	W	800	4	294500 179900
	BGS Boreholes				
23	BGS Reference: Ss98se31 Drilled Length (m): Not Supplied Borehole Name: Bridgend By-Pass, Bh.38	NE	909	4	295670 180730
	BGS Boreholes				
23	BGS Reference: Ss98se65 Drilled Length (m): 28.6 Borehole Name: Bridgend Northern By-Pass M4, Bh.183	NE	692	4	295650 180720
	BGS Boreholes				
23	BGS Reference: Ss98se66 Drilled Length (m): 25.45 Borehole Name: Bridgend Northern By-Pass M4, Bh.184	NE	895	4	295700 180700

Map ID	Details	Compass Direction	Estimated Distance from Site	Contact	NSF
BGS Boreholes					
23	BGS Reference: Ss98se57 Drilled Length (m): 30.05 Borehole Name: Bridgend Northern By-Pass M4, Bh.185	NE	870	4	295640 180700
BGS Boreholes					
23	BGS Reference: Ss98se58 Drilled Length (m): 29.9 Borehole Name: Bridgend Northern By-Pass M4, Bh.186	NE	884	4	295670 180680
BGS Boreholes					
24	BGS Reference: Ss98se73 Drilled Length (m): 5 Borehole Name: M4, Capel Llanfarnham-Pencoed, Bh.44	NE	866	4	298020 180380
BGS Boreholes					
25	BGS Reference: Ss98se30 Drilled Length (m): Not Supplied Borehole Name: Bridgend By-Pass, Bh.39	NE	898	4	295810 180640
BGS Boreholes					
25	BGS Reference: Ss98se39 Drilled Length (m): 15 Borehole Name: Bridgend Northern By-Pass M4, Bh.41	NE	874	4	295780 180630
BGS Boreholes					
26	BGS Reference: Ss98se40 Drilled Length (m): 10.2 Borehole Name: Bridgend Northern By-Pass M4, Bh.42	NE	880	4	295870 180670
BGS Boreholes					
26	BGS Reference: Ss98se41 Drilled Length (m): 14.7 Borehole Name: Bridgend Northern By-Pass M4, Bh.43	NE	916	4	295890 180600
BGS Boreholes					
27	BGS Reference: Ss98se42 Drilled Length (m): 15 Borehole Name: Bridgend Northern By-Pass M4, Bh.44	NE	948	4	295960 180580
BGS Boreholes					
27	BGS Reference: Ss98se43 Drilled Length (m): 10.7 Borehole Name: Bridgend Northern By-Pass M4, Bh.45	NE	908	4	295940 180540
BGS Boreholes					
28	BGS Reference: Ss98se53 Drilled Length (m): 28.3 Borehole Name: Bridgend Northern By-Pass M4, Bh.181	NE	932	4	295880 180750
BGS Boreholes					
28	BGS Reference: Ss98se54 Drilled Length (m): 24.1 Borehole Name: Bridgend Northern By-Pass M4, Bh.182	NE	935	4	295710 180740
BGS Boreholes					
29	BGS Reference: Ss97nw25 Drilled Length (m): .8 Borehole Name: M4, Capel Llanfarnham-Pencoed Section, Tp.32	W	941	4	294360 179870
BGS Boreholes					
30	BGS Reference: Ss98se74 Drilled Length (m): 9 Borehole Name: M4, Capel Llanfarnham-Pencoed, Bh.45	NE	955	4	298050 180490
BGS Boreholes					
30	BGS Reference: Ss98se87 Drilled Length (m): 13.4 Borehole Name: M4, Capel Llanfarnham-Pencoed, Bh.57	NE	943	4	298050 180470

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	BGR
BGS Boreholes					
31	BGS Reference: Ss98se29 Drilled Length (m): Not Supplied Borehole Name: Bridgend By-Pass, Bh.37	N	948	4	295470 180830
BGS Boreholes					
32	BGS Reference: Ss98se38 Drilled Length (m): 21.9 Borehole Name: Bridgend Northern By-Pass M4, Bh.28	N	956	4	295590 180810
BGS Boreholes					
33	BGS Reference: Ss97nw26 Drilled Length (m): 2.5 Borehole Name: M4, Capel Llanfarnham-Pencoed Section, Tp.33	SW	978	4	294440 179440
BGS Boreholes					
34	BGS Reference: Ss98se88 Drilled Length (m): 10 Borehole Name: M4, Capel Llanfarnham-Pencoed, Bh.58	NE	988	4	298140 180420
BGS Boreholes					
35	BGS Reference: Ss98se32 Drilled Length (m): Not Supplied Borehole Name: Bridgend By-Pass, Bh.40	NE	991	4	298110 180470
BGS 1:825,000 Solid Geology					
Description: Triassic mudstones (including Keuper Marl, Dolomitic Conglomerate and Rhastoc)		-	0	5	295300 179900
Coal Mining Affected Areas					
Description: In an area which may not be affected by coal mining		-	-	-	-
Shallow Mining Hazards					
Risk: Very Low		-	0	-	295300
Source: British Geological Survey, Information Services Group					179900
Natural Subsidence Hazards					
Risk: Low		-	0	-	295300
Source: British Geological Survey, Information Services Group					179900
Radon Affected Areas					
Description: Between 3% and 10% of homes are above the Action Level		-	0	6	295300
Source: National Radiological Protection Board					179900
Radon Protection Measures					
Type: Full radon protective measures should be installed		-	0	5	295300
Source: British Geological Survey, Information Services Group					179900

Map ID	Details	Compass Direction	Estimated Distance From Site	Control	Notes
Contemporary Trade Directory Entries					
36	Name: Manning Construction Location: Brodawl, Coychurch, BRIDGEND, Mid Glamorgan, CF35 6BU Classification: Engineering - Civil Premises Type: Head Office Status: Active Positional Accuracy: Automatically positioned to postcode unit of the address	NE	143	-	295400 180000

Map ID	Details	Compass Direction	Estimated Distance from Site	Contact	USC
Sites of Special Scientific Interest					
Name:	Coedymwster Woodlands	N	716	7	295100
Multiple Area:	Y				180590
Area (m2):	115427.195				
Source:	Countryside Council for Wales				
Reference:	72.33wlp				
Designation Details:	Biological				
	1st January 1979				
	First Notified				

Data Type	Version	Update Cycle
Agency & Hydrological		
Discharge Consents Environment Agency Welsh Region	June-2001	Bi-Annually
Pollution Incidents to Controlled Waters Environment Agency Welsh Region	December-1998	Bi-Annually
River Quality Environment Agency Head Office	March-1997	Not Applicable
Water Abstractions Environment Agency Welsh Region	January-2002	Bi-Annually
Groundwater Vulnerability Environment Agency Head Office	January-1999	Not Applicable
Fluvial Indicative Floodplains Environment Agency Head Office	December-2001	Variable
Source Protection Zones Environment Agency Head Office	August-2000	As notified
Waste		
Registered Waste Treatment or Disposal Sites Environment Agency - Welsh Region South West Area	December-2001	Annual Rolling Update
Geological		
BGS Boreholes British Geological Survey National Geological Records Centre	April-2002	Bi-Annually
BGS 1:625,000 Solid Geology British Geological Survey Information Services Group	August-1996	Not Applicable
Shallow Mining Hazards British Geological Survey Information Services Group	October-2000	Variable
Natural Subsidence Hazards British Geological Survey Information Services Group	October-2000	Variable
Radon Affected Areas National Radiological Protection Board	September-1999	Not Applicable
Radon Protection Measures British Geological Survey Information Services Group	December-2000	Variable
Industrial Land Use		
Contemporary Trade Directory Entries Red Volcano	November-2000	Quarterly

Data Type	Version	Update Cycle
Sensitive Land Uses		
Sites of Special Scientific Interest Countryside Council for Wales	June-2001	Bi-Annually

Some of the organisations who provide data which is used within the report

Ordnance Survey	 Ordnance Survey[®] Licensed Partner
Environment Agency	 ENVIRONMENT AGENCY
Scottish Environment Protection Agency	 SEPA Scottish Environment Protection Agency
Centre for Ecology & Hydrology	 Centre for Ecology & Hydrology NATURAL ENVIRONMENT RESEARCH COUNCIL
British Geological Survey	 British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL Value Added Reseller
Countryside Council For Wales	 CYNGOR CEFN GWLAD CYMRU COUNTRYSIDE COUNCIL FOR WALES
Scottish Natural Heritage	SCOTTISH NATURAL HERITAGE 
English Nature Site of Special Scientific Interest, National Nature Reserve, Ramsar, Special Protection Area, Special Conservation Area, Marine Nature Reserve data (derived from Ordnance Survey 1:10000 raster) is provided by, and used with the permission of, English Nature who retain the copyright and Intellectual Property Rights for the data	 ENGLISH NATURE
The Coal Authority	 The Coal Authority
National Radiological Protection Board	

Contact Name and Address

1	Environment Agency Welsh Region Rivers House St Mellons Business Park St Mellons Cardiff Mid Glamorgan CF3 0LT	Telephone 029 2077 0088 Fax 029 2079 8555
2	Environment Agency Head Office Rio House Waterside Drive Aztec West, Almondsbury Bristol Avon BS32 4UD	Telephone 01454 624411 Fax 01454 624409
3	Environment Agency - Welsh Region South West Area Llys Afon Hawthorn Rise Haverfordwest Pembrokeshire SA61 2BH	Telephone 01437 760081 Fax 01437 760881
4	British Geological Survey National Geological Records Centre Keyworth Nottingham Nottinghamshire NG12 5GG ngis@bgs.ac.uk www.bgs.ac.uk	Telephone 0115 936 3109 Fax 0115 936 3276
5	British Geological Survey Information Services Group Kingsley Dunham Centre Keyworth Nottingham Nottinghamshire NG12 5GG www.bgs.ac.uk	Telephone 0115 936 3100 Fax 0115 936 3200

Contact Name and Address

6	National Radiological Protection Board Chilton Didcot Oxfordshire OX11 0RQ	Telephone 01235 831600 Fax 01235 833891
7	Countryside Council for Wales Plas Penrhose Fford Penrhos Bangor Gwynedd LL57 2LQ	Telephone 01248 385500 Fax 01248 355782
	Catalist Ltd (Fuel Station Data) Richmond House 22 Richmond Hill Clifton Bristol Avon BS8 1BA Mark@catalist-uk.com	Telephone 0117 923 7113 Fax 0117 923 7166
	The Coal Authority Mining Report Service 200 Lichfield Lane Mansfield Nottinghamshire NG18 4RG thecoalauthority@coal.gov.uk	Telephone 0845 7626848 DX 716176 Mansfield 5
	Landmark Information Group Limited 6 - 7 Abbey Court Eagle Way Sowton Exeter Devon EX2 7HY mailbox@landmark-information.co.uk www.landmark-information.co.uk	Telephone 01392 441728 Fax 01392 441709

Contact Name and Address

Please note that the Environment Agency/SEPA have a charging policy in place for enquiries

British Geological Survey

Institute of Geological Sciences
RECORD OF SHAFT OR BOREHOLE

6-in or 1:50 000 Map Registration No.

SS 97 NE/31

Name and Number of Shaft or Borehole:

COYCHURCH SEWAGE WORKS (BOREHOLE No. 11)

For whom made B.G.S.

Town or Village COYCHURCH County Glamorgan

Exact site (reference to a fixed point on 1-in or 1:50 000 Map)

National Grid Reference

9539 7990

1-in or 1:50 000
New Series Map No.

Enter 'C' if
Confidential

BRIDGEND
262

Purpose for which made Bridgend Environmental Maps

Ground level at shaft
bore relative to O.D. c20 m. If not ground level give O.D. of beginning of shaft
bore m.

Made by Norwest Holst Date of sinking 7.8.84

Information from Examined by D. Wilson

Specimen Numbers and Additional Notes

Bulk Samples: 2.4 - 2.65
6.15 - 6.80

Undisturbed U4 samples:

SPTs: 1.70 - 2.15 (11 blows)
2.40 - 2.85 (15 blows)
4.00 - 4.45 (7 blows)
6.05 - 6.45 (18 blows)

3.40 - 3.85 (16 blows)
4.75 - 5.20 (14 blows)

Geological Classification	Description of Strata	Thickness metres	Depth metres
Alluvium	Topsoil	1.2	1.2
	Yellowish brown mottled clayey sands with carbonaceous streaks and flecks		2.05
	Sand and gravel: yellow brown to grey well sorted fine to medium gravel with pebbles of Pennant sandstone		3.18
	Peat; dark brown, fetid with wood fragments interbedded with lenticles of grey clayey silts and sands passing down into interbedded silty and peaty clays with scattered gravel lenticles		5.70
Peat			

Name and Number of Borehole

SS 97 NE 31

2

COYCHURCH SEWAGE WORKS (BOREHOLE No. 11)

National Grid Reference

8639 7990

[illegible]

Waste Licence Granted in 1995

OGWR. BOROUGH COUNCIL

CONTROL OF POLLUTION ACT 1974
LICENCE TO DISPOSE OF WASTE

The Ogwr Borough Council in pursuance of the powers conferred on them by the Control of Pollution Act 1974, hereby licence:-

Welsh Water Industrial Services
Cambrian Way
Brecon
Powys
LD3 7HP

hereinafter called the "licence holder" to operate a Treatment Facility hereinafter called the "facility" on land at Pencoed Sewage Treatment Works grid reference SS.949800 which is edged in red on the drawings attached to this licence, being land occupied by the licence holder.

This licence is granted subject to the conditions set out in the schedules attached hereto.

Dated this

12th day of May

19 95

Signed


(Authorised Officer)

* THE LICENCE HOLDER'S ATTENTION IS DRAWN TO THE NOTES OVERLEAF *

NOTES

These notes are for general guidance only and they do not constitute an authoritative statement of the law.

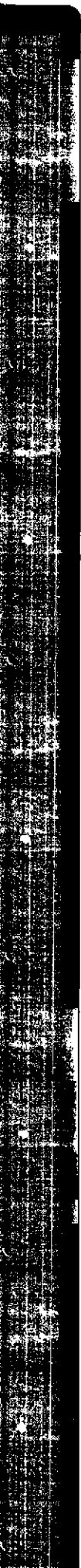
1. This licence relates only to the requirements of the Control of Pollution Act 1974 for the deposit of waste and the use of plant or equipment subject to the conditions set out in the Schedules and does not constitute a consent required by other legislation. In particular it is the responsibility of the licence holder to comply with any requirements of THE HEALTH AND SAFETY AT WORK ETC. ACT 1974, THE RADIOACTIVE SUBSTANCES ACT 1993, THE TOWN AND COUNTRY PLANNING ACTS, BUILDING REGULATIONS, and ALL RELEVANT WATER PROTECTION and PUBLIC HEALTH legislation including the provisions of the ENVIRONMENTAL PROTECTION ACT 1990 currently in force.

All discharges to sewer and watercourse have to meet the requirements of the National Rivers Authority and Water Company. Any diversion or other changes will also require the National Rivers Authority or Water Company approval.

2. If the licence holder ceases to occupy the land specified above, then the licence may be transferred to the new occupier after giving notice to the disposal authority which has the right to decline to accept the new licence holder.
3. If the licence holder wishes to cancel this licence, it must be returned to the disposal authority together with a notice stating that the licence is no longer required. Cancellation of the licence will not affect any outstanding liability of the licence holder under the conditions of the licence.

Contravention of Licence Conditions

Attention is drawn to the provisions of Sections 3, 7, 9 and 16 of the Control of Pollution Act 1974 and Section 33(1)c of the Environmental Protection Act 1990. A brief resumé is included below.



Section 3

Prohibits under penalty the deposit of waste, or the use of plant or equipment, otherwise than in accordance with the terms of a licence. This Section applies to all the conditions contained herein, including any which may be the subject of appeal to the Secretary of State under Section 10 of the Act.

Any deposit which takes place without compliance with all the licence conditions may lead to prosecution under this Section.

Section 7

Activities which cause pollution of water, danger to public health or would be seriously detrimental to the amenities of the locality may lead to revocation of this Licence.

Section 9

Non-compliance with any licence conditions may lead to the revocation of this licence.

Section 16

The licensing authority is empowered to require the removal of any controlled waste deposited in circumstances where any of the conditions contained in this licence are not being complied with.

Penalties under Section 3

A Corporate body or person who contravenes Section 3 subsection (1) shall, subject to subsection (4), be guilty of an offence and liable on summary conviction to a fine of an amount not exceeding scale 5 (currently £5,000, January 1991), or on conviction on indictment to imprisonment for a term not exceeding two (2) years or a fine or both.

Section 33(1)c - Environmental Protection Act 1990

Prohibits the treating, keeping or disposing of controlled waste in a manner likely to cause pollution of the environment or harm to human health.

Penalties under Section 33(1)c

A corporate body or person who contravenes Section 33 subsection (1)c shall, subject to subsection (8), be guilty of an offence and liable on summary conviction to imprisonment for a term not exceeding £ 20,000 or both, or on conviction on indictment to imprisonment for a term not exceeding two (2) years or a fine or both.

SCHEDULE A

DEFINITIONS

In this licence the following expressions shall have these meanings ascribed to them.

- A1. "Emergency" means a case where a person has reasonable cause to believe that circumstances exist which are likely to endanger life or health or cause damage to property or pollution of the environment.
- A2. An "authorised officer" is an officer authorised by the Waste Regulation Authority (WRA) for the purposes of the Control of Pollution Act 1974 or the Environmental Protection Act 1990.
- A3. "Operation" is defined as the receipt, handling or removal of waste from the facility and "operating hours" shall be construed accordingly.
- A4. A "proficient person" means a person who through training and/or qualification is able to identify the nature of wastes arriving at the facility and carry out operations at the facility in accordance with the working plan.
- A5. A "competent person" means a person who through training and/or qualification understands the terms and conditions of this licence and is responsible for ensuring the facility's compliance with the licence.
- A6. "Fly tipping" means the unregulated and hence illegal dumping of waste material.
- A7. "Waste stream" means a regular arising of waste having consistent chemical, physical and biological characteristics.
- A8. Notwithstanding the above, words and phrases in this licence have the meaning ascribed to them by the Control of Pollution Act 1974, the Environmental Protection Act 1990 and their associated regulations.

SCHEDULE BPERMITTED WASTES

Materials deposited within the site shall be restricted to the types and quantities of wastes detailed below:-

<u>Waste Type</u>	<u>Group Code (DoE)</u>	<u>Quantity Tonnes/day</u>
Water (contaminated)	J50	400

Types of contaminants allowed are indicated by the following DoE categories and codes.

Organic compounds:

Phenols, analogues and derivatives	K20
Oxygen containing compounds	K80
Other organic compounds	K90

Polymeric Materials and Precursors:

Finished Products and Manufacturing Scrap	L20
Latex, latex and rubber solutions and suspensions	L40
Synthetic adhesive wastes	L50

Fine Chemicals and Biocides:

Pharmaceuticals and cosmetic products	N10
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Miscellaneous Chemicals Waste:

Mixed Organic Compounds	P10
Mixed Inorganic Compounds	P20

Filter Materials, Treatment Sludge and Contaminated Rubbish:

Industrial Effluent Treatment Sludge	Q40
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Interceptor Wastes, Tars, Paint, Dyes and Pigments:

Dyestuffs Waste	R40
Paint Waste (water based)	R80

Miscellaneous Wastes:

Cellulose Wastes (natural and synthetic)	S20
Soap and Detergents	S50

Animal Processing Wastes:

Animal Processing Wastes	T10
Food Processing Wastes (including starch)	T20
Glue Wastes	T30

The total annual input of waste shall not exceed 75,000 tonnes

EXCLUSIONS

Notwithstanding the generality of the types of waste specified in this Schedule the following waste shall be specifically excluded from delivery to the facility without the prior written agreement of the WRA.

- (a) controlled waste being defined as 'special waste' in the Control of Pollution (Special Waste) Regulations 1980 and subsequent amendments.
- (b) substances within the control of Radioactive Substances Act 1993 and subsequent amendments.
- (c) percussives and explosives and other substances with similar characteristics, excepting where such wastes are in such a form or state where the percussive or explosive properties are and will remain ineffective.
- (d) any waste containing free flammable solvents.
- (e) waste in drums.

SCHEDULE C

CONDITIONS

- C1. (a) The following documents, submitted as part of the application for this licence, shall be referred to as the working plan:-
- (i) Site licence application and working plan dated 18th February 1994.
 - (ii) Letter dated 8th June 1994.
 - (iii) Drawings dated February 1994 and referenced FO.109.P1 and FO109.105.
 - (iv) Letter dated 25th April 1995 and drawing referenced K204-500 April 1995.
- (b) Subject to the terms and conditions of this licence, the site shall be operated in accordance with the working plan.
- (c) The licence holder shall notify the WRA in writing of any proposed change in the actual conduct of operations from those detailed in the Working Plan at least one month, or as otherwise agreed with the WRA, before such change is implemented. The proposed change shall not be implemented if, within one month of the date of receipt of the notification, the WRA declines in writing to accept the proposed change.
- C2. A copy of any notice or instruction including discharge consents received in respect of the facility from any authority, other than the WRA, which in any way relates the use of the facility, shall be given to the WRA within three working days of the receipt of such notice or instructions.
- C3. Within 6 months of the issue of this licence all site preparation works as specified in Schedule D shall have been completed.

SCHEDULE D

Site Preparation Works

- D1. Site roads shall be designed, constructed and maintained in accordance with the working plan so that they are adequate for the traffic usage of the site and any potholes shall be filled in as soon as possible.
- D2. Gates, walls and fencing shall be provided at the facility and maintained at all times in accordance with the working plan. Site gates shall be locked outside the hours stipulated in condition E4 and at any time the site is left unattended in order to prevent as far as practicable unauthorised access to the site. Appropriate warning signs shall be provided along the perimeter of the site.
- D3. An identification board of durable material and finish shall be displayed and maintained at the entrance to the facility. This shall give the name of the facility, the name, address and telephone number of the operator and the WRA, the hours at which waste is to be accepted, and the telephone numbers of personnel to contact in the event on an emergency.
- D4. Provision shall be made within the confines of the site for the parking and discharging of vehicles transporting wastes to and from the facility in accordance with the working plan.
- D5. Arrangements shall be made for storing and maintaining machinery and equipment based on site, in accordance with the working plan.
- D6. Tanks or drums used for the storage of liquids which may be polluting shall be contained within bunded compounds. The containment capacity of the bund shall be at least 110% of the capacity of the largest tank or drum, or 25% of the total volume of liquid which could be stored in the bund whichever is the greater. The side walls and base of the bunded area shall be lined with impervious material.

- D7. All containers within the bund shall be of a type and construction suitable for the liquids they contain and shall be labelled to show their contents. Containers shall conform, where necessary, to all relevant safety and construction standards.
- D8. Any tap or valve permanently fixed to any tank, through which liquid can be discharged to the open, shall be within the bund.
- D9. In accordance with the working plan all tanks indicated for the storage of liquids shall be fitted with high level audible or visible alarms and incorporate cut-off devices so as to avoid overfilling and/or spillages during filling (and transfer operations).
- D10. Measures in accordance with the working plan shall be taken to prevent damage to all pipework, valves, pumps and storage tanks.
- D11. In accordance with the details of the working plan a site office, equipped with a telephone, shall be provided and maintained at the facility.
- D12. In accordance with the working plan a chemical laboratory shall be provided and maintained with facilities to enable the sampling, analysis and assessment of wastes samples to be undertaken.
- D13. The site surface shall be designed, constructed and maintained so as to form a permanent surface that is able to withstand penetration by substances that are handled at the facility, as detailed in the working plan.
- D14. Drainage arrangements for the facility shall be designed, constructed and maintained so that water does not accumulate. Such arrangements shall include the interception of surface water and spillages so as to prevent contamination of any land not protected by the permanent surface referred to in Condition D13. All arrangements shall be in accordance with the working plan.
- D15. Prior to waste being deposited in any existing tank its integrity and suitability to hold wastes permitted by this licence shall be assessed by an appropriately qualified person to be agreed with the WRA. A copy of this assessment shall be sent to the WRA within 14 days of the assessment being made. No waste shall be deposited in any tank unless recommendations for that tank have been carried out.

SCHEDULE E

Operation of Site

- E1. The licence holder shall submit to the WRAS a quality control system for the operational management of the site to ensure that wastes are only accepted if they are compatible with the sewage treatment process and can be effectively treated and will not give rise to any adverse reaction when intermixed.
- E2. The types and quantities of waste accepted shall consist of those specified in Schedule 'B' of this licence. Provision shall, in accordance with the working plan, be made to deal with any unacceptable waste delivered to or left at the facility. Such waste shall be removed from the facility as soon as practicable or within such time as may be agreed with the WRA and taken to a facility authorised for its disposal.
- E3. Only wastes that have previously been sampled, analysed and assessed in accordance with the working plan as being suitable for treatment at the site shall be accepted. All incoming wastes shall additionally be assessed by a competent person as to their ability to cause odours leading to serious detriment to the local amenity. Copies of such analysis and assessment shall be kept at the site and open to inspection by the WRA.
- E4. Wastes shall be delivered to and removed from the facility during the following hours:-
- | | |
|------------------|--------------------|
| Monday to Friday | 0700 to 1700 hours |
| Saturday | 0700 to 1400 hours |
- Except in cases of emergency no delivery or removal of waste shall take place outside of these hours or on Sundays or Bank Holidays. All circumstances of emergency shall be reported forthwith to the WRA.
- E5. No deposit or other operation shall take place during the hours of darkness unless suitable lighting has been provided. Details of the lighting shall be included in the working plan. The hours of darkness are those covered by statutory lighting up times published by the Science and Engineering Research Council.

- E6. During all operational and maintenance periods the facility shall be manned by a proficient person who is capable of ascertaining, in accordance with the terms of the working plan and having regard for information supplied with waste materials, that only waste permitted by the licence is deposited at the site.
- E7. In accordance with the working plan, wastes which require segregated storage must be stored separately and should not be mixed with any other wastes during storage or discharge.
- E8. Any spillage of liquid shall be dealt with immediately in accordance with the working plan. Records of all such incidents shall be kept in the site diary/log book.
- E9. The washing down and cleaning of vehicle tanker holding tanks shall only take place in accordance with the working plan or as otherwise as agreed with the WRA.
- E10. The cleaning, removal and disposal of liquid and solid residues and the purging of fixed tanks and sumps shall be in accordance with the working plan. Such operations shall be conducted in a manner so as to prevent pollution of the environment, harm to human health or serious detriment to the amenities of the locality.
- E11. Litter shall not be allowed to accumulate at the facility. Not less frequently than once per seven days or at a greater frequency as detailed by the WRA any litter which may be lying at the facility or its immediate environs shall be gathered and disposed of in such a way as to keep the site in a tidy manner.
- E12. If required by the WRA any waste material shall be removed forthwith, if, according to the WRA it is giving rise to pollution of the environment, harm to human health or serious detriment to the amenities of the locality.
- E13. A diary/log book shall be provided and retained on site. The diary/log book should be available for the licence holder, accredited agent or employees and for authorised officers of the WRA to read or record comments pertaining to the activities of the facility.
- E14. A record shall be kept available in an agreed form for inspection for a period of not less than 2 (two) years after the date of deposit detailing the producer, carrier, the types and quantities of waste and the process from which the waste arose.

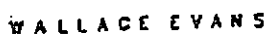
- E15. A summary of the record required by Condition E14 shall be forwarded to the WRA at annual intervals in the form prescribed by the WRA to arrive within 14 days of the end of the period to which it refers.
- E16. Precautions shall in accordance with the working plan, be taken to deal effectively with vermin, insects and odours. A written record for the treatment undertaken shall be kept on site for inspection.
- E17. Measures shall be taken in accordance with the working plan to prevent the deposit of mud, debris or any other material on the public highway by site traffic. These measures shall include the sweeping of hard surface areas, entrance and the public highway leading from the facility.
- E18. Measures, including proper maintenance and use, shall be undertaken to control the noise of machinery and vehicles operating at the facility which may cause pollution of the environment, harm to human health or serious detriment to the amenities of the locality.
- E19. Any cessation of operations for a period in excess of 3 (three) months shall be notified to the WRA. Not less than 14 days notice shall be given to the WRA of the date on which operations are to recommence in the event of such a cessation.
- E20. The integrity of all tanks, bunds and waste reception/discharge area shall be tested at intervals not exceeding 12 (twelve) months by an appropriately qualified person to be agreed with the WRA or as requested by the WRA. The results of all such tests shall be forwarded to the WRA within 2 (two) months of the date of the test. Recommendations shall be carried out within a time period to be agreed with the WRA.
- E21. Surface water and/or spillages shall be removed as necessary from within bunded areas in accordance with the working plan so as to maintain the available storage capacity required by Condition D6.
- E22. Standby operating, storage and disposal arrangements in accordance with the working plan shall be implemented in the case of an emergency at the facility. The WRA shall be immediately informed whenever these arrangements are implemented.

SCHEDULE F

Monitoring

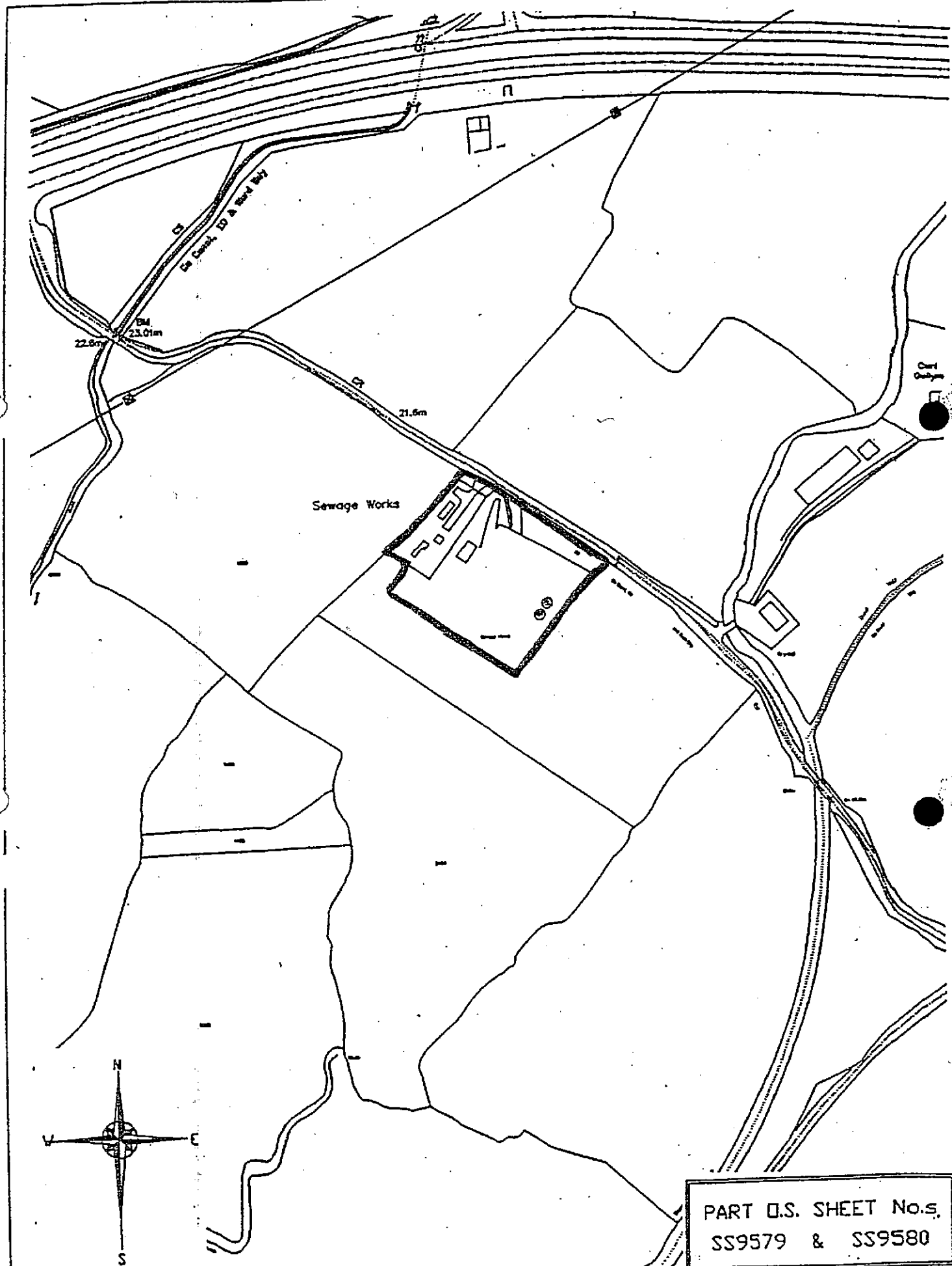
- F1. Unless otherwise agreed with the WRA each and every load of waste delivered to the facility shall be sampled, analysed and assessed in accordance with methods detailed in the working plan, so as to ensure that all waste within the load is consistent with the information provided in accordance with Condition E1. Such sampling, analysis and assessment shall ensure that the waste is capable of treatment at the facility in accordance with this licence. Samples of wastes shall be retained at the site laboratory for a minimum of 14 days after the deposit of each particular load and open to inspection and sampling by the WRA.
- F2. The on site sampling, analysis and assessment of wastes shall be undertaken by person(s) holding an appropriate qualification or training and as agreed with the WRA.
- F3. Within 3 (three) months of the date of this licence all existing waste streams that are to continue to be accepted at the facility shall in accordance with the working plan be sampled and analysed at a NAMAS accredited laboratory or other laboratory as agreed with the WRA and then assessed by a competent person as to their suitability for acceptance at the site.
- F4. Following the initial sampling, analysis and assessment of waste in accordance with Condition E3, each waste stream shall be further sampled, analysed and assessed at intervals of not more than 12 (twelve) months or whenever the chemical or physical nature of the waste stream changes.
- F5. Within 3 (three) months of the date of this licence samples of soil shall be taken from the perimeter of the site and analysed at a NAMAAS accredited laboratory or other laboratory as agreed with the WRA. The locations and number of the samples and the determinands analysed shall be agreed with the WRA.

- F6. The results obtained as a result of Condition F5 shall be forwarded to the WRA within 14 days of becoming available.
- F7. The operations detailed in Conditions F5 and F6 shall be repeated annually for the duration of the licence.
- F8. Results of all analysis and assessment of wastes shall, as soon as they become available, be kept on site for a period of 2 (two) years and be open to inspection by the WRA.



Date
FEB 94

WELSH WATER INDUSTRIAL SERVICES.
PENCOED WASTE WATER RECEPTION POINT.



PART U.S. SHEET No.s.
SS9579 & SS9580

APPENDIX G PREVIOUS REPORTS

File

Ogwr Borough Council
Civic Offices
Angel Street
Bridgend
CF31 1LX

16-June-95

F.A.O. - AUDREY EVANS

SUBJECT - PENCOED WASTE TREATMENT CENTRE (SOIL ANALYSIS)

To Audrey

Further to our conversation regarding soil sampling at Pencoed Waste Treatment Centre, I would like you to verify the following points :

1. Eight representative samples will be selectively chosen around the perimeter of the works.
The sample points will be labelled S.P.1 to S.P.8 (Ref K204 -500 Topographical Survey)
2. The samples will be taken to a depth of 25 cm unless the depth of the surface soil is less than that value ; however, the sampling depth in the latter case will not be less than 10cm.
3. Analysis will consist of :
 - pH
 - Cadmium
 - Copper
 - Nickel
 - Lead
 - Zinc
 - Mercury
 - Chromium

(Based on Council Directive - June 1986 (86/278/EEC) - Annex IIB

If there are any queries to the above, please contact me at Brecon. Alternatively I look forward to meeting you at Pencoed Waste Treatment Centre on 26-June-95.

Yours Sincerely

Jane Baker
Environmental Control

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ARCHIVE

(file)

Sample Analysis Enquiry & Report

Page 1

2
Sample Details:.....

Sample Point No. :WWIS006 PENCOED STW Purp

SI

Lab.Reference No.:T 884576 Date Taken (for Query): Prio

:3

Run Id.:RR01 28-JUN-95 1 +ARG's TW01 St

:U

Date/Time Taken:28-JUN-95 12:00 -ARG's

Sample Address : Samplers Comments: SAMPLE POINT 011)
Confirm Comments: Analysts Comments

Determinand Details:.....

Det. Method Det. Analyst's Comments Exc. Result Res.

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Code Code Descr. (Scrolls Sideways) Code Qual

8837	15	TOL/KG			920
9271	19	CD DWT			1
9272	19	CR DWT			10
9273	19	CU DWT			32
9275	19	NI DWT			16
9276	19	PB DWT			39
9277	19	ZN DWT			126
9281	10	TS%			93.2

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Sample Analysis Enquiry & Report

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Purpos

Sample Point No. :WWIS006

PENCOED STW

Priori

Lab.Reference No.:T 949815

Date Taken (for Query):

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Run Id.:RR01 29-SEP-95 29

+ARG'S

:F

Date/Time Taken:29-SEP-95 09:20 -ARG'S

Sampler :

Sample Address :SOIL ANALYSIS, PENCOE Samplers Comments SOIL ANALYSIS.

Analysts Comments

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Det. Method	Det.	Analyst's Comments	Exc.	Result	Res. :
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5 LIVE Sample Analysis Enquiry & Report

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 Lab.Reference No.:T 884577
 :3 Run Id.:RR01 28-JUN-95 1 +ARG's TW01 St
 :U Date/Time Taken:28-JUN-95 12:00 -ARG's
 Sample Address : Samplers Comments (SAMPLE POINT 02)
 2) Analysts Comments
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 Determinand Details:.....

Det. Method	Det.	Analyst's Comments	Exc.	Result	Res.
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9273	19	CU DWT			365
9275	19	NI DWT			43
9276	19	PB DWT			36
9277	19	ZN DWT			88
9281	10	TS%			90.4

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SI Date Taken (for Query): Prior

Lab.Reference No.:T 884578

:3 Run Id.:RR01 28-JUN-95 1 +ARG's TW01 Sta

:U Date/Time Taken:28-JUN-95 12:00 -ARG's

Sample Address : Samplers Comments (SAMPLE POINT 03)

3) Confirm Comments: Analysts Comments

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Det. Method	Det.	Analyst's Comments	Exc.	Result	Res.
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8837	15	TOL/KG			320
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9272	19	CR DWT			11
9273	19	CU DWT			10
9275	19	NI DWT			11
9276	19	PB DWT			24
9277	19	ZN DWT			83
9281	10	TS%			91

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2 Sample Details:.....

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Lab.Reference No.:T 884579

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:U Date/Time Taken:28-JUN-95 12:00 -ARG's

Sample Address : Samplers Comments SAMPLE POINT 04

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Code	Code	Descr. (Scrolls Sideways)	Code	Qual
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8837	15	TOL/KG		340
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9277	19	ZN DWT		126
9281	10	TS%		87.5

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2 .Sample Details:.....

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SI Date Taken (for Query): Prior

Lab.Reference No.:T 884580 Sta

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:U Date/Time Taken:28-JUN-95 12:00 -ARG's
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Det. Method	Det.	Analyst's Comments	Exc.	Result	Res.
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s	8837	15	TOL/KG		480
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	9273	19	CU DWT		20
	9275	19	NI DWT		23
	9276	19	PB DWT		65
	9277	19	ZN DWT		330
	9281	10	TS%		86.8

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5 ARCHIVE Sample Analysis Enquiry & Report

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2 .Sample Details:.....

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SI Date Taken (for Query): Prio

Lab.Reference No.:T 884581

:3 Run Id.:RR01 28-JUN-95 1 +ARG's TW01 St

:U Date/Time Taken:28-JUN-95 12:00 -ARG's

Sample Address : Samplers Comments SAMPLE PINT 06 (

) Analysts Comments

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9271	19	CD DWT		13	
9272	19	CR DWT		18	
9273	19	CU DWT		7	
9275	19	NI DWT		27	
9276	19	PB DWT		152	
9277	19	ZN DWT		95	
9281	10	TS%			

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Sample Analysis Enquiry & Report

Page 1 of

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Sample Details:.....S.P.T.....

Sample Point No.:WWIS006 Pencoed STW Purpose
Lab. Reference No.:T 949813 Date Taken (for Query): Priority
Run Id.:RR01 29-SEP-95 29 +ARG's Status
Date/Time Taken:29-SEP-95 09:05 -ARG's Sampler :
Sample Address :SOIL ANALYSIS, PENCOE Samplers Comments SOIL ANALYSIS.
Confirm Comments: Analysts Comments
Determinand Details:.....

Det. Method	Det.	Analyst's Comments	Exc.	Result	Res. St
Code	Descr.	(Scrolls Sideways)	Code		Qual. -
8837	15	TOL/KG			360

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5 ARCHIVE Sample Analysis Enquiry & Report

Page 1

3 .Sample Details:.....

Sample Point No. :WWIS006 PENCOED STW Purpo

SI Date Taken (for Query): Prior

Lab.Reference No.:T 884582

:3 Run Id.:RR01 28-JUN-95 1 +ARG's TW01 Sta

:U Date/Time Taken:28-JUN-95 12:00 -ARG's Sampler :

Sample Address : Samplers Comments SAMPLE POINT 07

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Det. Method	Det.	Analyst's Comments	Exc.	Result	Res.
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Code	Code	Descr. (Scrolls Sideways)	Code	Qual
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8837	15	TOL/KG		240
9271	19	CD DWT		1
9272	19	CR DWT		15
9273	19	CU DWT		22
9275	19	NI DWT		10
9276	19	PB DWT		32
9277	19	ZN DWT		74
9281	10	TS%		92

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5 ARCHIVE Sample Analysis Enquiry & Report

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2 .Sample Details:.....

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Lab.Reference No.:T 884583

:3 Run Id.:RR01 28-JUN-95 1 +ARG's TW01 Sta

:U Date/Time Taken:28-JUN-95 12:00 -ARG's Samplers Comments: SAMPLE POINT 08 Sampler :

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8837	15	TOL/KG		15000
9271	19	CD DWT		2
9272	19	CR DWT		296
9273	19	CU DWT		2230
9275	19	NI DWT		150
9276	19	PB DWT		154
9277	19	ZN DWT		1430
9281	10	TS%		87.9

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WW Industrial Services

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Sample Analysis Enquiry & Report

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Lab.Reference No.: T 949814

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Run Id.: RR01 29-SEP-95 29

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Date/Time Taken: 29-SEP-95 09:10 -ARG'S

Sampler :

Sample Address : SOIL ANALYSIS, PENCOE Samplers Comments SOIL ANALYSIS.

Analysts Comments

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9273	19	CU DWT		137	
9275	19	NI DWT		26	
9276	19	PB DWT		145	
9277	19	ZN DWT		233	
9281	10	TS%		74.9	

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ALLACE EVANS

Hawthorn Rise,
Haverfordwest,
Dyfed,
SA61 2BH

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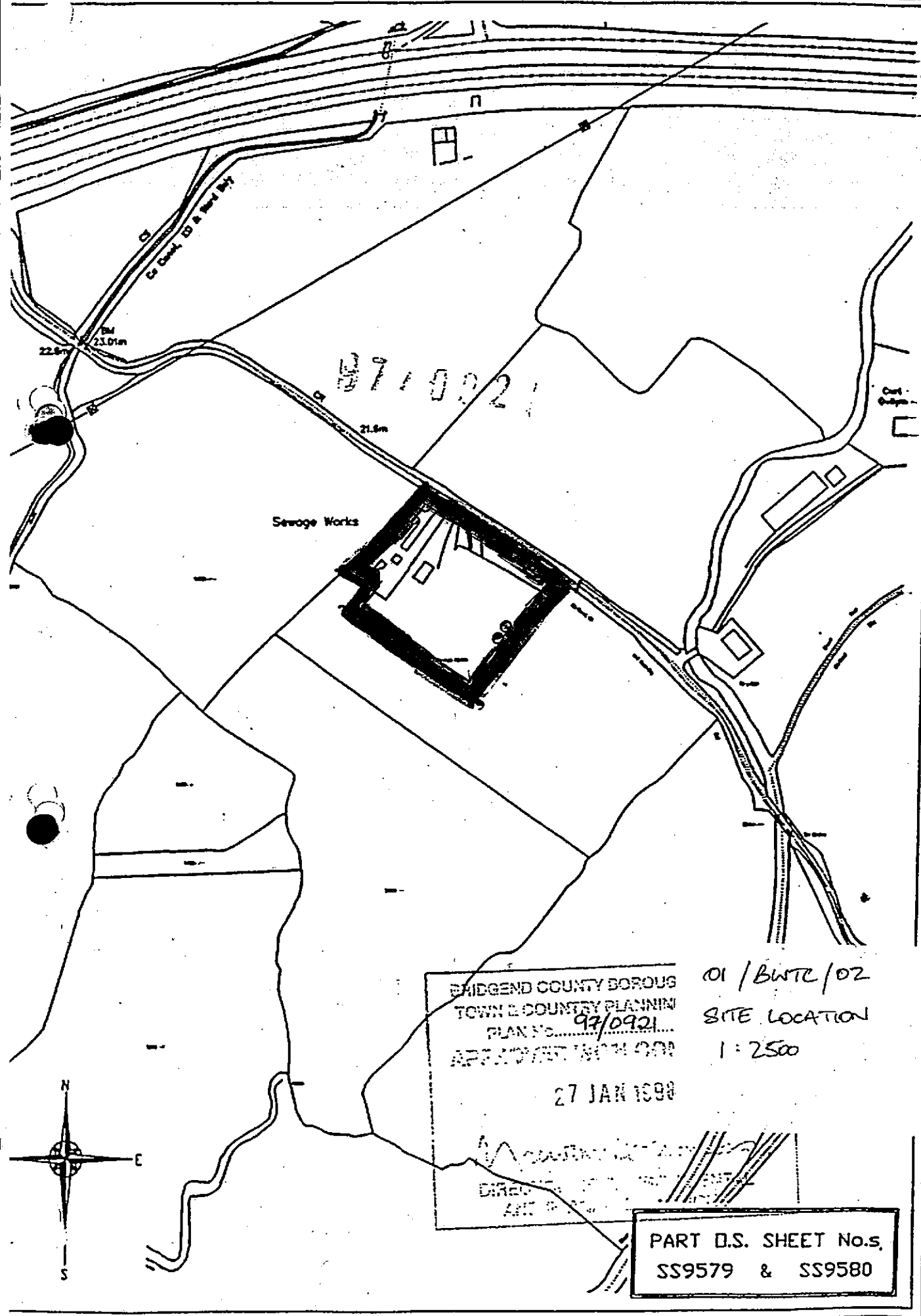
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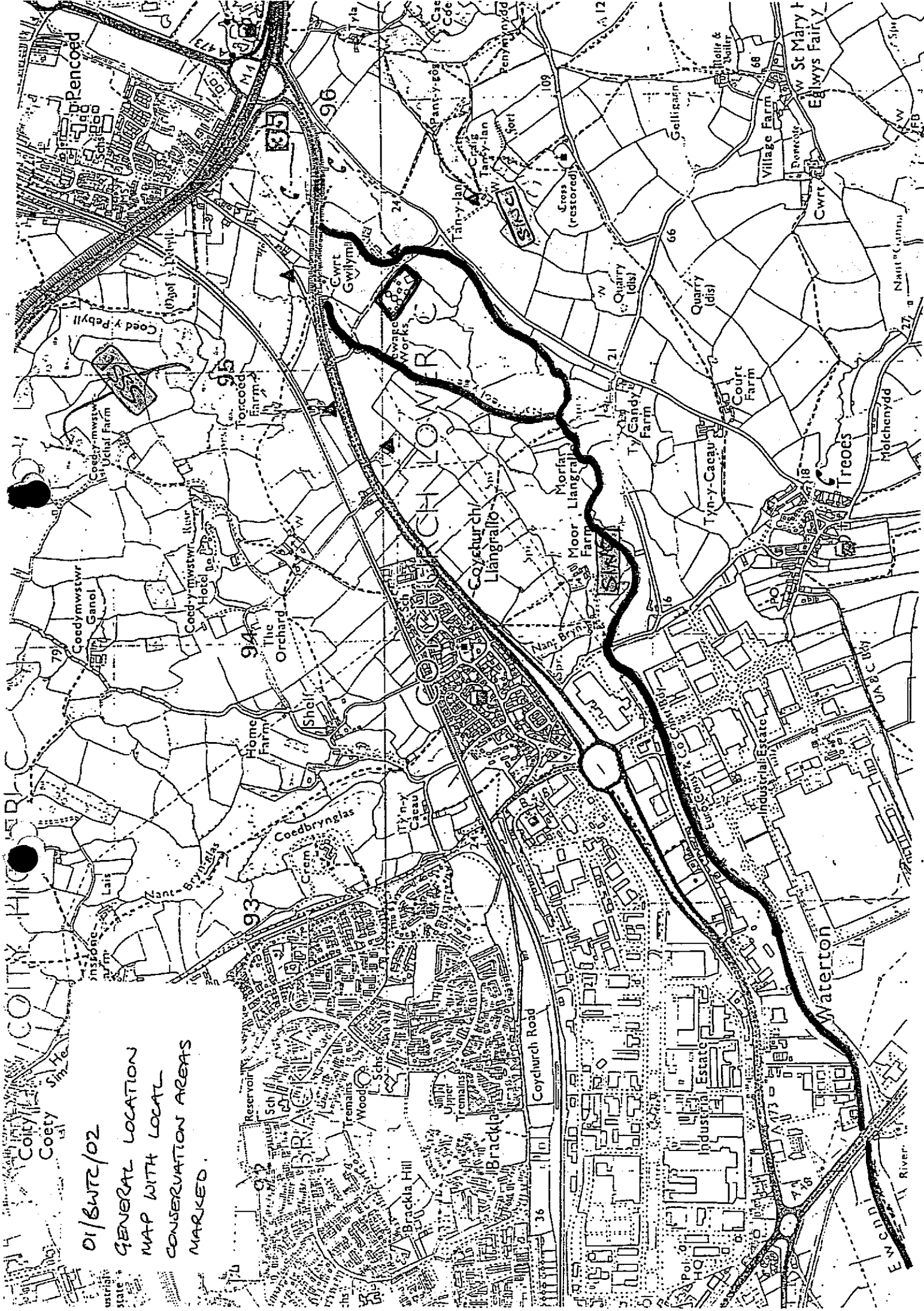
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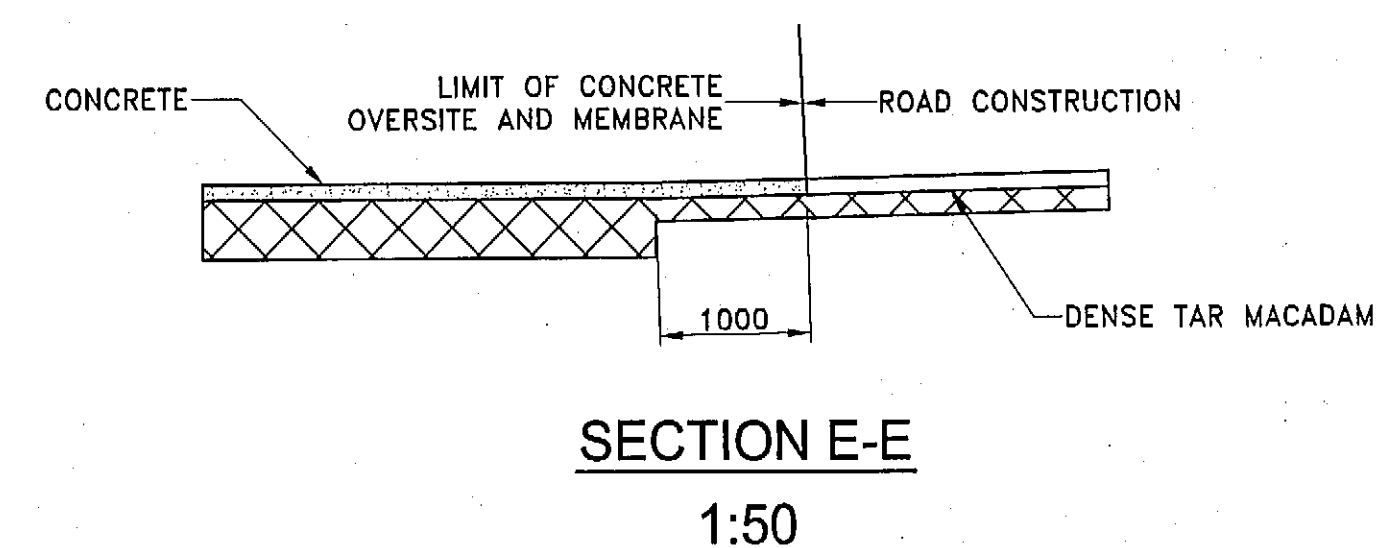
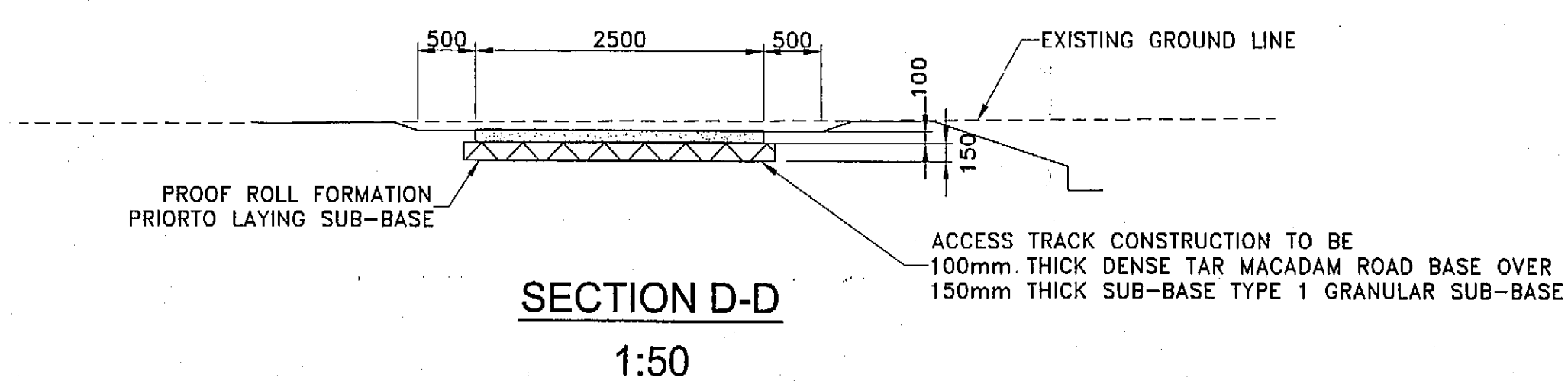
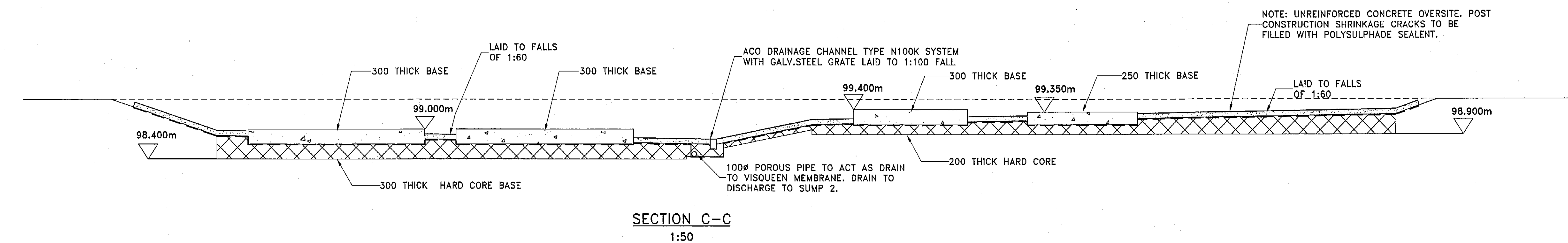
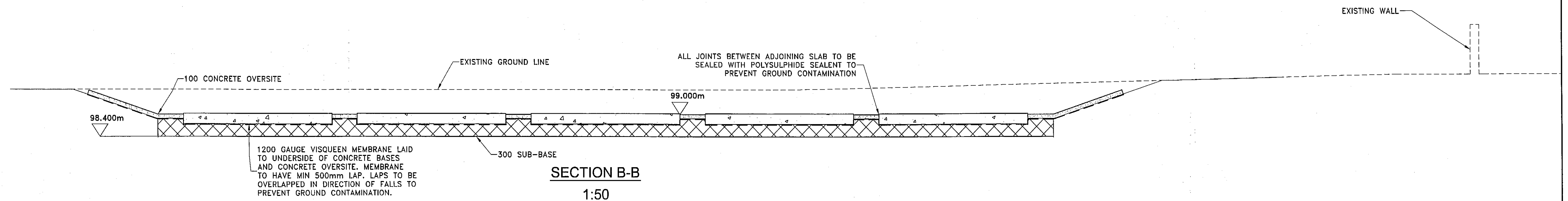
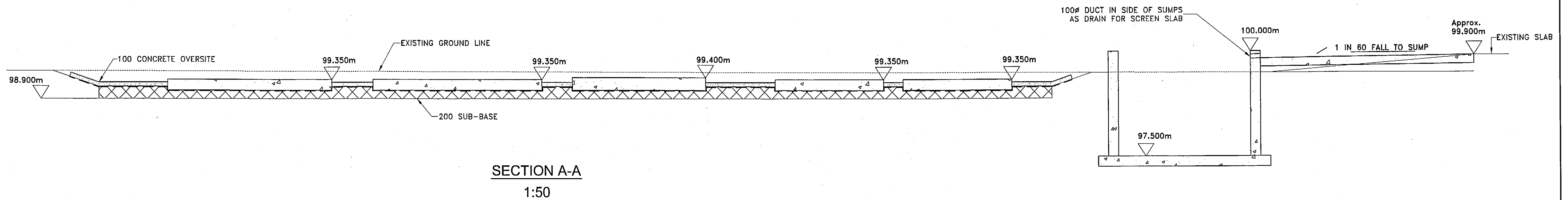
WELSH WATER INDUSTRIAL SERVICES.
PENCOED WASTE WATER RECEPTION POINT.



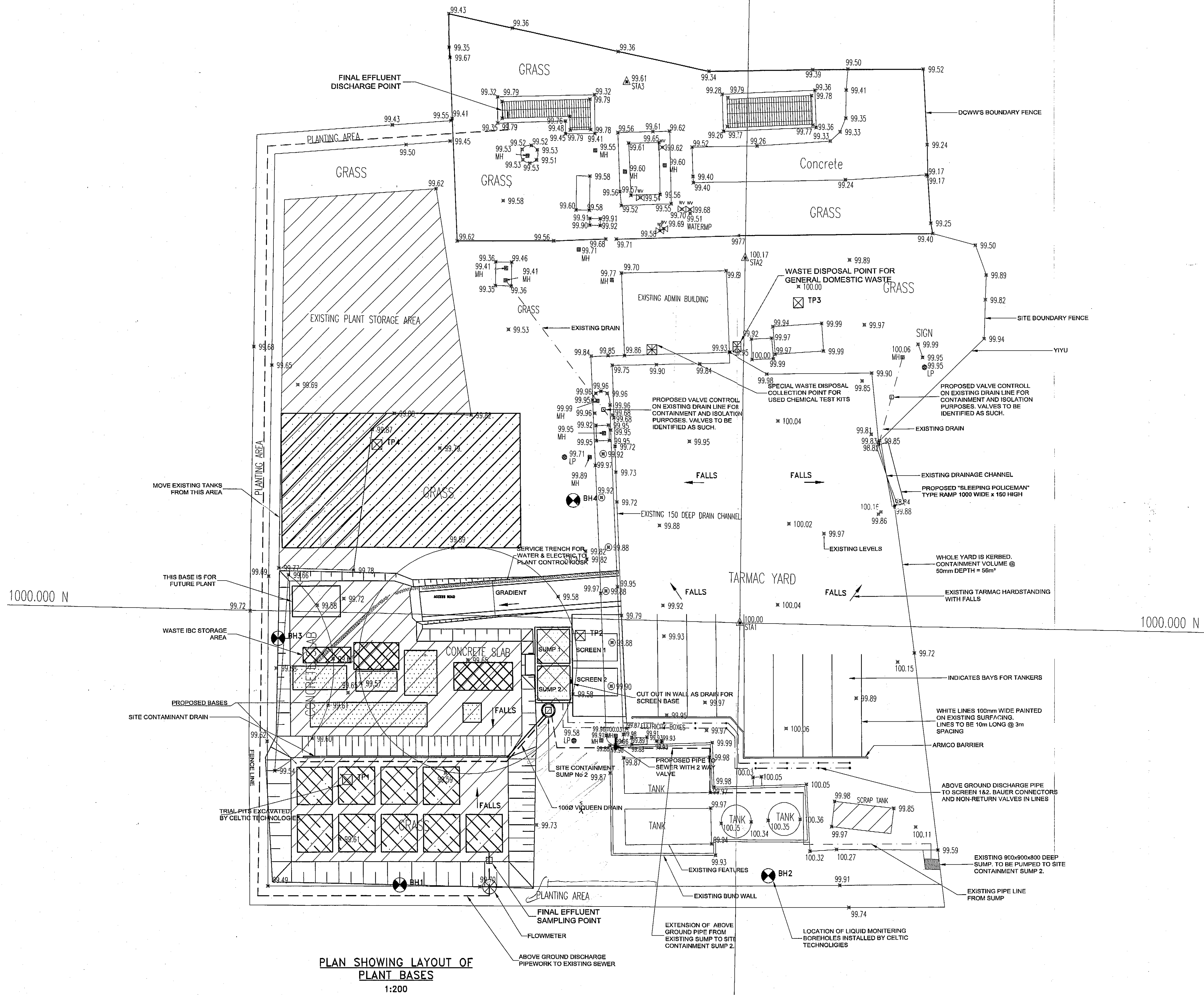
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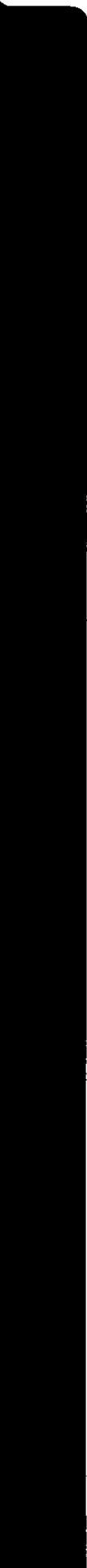
GENERAL LOCATION
MAP WITH LOCAL
CONSERVATION AREAS
MARKED





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This drawing must not be scaled Use figured dimensions only. If in doubt ASK!		
Rev.	Date	Amendment
Project PENCOED WASTE TREATMENT CENTER		
Drawing title SECTIONS THROUGH PLANT AREA		
Client UNITED UTILITIES INDUSTRIAL		
Michael Dudfield Associates Ltd Consulting Civil and Structural Engineers Laurel House Station Approach Alresford Hampshire SO24 9JH Telephone 01962 735024 Fax 01962 733388		
Date	APRIL/2002	Drawn By SRA
Drawing	1027/4	Revision REV





B2.1 MANAGEMENT TECHNIQUES

The UUI management system for the Bridgend Waste Treatment Centre comprises two key elements :

- ◆ The company wide Business Management Policies and Procedures
- ◆ The site based operational plan

Site personnel have full access to the company business management procedures but use the site operational plan as their day to day operational procedures reference.

The following documents are included in this section of the application as demonstration of the management system and standards in place to operate the site :

1. Site operational plan – this is presented in a format that, while comprehensive, is not yet complete, requiring information from the proposed plant operation and maintenance manuals (scheduled for handover at commissioning), and final consent conditions arising from the PPC application process
2. UUI Environmental policy
3. UUI Health and Safety policy
4. UUI Business Management Systems manual
5. UUI procedure OP018 – Training of personnel
6. UUI procedure OP014 – Procedure for the acceptance of waste
7. UUI procedure OP019 – Procedure for incoming complaints
8. UUI procedure OP015 – Internal audit and review

United Utilities has commenced a programme of ISO 14001 implementation at some of its waste management sites, a number of which have already received certification.

BRIDGEND WASTE MANAGEMENT CENTRE OPERATIONAL PLAN

NOTES

1. This operational plan is referenced to our formal Quality / Management System which fully addresses all the requirements of ISO9001:1994
2. This plan will be amended and referenced with an issue number on a periodic basis

Issue / control data

Copy number

Revision reference

Date

Issue No - rev02

12th June 2002

Plan prepared by : _____

Signed : _____

Plan approved by : _____

Signed : _____

This plan is prepared in accordance with Company procedure GEN/WW:OP020 (Procedure for the preparation of site operational plans). It is intended to be both the local work instruction for site personnel and a key supporting document for PPC authorisation application purposes (specifically in relation to section B2.1 of the PPC application form).

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1. OPERATIONAL STATEMENT

The facility makes use of the existing structures located within the site of the old Pencoed sewage treatment works (STW) at Bridgend. It is located at NGR SS949 800. It has been purposely designed to receive, store, treat and safely dispose of industrial waste.

Such waste will be delivered by road tanker to the relevant discharge point, treated and subsequently discharged under closely scrutinised conditions by sewer to Penybont STW.

The identification, traceability, systematic checking and control of waste streams is effectively carried out through the UUI formal management system. This system ensures that all such waste will be in accordance with our site licences and traceable through such records as Duty of Care documents and sampling/analysis procedures.

Incoming domestic and industrial waste is subjected to the appropriate pre-treatment process, carried out under strict monitored conditions, enabling controlled discharges to the adjacent trunk sewer under a trade effluent consent issued by Dwr Cymru - Welsh Water.

At all times the overall management of our Waste Management Centre is carried out in accordance with a formal documented system which fully meets the requirements of BS EN ISO 9001 : 1994.

In addition to the strict controls of industrial waste detailed within this plan, our management system also addresses the criteria for essential support activities such as - Design of our Service, Document Control, Purchasing, Calibration, Problems and complaints, Auditing, Personnel Training and overall review of company performance in relation to our client needs.

The complete documented management system will be available at this waste management centre for use by UUI personnel.

2. SITE PERSONNEL

Competent persons for the site are as follows :

Name	Job Title	Site Number	Mobile	COTC
Javad Farooq	Regional Operations Manager	02920316329	07767 410112	Yes
Nick Carter	Site/Operations Manager	02920 316300		Yes
Dave Taylor	Team Leader	01446790374	07775 951703	Yes
Matthew Jones	Member of Sales Team	02920316338	07788 916016	Yes
Andrew Price	Site Operations	01432360129	07967 394103	No
Nick Penn	Site Operations	01432360129	07901 852896	No
Chemist(to be recruited)	Site Operations			To be confirmed
Hugh Ratsey	Process Scientist		07748 336901	Yes

Siobhan O'Leary Johns	Process Scientist		07748 336909	Yes
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2.1 Training requirements / competency

Personnel training at the site falls into two main areas – competency training and site induction.

Staff at the site are trained to ensure competency in relation to their responsibilities. The United Utilities operating procedure OP018 Training of personnel describes the arrangements for staff competency training.

Site induction training, comprising basic health, safety and environmental information and key operational rules, is provided by the UUI site supervisor to all persons visiting the site. Appendix 1 contains the induction information and record sheet used.

2.2 Responsibilities

The **Regional Operations Manager** is responsible for the overall operation of the region, including compliance with all company standards and regulatory requirements.

The **Site/Operations Manager** is responsible for ensuring that operations activities in their own area are managed in a manner that meets with Company, client/customer and regulatory requirements. They will form part of the technically competent staff for the site.

The **Team Leader** (not based on site) is responsible for the day to day supervision of all Site Operations Teams.

The **Sales Team** is responsible for communications with waste producers and carriers to source waste streams for treatment and disposal at specific facilities. Involves sampling potential waste streams and discussing their suitability for treatment with the Operations Managers, pricing of acceptable wastes and their logistics.

The **Site Operations Team** (which includes a qualified chemist) is responsible for all day to day site matters including receipt of incoming wastes, operation, inspection and routine maintenance of site infrastructure, discharge compliance assurance procedures and liaison with UUI regional office staff. They form part of the technically competent staff for the site.

The **Process Scientists** are responsible for providing effective process support to South Wales' operations, including the Site Operations Team.

3. WORKING HOURS

The site shall be opened to receive waste between the hours of :

Monday to Friday:	07.00 - 17.00
Saturday:	07.00 - 14.00
Sunday and Bank Holidays:	Closed

Outside of these hours plant and equipment will only be operated where failure to do so would create the risk of a health, safety or environmental incident.

4. SITE INFRASTRUCTURE

The site infrastructure is shown in the plan included in Appendix 2. The property is owned by Dwr Cymru - Welsh Water and leased to United Utilities Industrial the occupiers.

The facility consists of effluent/waste reception, storage and treatment before discharge to the sewage works via the sewer. The facility makes use of existing infrastructure on site including tanks, pipes, valves and services adjacent to the site including office and changing room, shower and toilet facilities, canteen, car parking, plant services and maintenance area.

The infrastructure comprises of concrete hard standing, offices and discharge points connected to the Penybont sewer. The plant is divided into two key operational areas described respectively as the Process 1 and Process 2 & 3 areas.

The Process 1 area comprises :

Four tanks labelled I-01-I-04 have been installed to allow for reception, storage, blending and discharge of industrial waste to the existing discharge points. These tanks are mounted on concrete plinths and surrounded by bunding to 110% of the tank capacity.

There are three domestic discharge points in use labelled D01-D03. There is also the option to use D04 and D05 if the need arises. Domestic discharges go via sewer directly to Penybont STW. Buildings and structures are described in section 4.7.

The Process 2 & 3 area comprises :

The plant incorporates 9 storage tanks each of 65m³ capacity. Two tanks are reserved for treated liquor prior to discharging to sewer. One tank is reserved for sludge holding/concentration. Another tank is reserved for storing recovered oil. The other 5 are for storing incoming wastes prior to processing/blending. This gives a total holding capacity of approximately 325m³ of unprocessed liquor.

All tanks will have high level alarms, linked back to an audible Klaxon. All process pump systems are duty/standby with Manual and Auto control. All chemical storage tanks will have integral bunding and sit within the main bunded area. All storage tanks will have lockable valves on all discharge points

There are a total of 5 reception tanks that are valved off from each other but with a drain line back to the main sumps such that they can be re-routed to alternative tanks for blending/mixing/diluting etc. The waste will be left in the reception tanks for up to 24 hours to allow sludge/solids to settle. Sludge pumps will be used to transfer the sludge in the bottom of each tank to a main sludge holding tank where it will be left to concentrate. Drain valves will be used, in conjunction with tun-dishes, to drain the supernatant back to the main sumps from where it will be pumped back to the reception tanks.

Hodge Separators surface skimmers skim the free-oils/lighter fractions to a small recovered oil holding tank from where it is automatically pumped to the main 65m³ recovered oil tank.

Two separate waste treatment processes exist to treat the incoming wastes according to their contaminants. The systems comprise respectively :

- ◆ a dissolved air flotation plant (with associated blower plant and tankage) and,
- ◆ a lamella settler (with associated ph correction / metals precipitation tank)

Treated wastes that fall within discharge consent, are pumped direct to sewer via a magflow meter and automatic sampler.

Specific features of the site infrastructure, including buildings and structures, are described below :

4.1 Fencing

The security to the site is provided by the external boundary fence of 2m high post and PVC coated wire chain link security fence with 3 strands of barbed wire.

4.2 Gates

The entrance and exit to the site, is maintained secure by a 2m high anti-intruder gate in the external boundary fence. This is padlocked outside of the opening hours.

4.3 Lighting

Security flood lighting (350W) has been installed on the main gate to the works, the main administration building and the industrial tank area. Internal lighting within the buildings is provided by appropriate internal fittings in accordance with industrial statutory regulations.

4.4 Roadways

The internal road and hardstanding is of concrete surfacing to carry all normal road traffic.

Heavy Good Vehicles (HGVs) will keep strictly to the speed limit of 5 miles per hour.

The layout of the facility will allow for parking of three tankers in a marshalling area. There is also sufficient space for up to 4 HGV's to discharge their contents at any one time.

The marshalling area also acts as an emergency storage area for tankers carrying waste streams which prove to be problematic. It is intended to hold those tankers whose loads are not in accordance with UUI criteria and thereby outside the realms of the site licence. The Agency will be informed prior to contractors finding alternative disposal routes.

4.5 Drainage

The drainage system at the site is designed so that all spillages can be contained within the bunded area. There are three key valve points – two within the marshalling and tanker discharge area and one for the new process area. During normal working conditions all valves are kept shut resulting in an isolated site. The containment and release of drainage from site is described in the procedure included in Appendix 10. In the event of a spillage the procedures described in the site emergency plan (see Appendix 6) will be followed.

Foul water drainage from toilet facilities is to the main sewer.

4.6 Services

Mains, water, electricity and telephone are supplied to the site.

4.7 Buildings/Structures

Administration block/reception area.

This is a brick building to the right of the entrance gates which will be used for the documentation and control of tankers and visitors entering the site.

Maintenance Store/ Mess facilities/Shower and Toilet.

This is this is part of the brick administration building which provides facilities for the UUI staff.

All on site test kit/calibration facilities will be stored in the maintenance store room.

Process equipment

PROCESS 1

There are four above ground tanks which are contained within a bunded area and labelled as follows :

		<u>volume</u>	<u>dimensions</u>
I-01	Holding/storage facility	30m ³	4m h x 1.55m radius
I-02	Holding/storage facility	30m ³	4m h x 1.55m radius
I-03	Holding/storage facility	85m ³	8.9m x 3.1m x 7.2m (sloped)
I-04	Holding/storage facility	85m ³	8.9m x 3.1m x 7.2m (sloped)

The operation of I-01 - I-04 will allow for reception of waste by road tanker via a 4" tanker hose into the selected tank. Tanks I-03 and I-04 will have a blower system to give some pre-treatment and avoid settlement of sludgy wastes.

All connecting pipework will be detained within the bunded area and be weather treated with appropriate coating.

The industrial tanks will contain duty/standby pumps which will be pre-set to an agreed discharge rate to the Pen-Y-Bont sewer in accordance with the Welsh Water's Trade Effluent discharge consent.

PROCESS 2 & 3

Process 2 and 3 comprise the Hodge's effluent treatment / oil recovery plant (see Hodge's plant manual for details) situated on a bunded area separate from but adjacent to Process 1. As with Process 1, treated waste is discharged to sewer in accordance with the Welsh Water discharge consent.

4.8 Notice Boards/Instruction Signs

All external signs will be of a durable nature and of sufficient size to be read by the driver from his/her vehicle.

4.9 Grounds

Where areas of the site are not considered operational, they will be laid to grass.

5. MAINTENANCE OF INFRASTRUCTURE

5.1 Inspection

A checklist based inspection regime will be carried out by site staff to ensure all infrastructure is maintained in a suitable condition to perform its function.

Any visible defects observed during the inspection will be recorded on the inspection sheets (see Appendix 3) together with the site diary where applicable. Appropriate action will be taken to rectify any unacceptable conditions.

5.2 Routine Maintenance

All mechanical plant will be regularly serviced in accordance with the scheduled checklists (See Appendix 3) which are based on manufacturer's recommendations and best practice. All maintenance will be logged on the relevant maintenance schedules.

Where specialised service personnel are employed to carry out full maintenance then the log will appropriately identify the activity.

5.3 Tanks, Sumps and Pipework

As part of the inspection and maintenance regimes described in 5.1 and 5.2 above, all above ground pipework, tanks and sumps will be subject to a daily visual inspection for wear and tear. There will also be an annual integrity test comprising :

- ◆ pressure test of underground pipework
- ◆ inspection of tanks, above ground pipework and cleaned out sumps by a chartered civil engineer

5.4 Grounds and litter

Grassed areas will be cut at regular intervals depending upon the season to maintain the site in a tidy condition and all litter will be picked up on a regular basis and disposed of in accordance with site waste management procedures.

6. PROCESS DESCRIPTION

Process 1

The existing operation comprises a tanker receipt facility, effluent storage tanks and controlled discharge facility to main sewer. Incoming tanker loads of domestic waste (typically from cess pits etc) are discharged direct to sewer. Incoming loads of industrial effluent from specified sources are sampled, blended and discharged under controlled conditions to ensure compliance with the terms of Trade Effluent Consent No. 371 of 2001 issued by Welsh Water.

Processes 2 & 3

The new process comprises a pre-treatment facility designed to effect oil recovery, metals and solids removal prior to discharge to the mains sewer at a discharge point shared with the existing process. The anticipated incoming waste streams include but are not confined to the following groups : -

Group 1 *dirty waste*

1. Interceptor wastes
2. Anti-freeze mixtures
3. Drilling muds
4. Water based paint wastes
5. Gully detritus
6. Car wash effluent
7. Saline solutions
8. Boiler blowdown waters
9. Spray booth and wet backs
10. Surface and flood waters
11. Oil storage tank bottoms
12. Emulsion and cutting oils

*Chem
closed*

Group 2

1. Ink wastes
2. Food wastes
3. Foundry effluent
4. Caustic/acid washings
5. Pharmaceutical/cosmetic wastes
6. Latex solutions
7. Dewax washings
8. Activated polymers & carbon dusts in solution

*pH corrected
for metal
pH (hydroxides)*

Group 3

1. Mineral sludges/concrete & stone washings
2. Drink waste
3. Sugar/starch water
4. Formation waters
5. Landfill leachates

The wastes listed are delivered to site primarily by bulk tankers, but also on occasion in IBC's. Bulk tankers discharge to the site storage tanks as described below, while IBC's will be stored in the dedicated area before being manually connected to the appropriate discharge line.

The process has been designed so that the three waste streams can be readily split and blended to meet all consent limits. Group 3 wastes are seen as

dilutants for other streams. They may need some treatment in their own right on occasions depending upon strengths. Group 2 wastes are seen as requiring chemical dosing for pH correction for metals precipitation. Group 1 wastes (being the bulk of plant inputs) are seen as requiring straight chemical dosing for removal of offending contaminants. There may be instances where odd streams require a mix of processes possibly involving recycling within the treatment plant. Waste streams are analysed and processed on a batch basis to ensure appropriate treatment methods are used. Each batch is then checked prior to discharge to ensure compliance with consent standards.

A summary of the stages involved in each waste stream process is provided in the following table.

	Process 1 (existing)	Process 2 (new)	Process 3 (new)
INPUTS	Influent (domestic & industrial)	Influent (group 1 & 3 wastes) Caustic / acid Coagulant Flocculant	Influent (group 3 & 3 wastes) Caustic / acid Coagulant Flocculant
PROCESS	Influent analysis Tank storage Sampling and blending as required Discharge to sewer	Influent analysis Coarse screening on receipt Holding tanks Oil recovery (settlement & tilted plate separator) Addition of acid / caustic to regulate pH Addition of coagulant & flocculant Dissolved Air Flotation process (separation of sludge) Sampling & Blending Discharge to sewer	Influent analysis Coarse screening on receipt Holding tank Addition of acid / caustic to regulate pH Addition of coagulant & flocculant Lamella settler (separation of hydroxide sludge) Sampling & Blending Discharge to sewer
OUTPUTS	Effluent to sewer	Effluent to sewer Screening waste (special) Recovered oil Sludge (special)	Effluent to sewer Screening waste (special) Sludge (special)

Detailed description

Process flow diagrams are included in Appendix 4 as :

Figure 1 – New process layout

Figure 2 – Process 2 (DAF)

Figure 3 – Process 3 (Lamella).

The plant incorporates 9 existing storage tanks each of 65m³ capacity. Two tanks are reserved for treated liquor prior to discharging to sewer. One tank is reserved for sludge holding/concentration. Another tank is reserved for storing recovered oil. The other 5 are for storing incoming wastes prior to processing/blending. This gives a total holding capacity of approximately 325m³ of unprocessed liquor.

The various processes proposed for this site include screenings, dilution, mixing, blending, settlement, flotation, concentration, chemical dosing, pH correction. This description gives an outline of the overall process stream rather than treating each individual waste. It is not possible to describe precisely the process to be used on each of the above listed waste streams, with dosing and chemical agents varying depending on influent analysis.

Some of the contaminants cannot be removed by the process equipment to be supplied and will involve a degree of flow balancing and blending to achieve consent levels via dilution. The problem contaminants include Phenols, anti-freeze/glycol, detergents, chlorides and some heavy metals (although metals are generally suitable for precipitation).

Incoming tankers will discharge the liquid waste through a coarse screen to remove the large debris (rags, cups, wood, tools, nuts/bolts etc.). The screenings will slide down a chute into a skip positioned under the curved screen. The liquid and small solids will flow into a sump within the bund area.

There are a total of 5 reception tanks that are valved off from each other but with a drain line back to the main sumps such that they can be re-routed to alternative tanks for blending/mixing/diluting etc. The waste will be left in the reception tanks for up to 24 hours to allow sludge/solids to settle. Sludge pumps will be used to transfer the sludge in the bottom of each tank to a main sludge holding tank where it will be left to concentrate. Drain valves will be used, in conjunction with tun-dishes, to drain the supernatant back to the main sumps from where it will be pumped back to the reception tanks.

Hodge Separators surface skimmers will skim the free-oils/lighter fractions to a small recovered oil holding tank from where it will automatically be pumped to the main 65m³ recovered oil tank. The oil will be discharged from the reception tanks via a valved pipe into a tun-dish.

Sampling points are provided in the reception tanks to enable analysis of the various waste streams i.e. COD, SS, TOG, pH etc. This will be necessary to enable accurate diagnosis of the waste to ensure correct treatment.

For the wastes that fall within discharge consent, either through blending or those within consent on arrival at the depot, will be pumped direct to sewer via the magflow meter and automatic sampler.

Process 2 (see Appendix 4, Figure 2)

The Group 1 ^{oily wastes} wastes outside of consent will be pumped through a Hodge Separators TS180 Tilted Plate Separator where free-oils will be recovered that will be automatically gravity discharged to a small recovered-oil tank. The oil is then automatically pumped to the main 65m³ recovered oil tank. The clarified liquor is gravity discharged to a Dissolved Air Flotation (DAF) plant where chemical dosing and/or pH correction will take place. SS/COD reduction and soluble/vegetable oil splitting will take place in the DAF. The DAF is designed essentially as a flotation plant but the Hodge Separators unit is also designed to remove settleable solids and re-entrained matter as a secondary function.

Sludge pumps will be used to automatically transfer the skimmings and sludge in the DAF tank to a main sludge holding tank where it will be left to concentrate.

The processed aqueous phase will then be pumped to the clarified water holding tank where it can be analysed prior to discharge to sewer. If it fails to meet the consent it can be re-circulated as appropriate. If consent is met then it can be gravity discharged to main sewer via the magflow meter and auto-sampler.

Sludge will initially be tankered off-site for disposal by a licensed waste contractor. It is anticipated that at some point following commissioning sludge dewatering using a centrifuge system will be introduced. While it is not intended to introduce this facility on construction, provision is being made within the design to allow easy subsequent incorporation. With the introduction of the centrifuge a waste skip will be required to hold the dried 'cake' prior to collection by waste contractor.

Process 3 (see Appendix 4 Figure 3)

The second part of the waste treatment plant designed for Group 2 ^{Industrial Wastes} wastes comprises straight pH correction and alkaline precipitation in the Hodge Separators Lamella Settler to remove contaminants as Hydroxide Sludge. The initial screening, as described above, is undertaken with the product directed to a second sump. From here it will be pumped to a reception tank. One reception tank has a venturi air mixer to keep some of the wastes 'sweet' prior to treatment. If a non-mixer tank is used then the waste will be left in the reception tank for up to 24 hours to allow sludge/solids to settle. Sludge pumps will be used to transfer the sludge in the bottom of each tank to a main sludge holding tank where it will be left to concentrate.

The waste stream will then be pumped to a chemical dosing tank where pH correction will take place. Alkaline dosing and flocculation will then be done to precipitate any metals present. The processed aqueous phase will then be pumped to the clarified water holding tank where it can be analysed prior to discharge to sewer. If it fails to meet the consent it can be re-circulated as appropriate. If consent is met then it can be gravity discharged to main sewer via the magflow meter and auto-sampler.

Sludge pumps will be used to automatically transfer the hydroxide sludge in the bottom of the lamella settler to the sludge holding tank where it will be left to concentrate. Sludge disposal will be as described for process 2 above.

The following list comprises a range of chemicals/contaminants that may be present in the typical waste streams listed above. In many instances only very low-level traces will be found on occasions. The contaminants will arrive in various forms in the waste streams e.g. dissolved, 'free', fine particles, large particles etc. depending upon the product and the source.

Hydrocarbons	Oil (crude, vegetable, synthetic and mineral)
Fats and greases	Detergents (anionic, cationic and amphoteric)
Anti-foaming agents	Anti-corrosion agents
Bactericides, fungicides	Hydrogen Sulphide
Caustic	Petrol/diesel/kerosene
Paint	Dyes (nitro phenol, nitro aniline)
Ethylene Glycol (anti-freeze)	Silt/sludge

Pigments and emulsifiers	Carbon
Bilge water	Drilling muds
Pharmaceutical wastes	Saline solutions
Latex solutions	Paraffin waxes
Activated polymers	Leachate
Ferric chloride	Ferric sulphate
Sulphuric acid	Sodium bisulphate
Ammoniacal Nitrogen	
Aluminium, iron, steel, titanium, nickel, zinc etc. from 'metal-bashing' industry	
General food wastes (dairy, abattoir, sugars, starches, proteins, casein, lactose, animal waste, gelatine, brewery etc.)	

Possible traces of: -

Cadmium	Chromium	Copper	Zinc
Nickel	Lead	Tin	Silver
Phenols	Cyanide		

7. OPERATIONAL CONTROLS

The site is operated in accordance with the UUI Business Management System and site specific procedures where relevant.

7.1 Receipt of wastes -

Site Planning Schedules

Prior to acceptance of a new waste stream (a waste of a specific type from a single source) the producer/carrier/broker will be required to submit a representative sample of the waste, together with a UUI pre-acceptance form (see Appendix 11). If the waste is acceptable a contract between United Utilities Industrial and the customer will be initiated and the Process Scientist will produce a Site Planning Schedule (refer to Business Systems Manual and Procedures Section OP013). The Site Planning Schedule will contain information on incoming waste specification, ongoing re-sampling frequency, acceptable volumes, description, storage and processing arrangements. Copies of Site Planning Schedules will be kept in the site control office and under no circumstances other than a request from the Environment Agency or a direction from the Secretary of State For the Environment will waste be accepted if no Site Planning Schedule is available.

Waste delivery

All drivers of vehicles delivering waste to the licensed facility will report to the person on duty in the site control office. The operator will check the Duty of Care documentation and the carrier must complete a Waste Reception Form,, (refer to Business Systems Manual and UUI Procedure OP014). These

documents will be completed in the site control office. No waste will be accepted at the site without these documents.

Taking account of the Site Planning Schedule the driver of the tanker or IBC load will be directed to the appropriate discharge point. Connection will only be done under the supervision of a member of the site operations team. The site operations team is also responsible for ensuring that no discharge procedures are commenced until the site containment isolation valves have been shut. Where IBC's are being unloaded for temporary storage, the same procedure will apply for unloading in the dedicated IBC area. The site chemist is responsible for considering any waste storage incompatibilities at this stage.

Unscheduled Waste

If any unknown / unscheduled waste is delivered the delivery vehicle will be directed to the emergency holding area as shown on drawing (refer to Appendix 2) and remain there until the waste has been identified and either accepted or rejected. If the operator suspects that further movement of the waste would constitute an offence under the Environmental Protection Act 1990 or would give rise to a high level of risk of harm to the environment or human health, the Environment Agency will be contacted to seek guidance on the appropriate course of action. Details of any unknown/unscheduled waste delivery will be entered in the site diary and the Waste Reception Form retained.

Non-conforming loads

Where a load has been accepted onto site within the terms of the site planning schedule but is subsequently found to be a non-conforming load, the following measures shall be taken by the site operative :

- ◆ Isolate tank by closing outlet valves
- ◆ Do not allow any further discharges into the tank. Remove all delivery tags for that tank as a backup.
- ◆ Hold the tanker carrier on site and contact the operations manager to inform him of the incident
- ◆ Complete an incident report form in accordance with UUI business procedures

The Operations Manager will then inform all relevant parties (eg the Environment Agency and UUI customer services), and decide upon an appropriate course of action – typically separation then removal of non-conforming material (if an oil based load) or removal of the entire tank contents.

7.2 Normal Disposal/Despatch of Waste

Effluent

Treated effluent is pumped into the municipal waste water treatment works inlet under controlled conditions as described in steps (i) to (iii) in section 7.3. The rate of flow is recorded by a flow monitor. The discharge agreement is held at Head Office.

Sludge

Sludges generated from the treatment process are collected in dedicated skips which are disposed of in accordance with the site waste management procedures (see section 8.11).

7.3 Procedures if treated effluent remains outside the specification of the Trade Effluent consent

The following steps are to be taken in the event of treated effluent failing to meet the discharge consent conditions :

- (i) Prior to discharge to sewer the aqueous phase(final effluent) arising from the treatment process is stored in a clarifying tank
- (ii) The contents of this tank will be analysed prior to discharge to ensure that it is within acceptable limits, set out in the Trade Effluent Consent
- (iii) If consent is met the final effluent will be gravity fed to sewer via a magflow meter and auto-sampler
- (iv) If consent is not met then the final effluent will be re-circulated for further treatment
- (v) During discharge to sewer the auto-sampler will take composite samples. These will be frequently analysed to ensure compliance is maintained
- (vi) If discharges are nearing consented limits they will be stopped immediately and re-circulated for further treatment. Reasons for this increase in waste strength will be identified and resolved
- (vii) In the unlikely event that this procedure fails and final effluent is discharged outside consent, once realised discharges will be stopped immediately
- (viii) The operator at Bridgend WMC would contact personnel in charge of the receiving Sewage Treatment Works at Pen-Y-Bont on 01656 880072 to inform them of the breach.
- (ix) This would also be the case if a spillage on site, which was outside the consented limits, breached the containment measures and entered the sewer.
- (x) Detail of the incident and all communications would be recorded in the site diary, the Operations Manager would be consulted and incident report forms completed

7.4 Procedures in the event of flood alerts at the Pen-y-Bont Sewage Treatment works

This procedure is to be followed on notification by Welsh Water or the Environment Agency of a flood alert related to the trunk sewer or sewage treatment works that requires temporary cessation of discharges from the site.

- ◆ During working hours (08.00-16.00 Monday to Friday, 08.00-12.00 Saturday) Pen-Y-Bont STW to contact Bridgend WMC on 01656 862136 to inform the site of requirements / restrictions on discharges
- ◆ Site operators would make every effort to assist with the situation and reduce or stop discharges until the problems were resolved
- ◆ Outside working hours there are no discharges to sewer from site. However, if Pen-Y-Bont STW suspected a breach of containment and release to sewer from site during this period (or required to notify the site with regards other actions) then the United Utilities Industrial (UUI)

Operations Manager on standby could be contacted via the emergency number ie. 01443 452460. A UUI operator would be sent to site to investigate the situation if appropriate.

- ◆ Details of the incident and all communications would be recorded in the site diary, the Operations Manager would be consulted and incident report forms completed

7.5 Measurement of wastes

The quantity of waste generated is measured on the basis of output monitoring at the point of discharge / disposal. Effluent discharge to the STW is measured via a flow monitor whilst the process sludge is currently weighed at the final disposal site and the figures transferred to the site records when the weigh-bridge tickets are returned.

7.6 Sampling

New waste streams

All new waste streams are sampled and analysed prior to delivery to ensure they match the producers description. The producer's description will come in the form of the pre-acceptance form. The sample will be taken from the waste producer's source and analysed for a range of determinants selected on the basis of the process from which the waste arises and any other contaminating factors which may be present. The analytical results will be used to determine the acceptability of the waste on the basis of:

- Limitations of the Site Waste Management Licence
- The suitability of the waste for the process types operated on site
- The current operational capability of the site
- Compatibility with other wastes with which it will be stored/mixed
- Any potential effects on the final effluent, which could breach the discharge agreement.

This information will be used to produce the Site Planning Schedule as per section 7.1 above.

Existing waste streams

Once waste is accepted at the site the ongoing sampling requirements for any given waste stream is specified in the Site Planning Schedule. On site analysis is by means of a stick test while a sample is despatched for laboratory analysis and a sub-sample is retained on-site for two weeks, in a dedicated sample refrigerator situated in the control room.

On-site analysis results are recorded on the UUI standard Field analysis Sheet. If the results of ongoing analysis fall outside the parameters agreed with the waste producer, the Operations Manager shall be informed and will decide the appropriate course of action.

Effluent discharged from the treatment facility

The effluent discharged to the STW must meet the agreed discharge limits set out in the Trade Effluent discharge consent.

Laboratory analysis

All laboratories used for analysis will be accredited for whichever determinants are being analysed. Copies of accreditation's will be retained on site and made available on request to any Environment Agency officer.

Sampling protocol

All the sampling and analysis described above is carried out in accordance with the sampling protocol in Appendix 5 to ensure consistency and reliability of measurements.

8.0 ENVIRONMENTAL PROTECTION STANDARDS

8.1 Inspection

As part of the daily site inspection procedure (see section 5) a check will be made on environmental issues that may arise from the site. These will be recorded on the daily and weekly record sheets, which will be kept at the site office for review. The following issues are covered on the inspection checklist :

- ♦ Vermin
- ♦ Odour
- ♦ Noise
- ♦ Dust
- ♦ Litter
- ♦ Bunding
- ♦ Spills and leaks

The following preventative measures and operational controls relate to these and other actual and potential environmental issues associated with the site :

8.2 Vermin

Immediate action will be taken to rid the site of any such infestation. Appropriate bait and eradication methods will be used by engaging a specialist company.

8.3 Odour

Odorous waste will be identified during the sampling, analysis and checking procedures. The nature of the waste will be assessed and the laboratory and/or analysis at the facility will ensure that the odour can be effectively removed by treatment.

Preliminary identification of an odour problem on site will take place by experienced site operatives who will carry out a small survey using an odour recording sheet. Discharge points and holding tanks will be scored on a 1 to 3 score chart as follows :

- 1 - no smell
- 2 - weak
- 3 - strong

Where odour problems are detected the source of the nuisance will be traced and the matter will be reported to the Operations Manager. The Operations Manager will then determine appropriate action typically either the cessation of treatment of the problem waste stream or the implementation of odour control measures.

8.4 Noise

Where a noise beyond the normal levels associated with the plant is observed, the source of noise will be identified and isolated. Appropriate measures will be taken to reduce the noise either by screens, repair or replacement of the machinery.

To minimise the effects of traffic noise, deliveries to the facility will normally take place between 08-00 to 17-00 hours Monday to Friday and 08-00 to 14-00 hrs on Saturday.

8.5 Dust

Because of the nature of the operation, dust is not expected to be a significant problem at the site. However, the area will be hosed down on a regular basis using a nearby water supply and should a problem occur a review of the vehicle manoeuvring area will take place immediately.

8.6 Litter

Due to the nature of the operation, litter is not expected to be a significant problem. However, the site area will be litter picked regularly and the waste generated disposed of in accordance with the site waste management procedure.

8.7 Chemical delivery and storage

Chemical delivery takes place in the unload area adjacent to the storage tanks and IBC holding area. Delivery takes place in strict accordance with the Chemical supplier's comprehensive discharge procedure (see Appendix 7). In the event of a change of supplier similar standards of pollution prevention controls will be demanded.

Chemical storage is in dedicated areas on site, which are appropriately bunded and identified. Most materials are stored in bulk containers, either in situ tanks or supplier's IBCs. 25kg containers are used for flocculants and these are also stored in clearly marked and bunded areas. Where chemical mixing is a concern highlighted in the material safety data sheet, particular care will be taken to ensure adequate separation of materials and containment bunds.

8.8 Spillages

Any spillage of effluent, solid waste or process chemicals will be reported to the Operations Manager and recorded on the daily inspection sheet. The general procedures included in the site emergency plan (see Appendix 6) for dealing with effluent and chemical spills should be followed as appropriate.

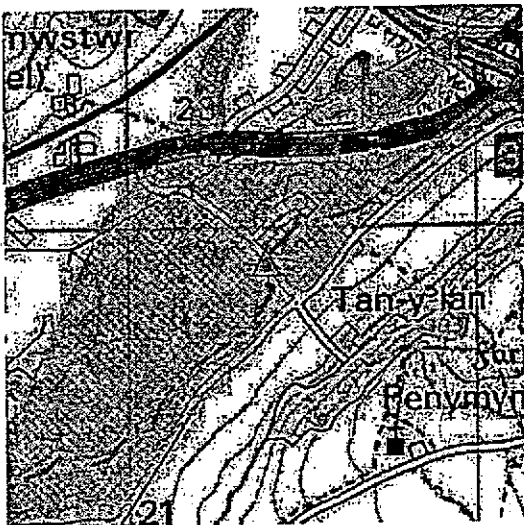
8.9 Groundwater Protection

Groundwater protection is a priority on the site and is primarily achieved through safe handling and storage procedures for effluent and chemicals, effective secondary containment and regular inspections to ensure the integrity of both storage and containment facilities are intact.

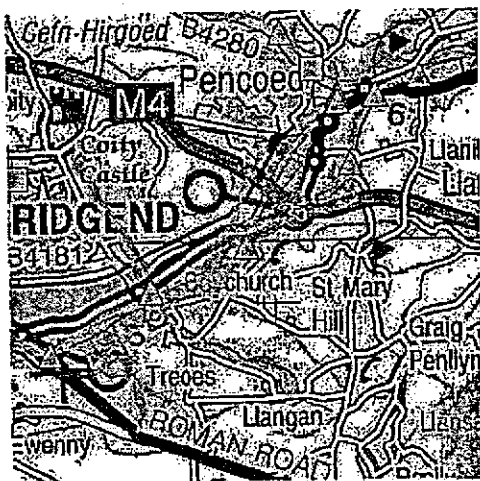
In addition to these preventative measures groundwater monitoring is also carried out on an annual basis in accordance with the site report recommendations (baseline site report is kept at the regional head office).

8.10 Flood Monitoring

Although a flood has not to date affected the site, the Bridgend Waste Management Centre is within an Environment Agency indicative floodplain area, as shown on the following maps. The principle implications of flooding on the site are based around the integrity and capacity of the trunk sewer. Under extreme flood conditions the sewer may be at risk of back up and uncontrolled discharge. Therefore under conditions of high flood risk it is important that the Bridgend site ceases to discharge effluent to the sewer in order to prevent uncontrolled releases of effluent from the site as part of the wider trunk sewer flooding. While responsibility for notification of a requirement to cease discharge essentially lies with Welsh Water (under the terms of the procedure described in section 7.4), the site operator will monitor the flood risk at the site and initiate a halt to discharge if the risk is perceived as high. Flood risk will be assessed initially through observation of local conditions in the watercourses nearest to the site. In addition, where adverse weather conditions indicate the possibility of flooding confirmation of perceived risk may be available by liaison with the Environment Agency via the Floodline (0845 9881188) or Welsh Water at the Pen y Bont STW (01656 880072)



Shaded areas = indicative floodplain (from EA website)



8.11 Waste Management

All waste generated on site will be dealt with under the terms of the Environmental Protection (Duty of Care) Regulations. Broadly speaking these regulations require UUI to ensure that :

- ◆ Any waste generated is stored appropriately on site – this includes the segregation of special waste and the general office refuse, and the appropriate identification and bunding of any special waste (mainly sludge from process 2 and 3. It is the responsibility of the site operative to ensure that this is carried out on site.
- ◆ Only transfer waste to licensed carriers and disposal sites. It is the responsibility of the operations manager to ensure that the waste contractors are appropriately licensed.
- ◆ Keep records of waste removed from site. A standard transfer note is used for recording the collection of all non-special waste (packaging and general waste). A copy is included in Appendix 8. Special waste consignment notes are used for all movements of sludge, chemical test waste (and any other special waste) from site. Pre-notification to the Environment Agency of waste movement is carried out at least 3 working days prior to collection. Consignment notes are provided by the waste contractor. It is the responsibility of the site operator to ensure that all documentation is completed and filed on site. Records must be kept for at least 3 years.

The following waste streams have been identified for the facility. Estimated quantities have been included together with waste classifications and proposed disposal / recovery route.

Waste stream description	Estimated quantities	Waste classification	Disposal / recovery route
Office / general waste	1 small wheelie bin per week	Controlled waste	Collected on weekly basis by municipal waste contractor – disposal to landfill
Waste testing materials.	Approximately 6 COD vials and 4 Ammonia test vials daily	Special waste	Stored in boxes provided by the manufacturer and collected periodically by supplier
25kg process chemicals containers	Approx. 40 / year	Controlled waste	Included in general waste bin as above or returned to supplier
Bulk containers – incoming waste	Unknown – demand for IBC input unlikely to represent a significant proportion of plant input	-	Returned to supplier
Bulk containers – process chemicals	Unknown – most will be pumped out directly to storage tanks	-	Returned to supplier
Process sludge,	3375 tonnes (estimated at 7.5% of input)	Special waste	Licensed landfill

Process screening waste	Unknown – estimate at 1% of input = 450 tonnes	Special waste	Licensed landfill
-------------------------	--	---------------	-------------------

The disposal routes specified represent the perceived current best option for the waste streams. Packaging waste has been minimised through the maximisation of bulk chemical provision as a requirement during the design phase. The 25kg electrolyte containers are currently not returnable but this will be reviewed on a regular basis and a switch made to returnable containers when this becomes an option in the future.

8.12 Materials change procedure

Process chemicals (in particular flocculants) are on occasion substituted in order to treat variations in effluent characteristics. Where this occurs due consideration will be given to the health, safety and environmental characteristics of the substitute chemicals by reference to the relevant material safety data sheets (i.e. a thorough COSHH assessment). Wherever possible, chemicals of equivalent or lower HSE hazard will be selected.

8.13 Energy management

In order to minimise energy consumption from the process, site operators will ensure that any equipment and lighting that is not required is promptly turned off. This is particularly important during the plant shutdown operation at the end of each working day.

In addition the operations manager is responsible for ensuring that any replacement plant or equipment is of a high energy efficiency specification wherever possible.

9. KEY PERFORMANCE STANDARDS

9.1 Operational consent limits

The key source of operational consent conditions for the Bridgend WMC arise from the site :

- ◆ Planning permission
- ◆ PPC authorisation
- ◆ Trade effluent discharge consent

A summary of the key requirements from each document is provided in Appendix 9. This summary effectively represents the site's licence to operate conditions and is a crucial reference during site operations.

9.2 Performance monitoring and reporting

Statutory reports detailing the environmental conditions within the licensed facility will be submitted to the Environment Agency in accordance with the terms of the PPC authorisation.

10. HEALTH AND SAFETY ARRANGEMENTS

10.1 General

The Health & Safety of all staff and operational procedures is governed by the holding company's policy on Health & Safety (copy available for inspection at the site office). In addition to this document and specific to the site, the following will be adhered to:

10.2 Risk assessment

Risk assessments will be performed as advised in the company Health and Safety procedures under the direction of the Operations Manager. The recommendations, if any, from these assessments will be incorporated in the operations.

10.3 COSHH

COSHH data relevant to all substances hazardous to health shall be available on site in the Health & Safety file.

10.4 Confined space working

All staff that are expected to work in confined spaces shall have the appropriate training (Refer to Health and Safety Procedures). All staff training records are held at Head Office and on site in the Health and Safety File.

10.5 Permit to work procedures

Where deemed necessary, members of staff elected by the Regional Operations Manager may implement the Permit to work System (Refer to Health and Safety Procedures). The Regional Operations Manager shall make sure that the elected members of staff are trained in the issue of Permits.

10.6 External Visitors

Every person not employed directly on the site will be regarded as an External Visitor and will be required to undergo site induction including the acknowledgement of site safety procedures (Appendix 1). All tanker drivers delivering waste to the site and other regular visitors are required to read these instructions and sign a document confirming that they have read and understood them. Chemical deliveries shall follow the procedure defined in Appendix 7.

10.7 Control of Contractors

Refer to Health and Safety Procedure Manual (Section 8.5).

10.8 Review of Health and Safety Records

The most appropriate corrective action for each incident, irrespective of type or code, will be taken at the time of the event and noted in the relevant record format.

Any incidents will be reported at time of occurrence to United Utilities Industrial General Manager.

However, on a 6 monthly basis all health and safety records will be reviewed by the Management Representative so as to identify any possible common feature and therefore identify any preventative actions, which may be taken to reduce the occurrence of the event.

These reviews will form the basis of information made available for the business annual (management) review.

11. RECORDS AND COMMUNICATIONS

11.1 Pro-formas and record maintenance

All documented records should be kept for a minimum period of two years. Site records will be completed on the following pro forma sheets.

- ◆ Daily Inspection Sheet
- ◆ Weekly Inspection Sheet
- ◆ Incident Response Book
- ◆ Incident Report
- ◆ Reception Form
- ◆ Disposal form - Record of analysis
- ◆ Site Instruction Sheet
- ◆ Daily Odour Recording Sheet
- ◆ Site Planning Schedule
- ◆ On site sampling record
- ◆ On-site daily Volume Log

A summary of a year's events must be kept and retained for inclusion in the site hand-over document when the site licence is returned. The site operator is responsible for the day to day generation and upkeep of all site records.

11.2 Internal communications

Internal communications are based on a combination of formal (eg procedures, memos, site reports etc) and informal verbal mechanisms. The very small number of staff involved means that for most purposes informal communication of site issues and concerns is appropriate.

11.3 External communications

The principal types of external communications are with :

- ◆ Site regulators – the Environment Agency, Bridgend County Borough Council and Welsh Water. Communications including routine reporting, consultation and incoming messages are all via the regional operations manager. In emergency scenarios other personnel may initiate contact with the regulators in accordance with the site emergency plan.
- ◆ Complaints / inquiries from the public – these communications are dealt with in accordance with the UI Procedure for incoming complaints (OPO16)

12. AUDITS

Business management systems audits are carried out on a regular basis in accordance with the UI Internal audit and review procedure (OPO15)

Appendix 1 – Site induction form

UNITED UTILITIES INDUSTRIAL SITE HEALTH AND SAFETY PROCEDURES SITE INDUCTION
--

ISSUED TO: _____

COMPANY: _____

TEL: _____

VEHICLE REG: _____

SITE: _____

BACKGROUND

Bridgend Waste Treatment Centre is an operational works with United Utilities Industrial staff based on site. Directions to reporting centres are clearly sign-posted. United Utilities Industrial sites can be particularly active during the summer months with visitors, including children, present on the works.

1.0 VISITORS, CONTRACTORS, TANKER DRIVERS, etc.

- 1.1 All visitors must report to a United Utilities Industrial representative on site.
- 1.2 All visitors to the site will receive a site induction and a record of that induction will be kept on file.
- 1.3 Basic details such as contact telephone numbers, vehicle registration number, company, etc., are to be provided to United Utilities Industrial, and will be recorded on this induction document.
- 1.4 United Utilities Industrial contact telephone numbers are displayed on the notice board.

2.0 ACCESS

2.1 Access to the works will be via the main entrance gate. The site operational hours are as follows, unless alternative arrangements are agreed:

Monday to Friday	0700-1700
Saturday	0700-1400
Sunday	Closed

2.2 Site keys and Barrier cards (if applicable) will be issued to agreed visitors, contractors, tanker drivers, etc. and records kept.

3.0 SITE RULES

- 3.1 All visitors, contractors, tanker drivers, etc. will comply at all times with the current "Health and Safety at Work Act".
- 3.2 All visitors, contractors, tanker drivers, etc. will comply at all times with United Utilities Industrial instructions and notice boards on site.
- 3.3 All visitors, contractors, tanker drivers, etc. will not wander outside of the designated routes.
- 3.4 Do not turn any equipment on or off without the permission of a United Utilities Industrial site representative.
- 3.5 Lock gates when leaving site (if last person out).
- 3.6 Report all accidents, dangerous occurrences, spillages, etc. immediately to site personnel.

4.0 WELFARE

- 4.1 Good hygiene precautions must be observed, as personnel on site may come into contact with sewage which is known to carry water borne diseases such as typhoid, polio, tetanus, hepatitis, and Leptospirosis (Weil's disease). Open wounds should be protected by a waterproof dressing and any injury on site should be dressed immediately and medical attention sought.
- 4.2 A First Aid Kit is available in the main admin block, with First Aiders named on the Safety notice board.
- 4.3 Do not use United Utilities Industrial facilities without permission.
- 4.4 All welfare facilities are to be kept clean and tidy.
- 4.5 Where applicable, personal protective clothing (PPE) must be worn.
- 4.6 The drinking of alcohol during work hours is forbidden.

DECLARATION

I have read and understood the above and agree to abide by all United Utilities Industrial site rules and regulations as detailed.

SIGNED (Recipient) _____ Date: _____

AUTHORISED BY (United Utilities Industrial) _____

Date: _____

Appendix 2 – Site infrastructure plan

Final drawings to be included on completion

**Appendix 3 – Infrastructure inspection sheet and
maintenance checklists (daily , weekly, monthly, 6-monthly, annual)**

(Note: these checklists are samples only and will require customisation on receipt of the Hodges plant operations and maintenance manual)

Bridgend WMC INFRASTRUCTURE INSPECTION
SHEET

WEEK BEG.....

Please mark all equipment and infrastructure with a tick if good, or a cross and write deficiencies in comments box. If not applicable, mark N/A. Appropriate action should be taken depending on the deficiency. All actions should be reported to the site manager. Please initial the checks in the relevant box next to the cross or tick.

ITEM	MON	TUE	WED	THU	FRI	SAT	SUN	COMMENTS
FIREFIGHTING EQUIPMENT								
FIRST AID								
EYEWASH BOTTLES								
EMERGENCY SHOWER								
OTHER EMERGENCY EQUIPMENT								
ODOUR (GRADE 1-3, 3 BEING WORST)								
NOISE								
DUST			once per week					
VERMIN								
LITTER								
SERVICES/LIGHTING								
TANKS/BUNDS								
PIPEWORK/LEAKS/SPILLS			once per week					
NOTICE BOARDS/SIGNAGE								
DRAINAGE								
FENCING								
GATES								
ROADWAYS			once per week					

Signed.....

Date.....

These are sample maintenance logs, Actuals to be compiled once O/M manuals have been handed over. DAILY maintenance checklist

WEEK COMMENCING (DATE).....

More detailed information will be found in the O&M manuals (where available)

The following inspections will be carried out by site staff to ensure all equipment is maintained in a suitable condition to perform its function.

G = GOOD CONDITION, NO WORK REQUIRED, OTHERWISE NOTE ANY ACTIONS TAKEN

NOTE ANY DEFECTS IN SITE DIARY AND REPORT TO OPERATIONS MANAGER OR TEAM LEADER

ITEM	MON	TUES	WED	THUR	FRI	SAT	SUN	COMMENTS
Check BLOWER for correct operation								
Listen for any abnormal noise, and check for evidence of belt damage, oil leaks or excessive heat.								
Check inverter speed in relation to dissolved oxygen								
Check RAS PUMP for correct operation								
Listen for abnormal noise, and check for oil leaks								
or excessive heat.								
Note ammeter reading.								
Check output by opening surplusing valve.								
Check FINAL EFFLUENT PUMP for correct operation								
Listen for any abnormal noise / vibration								
Note ammeter reading.								
Check RECIRCULATION PUMPS for correct operation								
Observe outlet flow from duty pump, and listen for any								

WEEKLY maintenance duties (to be carried out in addition to the daily checks)

WEEK COMMENCING
(DATE).....

More detailed information will be found in the O&M manuals (where available)

The following duties will be carried out by site staff to ensure all equipment is maintained in a suitable condition to perform its function.

G = GOOD CONDITION, NO WORK REQUIRED, OTHERWISE NOTE ANY ACTIONS TAKEN
NOTE ANY DEFECTS IN SITE DIARY AND REPORT TO OPERATIONS MANAGER OR TEAM LEADER

ITEM	DETAILS	Signature
BLOWER		
Grease bearings - 2 shots per week		
Check belt tension		
Check oil level - top up if necessary		
R.A.S. PUMP		
Check gearbox oil level - top up if necessary		
Sodium Hypochlorite Dosing Pump		
Test pump with water		
Ferric Chloride Dosing Pump		
Test pump with water		
Checks carried out by (Signature) :		

MONTHLY maintenance duties (to be carried out in addition to daily and weekly checks)
More detailed information will be found in the O&M manuals (where available)

The following inspections will be carried out by site staff to ensure all equipment is maintained in a suitable condition to perform its function.

G = GOOD CONDITION, NO WORK REQUIRED, OTHERWISE NOTE ANY ACTIONS TAKEN
NOTE ANY DEFECTS IN SITE DIARY AND REPORT TO OPERATIONS MANAGER OR TEAM LEADER

ITEM	DATE	DETAILS	Signature
BLOWER			
Change the gearcase oil (use SAE40)			
Clean air filter			
DOMESTIC LOGGER			
Grease rotork valve spindle			
DISSOLVED OXYGEN PROBE			
Calibrate unit and clean floatation ball			
Checks carried out by (Signature) :			

SIX MONTHLY maintenance duties (to be carried out in addition to daily, weekly, and monthly checks)

More detailed information will be found in the O&M manuals (where available)

The following inspections will be carried out by site staff to ensure all equipment is maintained in a suitable condition to perform its function.

G = GOOD CONDITION, NO WORK REQUIRED, OTHERWISE NOTE ANY ACTIONS TAKEN

NOTE ANY DEFECTS IN SITE DIARY AND REPORT TO OPERATIONS MANAGER OR TEAM LEADER

ITEM	DATE	DETAILS	Signature
BLOWER			
Check that all fixing bolts and nuts are secure			
Check that all guarding and covers are sound			
RAS PUMP			
Change gearbox oil			
RECIRCULATION PUMPS			
Lift pumps & remove any debris - wash down			
Check impeller for wear and movement			
Check power cables and glands for damage			
Clean out recirculation well (use approved contractor)			
T01 MIXER			
Lift mixer & remove any debris from blade - wash down			
Check blade for wear and movement			
Check power cable and gland for damage			
ANOXIC TANK MIXER			
Drain down anoxic tank and remove any debris			
Inspect mixer blade for excessive wear			
Check gearbox oil - top up if required			
Checks carried out by (Signature) :			

ANNUAL maintenance duties

More detailed information will be found in the O&M manuals (where available)

The following inspections will be carried out by site staff to ensure all equipment is maintained in a suitable condition to perform its function.

G = GOOD CONDITION, NO WORK REQUIRED, OTHERWISE NOTE ANY ACTIONS TAKEN

NOTE ANY DEFECTS IN SITE DIARY AND REPORT TO OPERATIONS MANAGER OR TEAM LEADER

ITEM	DATE	DETAILS	Signature
BLOWER			
Change air filter			
Change drive belts			
Check EMERGENCY STOP for correct operation			
Carry out statutory check on drive panel			
RAS PUMP			
Check EMERGENCY STOP for correct operation			
Carry out statutory check on drive panel			
FINAL EFFLUENT PUMP			
Check EMERGENCY STOP for correct operation			
Carry out statutory check on drive panel			
RECIRCULATION PUMPS			
Check EMERGENCY STOP for correct operation			
Carry out statutory check on drive panel			
Carry out statutory check on lifting davit			
T01			
MIXER			
Check EMERGENCY STOP for correct operation			
Carry out statutory check on drive panel			
Carry out statutory check on lifting winch			

Checks carried out by (Signature) :

Appendix 4 – Process drawings

Figure 1 – New process layout

Figure 2 – Process 2 (DAF)

Figure 3 – Process 3 (Lamella).

Final drawings to be included on completion

Appendix 5 – Sampling and Analysis Protocol

Sampling Schedule -

Sampling Prior to Discharge for Treatment	In-Process Sampling	Final Effluent Sampling Prior to Sewer Discharge
On site analysis in accredited laboratory	On site analysis in accredited laboratory	On site analysis in accredited laboratory
On every load (detailed on specific Site Planning Schedule) Stick Tests - pH, cyanide, nickel, copper, lead. Odour/Visual assessment	Specific to the waste being treated as decided by the site chemist. To include some or all of the following: pH, COD settled, COD total, cyanide, phenols, solids, oil content, ammonia	Specific to the waste being treated as decided by the site chemist. To include some or all of the following: pH, COD settled, COD total, cyanide, phenols, solids, oil content, ammonia
As detailed on the specific Site Planning Schedule, determined by pre-characterisation analysis includes some or all of the following: pH, ammoniacal, nitrogen, COD total, BOD, total suspended solids, fats/oils/grease, phenols, cyanide, nickel, chromium, zinc, copper, lead, sulphate, anionic surfactants	Specific to the waste being treated as decided by the site chemist. To include some or all of the following: pH, COD settled, COD total, cyanide, phenols, solids, oil content, ammonia	Analysis which is unable to be completed on site Once per fortnight for the following (All send to cross check site analysis) pH, ammoniacal, nitrogen, COD settled, COD total, total suspended solids, Fats/oils/grease, anionic surfactants, phenols, cyanide, nickel, chromium, zinc, copper, lead, sulphide, sulphate

Appendix 6 – Site emergency plan

To be completed post construction in a similar format to the enclosed example.

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Introduction
and
Index

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Introduction

Emergency Planning. (05-April-2000)

These instructions or guidelines have been reviewed by United Utilities Industrial and Dairy Crest (where applicable) as a result of past experience in operating the Haverfordwest Waste Management Centre.

Their purpose is to ensure that in the event of an emergency, United Utilities Industrial's representative on site, would know how to deal with the situation, in order to minimise risk to themselves and to others, and to prevent environmental incidents or pollution, and to satisfy company procedures.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Index

1. A major spill at Dairy Crest factory of Nitric Acid, finding its way into the United Utilities Industrial Effluent Treatment Plant.
2. A major spill at Dairy Crest factory of Caustic Soda, finding its way into the United Utilities Industrial Effluent Treatment Plant.
3. A major spill at Dairy Crest factory of Fuel Oil, finding its way into the United Utilities Industrial Effluent treatment Plant.
4. A major spill at Dairy Crest factory of Concentrate Whey or Milk, finding its way into the United Utilities Industrial Treatment Plant.
5. A major spill at the United Utilities Industrial Plant of Ferric Chloride.
6. A major spill at the United Utilities Industrial Plant of Sodium Hydroxide. (Caustic).
7. A major spill at the United Utilities Industrial Treatment Plant, of Domestic Sewage or Leachate due to a Tanker Accident.
8. A major spill at the United Utilities Industrial Treatment Plant of Milky Effluent or Leachate due to a Ruptured Storage Tank.
9. A major increase of influent volume into the United Utilities Industrial Treatment Plant, due to a Fire and the use of Fire Fighting Water, or due to Severe Storm Conditions at the Dairy Crest Factory.
10. A Fire at the United Utilities Industrial Treatment Plant.
11. Persons falling into a tank with the potential of Drowning.
12. Loss of Electrical Supply to the United Utilities Industrial Treatment Plant.
13. Serious Process Failure at the United Utilities Industrial Treatment Plant.
14. Serious Process Failure at the Sewage Treatment Plant.
15. Blockage or Failure of the Mainstream or Condensate Pipeline.
16. Failure of telemetry outstation
17. Determining use of tankers to empty one of the balance tanks

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for a major spill
at Dairy Crest factory of nitric acid, finding its way
into the United Utilities Industrial Effluent Treatment Plant

Number 1

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for a major spill at Dairy Crest factory of nitric acid finding its way into the United Utilities Industrial Effluent Treatment Plant

Note - This will be identified either by telephone communication from Dairy Crest factory personnel via the Swansea Control Emergency Procedure to the United Utilities Industrial duty manager, or the 24 hour pH telemetry monitoring system, or at the start of each day when the Operator carries out his routine site checks.

Actions required

- Immediately stop the forward feed to the process by switching off the DAF feed pumps on the control cabinet.
- Isolate the contaminated tank by closing the outlet valve.
- Contact the duty manager at Dairy Crest factory (24 hour contact 01437 762852 or mobile no. 07989 836679) to enquire whether the emergency is under control, if not continue to feed the same balance tank until the emergency is under control.
- When the situation is under control at the factory, United Utilities Industrial will request Dairy Crest duty manager to release Caustic Soda down the mainstream line at a controlled rate to neutralise the contaminated balance tank of effluent.
- At all times during the emergency, periodic contact should be maintained with the Dairy Crest factory duty manager.
- Careful monitoring of the pH in the contaminated balance tank will continue until such a time that the effluent pH has risen to about pH 8.
- Once the balance tank pH 8 is reached, Dairy Crest factory duty shift manager will be asked to stop discharging the Caustic Soda.
- United Utilities Industrial will then re-start the process, keeping a careful eye on the DAF treatment so as not to cause damage to the bio-filter.
- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for a major spill
at Dairy Crest factory of fuel oil finding its way
into the United Utilities Industrial Effluent Treatment Plant

Number 3

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for a major spill at Dairy Crest factory of fuel oil finding its way into the United Utilities Industrial Effluent Treatment Plant

Note - This will be identified either by telephone communication from Dairy Crest factory personnel via the Swansea Control Emergency Procedure to the United Utilities Industrial duty manager or at the start of each day when the Operator carries out his routine site checks.

Actions required

- Immediately stop the forward feed to the process by switching off the DAF feed pumps on the control cabinet.
- Isolate the contaminated tank by closing the outlet valve.
- Contact the duty manager at Dairy Crest factory (24 hour contact 01437 762852 or mobile no. 07989 836679) to enquire whether the emergency is under control, if not continue to feed the same balance tank until the emergency is under control.
- When the situation is under control at the factory, United Utilities Industrial will request Dairy Crest duty manager to release copious amounts of water or effluent to wash the residues out of the mainstream line. There would also be a need to clear the residues right back to the source.
- At all times during the emergency, periodic contact should be maintained with the Dairy Crest factory duty manager.
- Careful monitoring of the mainstream influent will continue until such a time that there is no evidence of contaminated effluent.
- Once the mainstream influent is deemed back to normal, UUI will switch over to the other balance tank and the Dairy Crest factory duty manager will be informed of the change.
- United Utilities Industrial will then initiate a professional clean-up using experienced expertise and equipment. (Shanks Waste Solutions have been used during previous incidents- 24 hour no 01269 846200).
- United Utilities Industrial will then contact the E/A (24 hour contact no. 02920 770088) to inform them of the situation and requesting a Special Waste Consignment Note, to transfer the Special Waste to a designated Special Waste Site (Avonmouth WMC).
- Once the clean-up is complete, United Utilities Industrial will then start the process, keeping a careful eye on the DAF treatment so as not to cause damage to the bio-filter.

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for a major spill
at Dairy Crest factory of concentrate whey or milk finding its way
into the United Utilities Industrial Effluent Treatment Plant

Number 4

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for a major spill
at Dairy Crest factory of concentrate whey or milk finding its way
into the United Utilities Industrial Effluent Treatment Plant

Number 4

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for the A major spill at Dairy Crest factory of concentrate whey or milk finding its way into the United Utilities Industrial Effluent Treatment Plant

Note - This will be identified either by telephone communication from Dairy Crest factory personnel via the Swansea Control Emergency Procedure to the United Utilities Industrial duty manager, or the 24 hour pH telemetry monitoring system, or at the start of each day when the Operator carries out his routine site checks.

Actions required

- Immediately stop the forward feed to the process by switching off the DAF feed pumps on the control cabinet.
- Isolate the contaminated tank by closing the outlet valve.
- Contact the duty manager at Dairy Crest factory (24 hour contact 01437 762852 or mobile no. 07989 836679) to enquire whether the emergency is under control, if not continue to feed the same balance tank until the emergency is under control. Request details of incident in writing from Dairy Crest.
- When the situation is under control at the factory, United Utilities Industrial will request Dairy Crest duty manager to release some Caustic Soda, down the mainstream line to pH correct the contaminated tank.
- At all times during the emergency, periodic contact should be maintained with the Dairy Crest factory duty manager.
- Careful monitoring of the mainstream influent will continue until such a time that there is no evidence of contaminated effluent.
- Once the mainstream influent and the contaminated balance tank is deemed back to normal, the Dairy Crest factory duty manager will be informed of the change.
- United Utilities Industrial site staffs will then re-start the process, keeping a careful eye on the DAF treatment so as not to cause damage to the bio-filter.
- There may be a need to increase/decrease the Ferric dosing and the Poly dosing to achieve the best results across the DAF due to the variation in loading. Careful monitoring using the basic jar tests at site will achieve the best results. UUI to ensure that at least 2 days supply of caustic is available on site at all times.
- In the event that treatment is not possible, then the balance tank will be isolated and the other balance tank will be filled with fresh effluent. Dairy Crest will be informed of this event and discussions will take place in order to determine whether emergency

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

procedure 17 is initiated. The freshly filled balance tank will then be treated on the following day and the off-spec tank bled into the system over time.

- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

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HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Introduction

Emergency Planning. (05-April-2000)

These instructions or guidelines have been reviewed by United Utilities Industrial and Dairy Crest (where applicable) as a result of past experience in operating the Haverfordwest Waste Management Centre.

Their purpose is to ensure that in the event of an emergency, United Utilities Industrial's representative on site, would know how to deal with the situation, in order to minimise risk to themselves and to others, and to prevent environmental incidents or pollution, and to satisfy company procedures.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

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2. A major spill at Dairy Crest factory of Caustic Soda, finding its way into the United Utilities Industrial Effluent Treatment Plant.
3. A major spill at Dairy Crest factory of Fuel Oil, finding its way into the United Utilities Industrial Effluent treatment Plant.
4. A major spill at Dairy Crest factory of Concentrate Whey or Milk, finding its way into the United Utilities Industrial Treatment Plant.
5. A major spill at the United Utilities Industrial Plant of Ferric Chloride.
6. A major spill at the United Utilities Industrial Plant of Sodium Hydroxide. (Caustic).
7. A major spill at the United Utilities Industrial Treatment Plant, of Domestic Sewage or Leachate due to a Tanker Accident.
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9. A major increase of influent volume into the United Utilities Industrial Treatment Plant, due to a Fire and the use of Fire Fighting Water, or due to Severe Storm Conditions at the Dairy Crest Factory.
10. A Fire at the United Utilities Industrial Treatment Plant.
11. Persons falling into a tank with the potential of Drowning.
12. Loss of Electrical Supply to the United Utilities Industrial Treatment Plant.
13. Serious Process Failure at the United Utilities Industrial Treatment Plant.
14. Serious Process Failure at the Sewage Treatment Plant.
15. Blockage or Failure of the Mainstream or Condensate Pipeline.
16. Failure of telemetry outstation
17. Determining use of tankers to empty one of the balance tanks

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for a major spill
at Dairy Crest factory of nitric acid, finding its way
into the United Utilities Industrial Effluent Treatment Plant

Number 1

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for a major spill at Dairy Crest factory of nitric acid finding its way into the United Utilities Industrial Effluent Treatment Plant

Note - This will be identified either by telephone communication from Dairy Crest factory personnel via the Swansea Control Emergency Procedure to the United Utilities Industrial duty manager, or the 24 hour pH telemetry monitoring system, or at the start of each day when the Operator carries out his routine site checks.

Actions required

- Immediately stop the forward feed to the process by switching off the DAF feed pumps on the control cabinet.
- Isolate the contaminated tank by closing the outlet valve.
- Contact the duty manager at Dairy Crest factory (24 hour contact 01437 762852 or mobile no. 07989 836679) to enquire whether the emergency is under control, if not continue to feed the same balance tank until the emergency is under control.
- When the situation is under control at the factory, United Utilities Industrial will request Dairy Crest duty manager to release Caustic Soda down the mainstream line at a controlled rate to neutralise the contaminated balance tank of effluent.
- At all times during the emergency, periodic contact should be maintained with the Dairy Crest factory duty manager.
- Careful monitoring of the pH in the contaminated balance tank will continue until such a time that the effluent pH has risen to about pH 8.
- Once the balance tank pH 8 is reached, Dairy Crest factory duty shift manager will be asked to stop discharging the Caustic Soda.
- United Utilities Industrial will then re-start the process, keeping a careful eye on the DAF treatment so as not to cause damage to the bio-filter.
- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for a major spill
at Dairy Crest factory of fuel oil finding its way
into the United Utilities Industrial Effluent Treatment Plant

Number 3

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for a major spill
at Dairy Crest factory of fuel oil finding its way
into the United Utilities Industrial Effluent Treatment Plant

Note - This will be identified either by telephone communication from Dairy Crest factory personnel via the Swansea Control Emergency Procedure to the United Utilities Industrial duty manager or at the start of each day when the Operator carries out his routine site checks.

Actions required

- Immediately stop the forward feed to the process by switching off the DAF feed pumps on the control cabinet.
- Isolate the contaminated tank by closing the outlet valve.
- Contact the duty manager at Dairy Crest factory (24 hour contact 01437 762852 or mobile no. 07989 836679) to enquire whether the emergency is under control, if not continue to feed the same balance tank until the emergency is under control.
- When the situation is under control at the factory, United Utilities Industrial will request Dairy Crest duty manager to release copious amounts of water or effluent to wash the residues out of the mainstream line. There would also be a need to clear the residues right back to the source.
- At all times during the emergency, periodic contact should be maintained with the Dairy Crest factory duty manager.
- Careful monitoring of the mainstream influent will continue until such a time that there is no evidence of contaminated effluent.
- Once the mainstream influent is deemed back to normal, UUI will switch over to the other balance tank and the Dairy Crest factory duty manager will be informed of the change.
- United Utilities Industrial will then initiate a professional clean-up using experienced expertise and equipment. (Shanks Waste Solutions have been used during previous incidents- 24 hour no 01269 846200).
- United Utilities Industrial will then contact the E/A (24 hour contact no. 02920 770088) to inform them of the situation and requesting a Special Waste Consignment Note, to transfer the Special Waste to a designated Special Waste Site (Avonmouth WMC).
- Once the clean-up is complete, United Utilities Industrial will then start the process, keeping a careful eye on the DAF treatment so as not to cause damage to the bio-filter.

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for a major spill
at Dairy Crest factory of concentrate whey or milk finding its way
into the United Utilities Industrial Effluent Treatment Plant

Number 4

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for the A major spill at Dairy Crest factory of concentrate whey or milk finding its way into the United Utilities Industrial Effluent Treatment Plant

Note - This will be identified either by telephone communication from Dairy Crest factory personnel via the Swansea Control Emergency Procedure to the United Utilities Industrial duty manager, or the 24 hour pH telemetry monitoring system, or at the start of each day when the Operator carries out his routine site checks.

Actions required

- Immediately stop the forward feed to the process by switching off the DAF feed pumps on the control cabinet.
- Isolate the contaminated tank by closing the outlet valve.
- Contact the duty manager at Dairy Crest factory (24 hour contact 01437 762852 or mobile no. 07989 836679) to enquire whether the emergency is under control, if not continue to feed the same balance tank until the emergency is under control. Request details of incident in writing from Dairy Crest.
- When the situation is under control at the factory, United Utilities Industrial will request Dairy Crest duty manager to release some Caustic Soda, down the mainstream line to pH correct the contaminated tank.
- At all times during the emergency, periodic contact should be maintained with the Dairy Crest factory duty manager.
- Careful monitoring of the mainstream influent will continue until such a time that there is no evidence of contaminated effluent.
- Once the mainstream influent and the contaminated balance tank is deemed back to normal, the Dairy Crest factory duty manager will be informed of the change.
- United Utilities Industrial site staffs will then re-start the process, keeping a careful eye on the DAF treatment so as not to cause damage to the bio-filter.
- There may be a need to increase/decrease the Ferric dosing and the Poly dosing to achieve the best results across the DAF due to the variation in loading. Careful monitoring using the basic jar tests at site will achieve the best results. UUI to ensure that at least 2 days supply of caustic is available on site at all times.
- In the event that treatment is not possible, then the balance tank will be isolated and the other balance tank will be filled with fresh effluent. Dairy Crest will be informed of this event and discussions will take place in order to determine whether emergency

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

procedure 17 is initiated. The freshly filled balance tank will then be treated on the following day and the off-spec tank bled into the system over time.

- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for a major spill at
the United Utilities Industrial Treatment Plant of ferric chloride

Number 5

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for a major spill at the United Utilities Industrial Treatment Plant of ferric chloride

Note - The volume of Ferric Chloride Water Grade Solution (40-42%w/w) stored at site would never exceed 40 tonnes, as this is the capacity of the storage tanks. The storage tanks are situated within a secure bund and these are located within the site bund with drainage channels to the bio-filter wet well. Early warning of a major spillage would be detected via 24-hour telemetry giving a low level in tank alarm, or at the start of each day when the Operator carries out his routine checks.

In the unlikely event of a spillage -

Actions required

- If a leak is detected from the tank, but within the bund, then the whole Ferric dosing process must be shut-down and isolated at the control panel. The Operator will then don the **Full Chemical Protection Suit and the Area must be isolated and made Safe** by putting up barrier tape, keeping other persons away from the area. Advice should be sought from the line manager who would then arrange to either initiate a repair using professionally trained persons (Chemical Company), or depending on the severity of the detained leak would arrange to have the contents tankered away using a suitable Chemical Tanker, supplied by a Chemical Company.
- If the leak is outside of the tank bund (i.e. fractured pipe) then the whole of the Ferric dosing process must be shut down and isolated at the control panel. The Operator will then put on the **Full Chemical Protection Suit and the Area must be isolated and made Safe** by putting up barrier tape, keeping other persons away from the area. In this instance it may be possible to isolate the fractured pipeline and revert to the duty stand-by dosing system available. Advice should be sought from the line manager who would give his decision and would possibly initiate a repair using Competent Contractors.
- Monitoring of the bio-filter wet well contents for pH, would determine whether this contaminated effluent should be tankered back to the works balance tank for storage.
- All Chemical spill's would be washed down with copious amounts of water, and pH testing of the bio-filter wet well would continue until it was deemed possible to forward feed this effluent to the Final Clarifier.
- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- Dairy Crest (24 hour contact 01437 762852 or mobile no. 07989 836679) is to be informed at the earliest possible convenience and kept updated as necessary.

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office. NOTE: The failure of the chemical tank is a RIDDOR reportable event.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for a major spill
at the United Utilities Industrial Treatment Plant
of sodium hydroxide 25%. (caustic)

Number 6

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for A major spill at the United Utilities Industrial Treatment Plant of sodium hydroxide 25%. (caustic)

Note - The volume of Sodium Hydroxide at 25% strength, stored at site would never exceed 4 tonne, as this is the capacity of the storage tank. The storage tank is situated within a secure bund and this itself is located within the site bund with drainage channels to the bio-filter wet well. Early warning of a major spillage would be detected via 24-hour telemetry giving a low level in tank alarm, or at the start of each day when the Operator carries out his routine checks.

In the unlikely event of a spillage -

Actions required

- If a leak is detected from the tank, but within the bund, then the whole Sodium hydroxide dosing process must be shutdown and isolated at the control panel. The Operator will then don the **Full Chemical Protection Suit and the Area must be Isolated and made Safe** by putting up barrier tape, keeping other persons away from the area. Advice should be sought from the line manager who would then arrange to either initiate a repair using professionally trained persons (Chemical Company), or depending on the severity of the detained leak would arrange to have the contents tankered away using a suitable Chemical Tanker, supplied by a Chemical Company.
- If the leak is outside of the tank bund (i.e. fractured pipe) then the whole of the Sodium Hydroxide dosing process must be shut down and isolated at the control panel. The Operator will then put on the **Full Chemical Protection Suit and the Area must be Isolated and made Safe** by putting up barrier tape, keeping other persons away from the area. In this instance it may be possible to isolate the fractured pipeline and revert to the duty stand-by dosing system available. Advice should be sought from the line manager who would give his decision and would possibly initiate a repair using Competent Contractors.
- Monitoring of the bio-filter wet well contents for pH, would determine whether this contaminated effluent should be tankered back to the works balance tank for storage.
- All Chemical spills' would be washed down with copious amounts of water, and pH testing of the bio-filter wet well would continue until it was deemed possible to forward feed this effluent to the Final Clarifier.
- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- Dairy Crest (24 hour contact 01437 762852 or mobile no. 07989 836679) is to be informed at the earliest possible convenience and kept updated as necessary.

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office. NOTE: The failure of the chemical tank is a RIDDOR reportable event.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for a major spill
at the United Utilities Industrial Treatment Plant,
of domestic sewage or leachate due to a tanker accident.

Number 7

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for a major spill at the United Utilities Industrial Treatment Plant, of domestic sewage or leachate due to a tanker accident.

Note - Once delivery Tankers carrying either Domestic Sewage or Leachate enter the Waste Management Site, they are then within the bounds of the site drainage system. If an accident was to occur during delivery vehicle movement or during off-loading, resulting in a major spill of the contents, then the same procedure would apply.

In the unlikely event of a spillage -

Actions required

- The vehicle driver would be expected at the earliest opportunity, to safely isolate the tanker to prevent as much spillage as possible.
- The vehicle driver would then inform United Utilities Industrial site staff about the spillage.
- The vehicle driver would then be requested to don the correct P.P.E. and start the clean-up using the nearest hose-pipe, and wash the spillage into the nearest site drain which will then feed back to the works inlet.
- If the spillage were such that the vehicle driver required help then the United Utilities Industrial Operator would don the correct P.P.E. and would re-charge his time to the company concerned.
- Any Oil or Diesel spills from the vehicles would be cleaned-up using the Spill Response Kits available at site, and the driver and company would be requested to repair the vehicle fault before access to the site was authorised again.
- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- Dairy Crest (24 hour contact 01437 762852 or mobile no. 07989 836679) is to be informed at the earliest possible convenience and kept updated as necessary.
- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for a major spill
at the United Utilities Industrial Treatment Plant of milky effluent
or leachate due to a ruptured storage tank.

Number 8

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for a major spill at the United Utilities Industrial Treatment Plant of milky effluent or leachate due to a ruptured storage tank.

Note - If either of the 2 storage balance tanks holding Dairy Crest Influent or any of the 4 storage Leachate Tanks were to leak, then that leak would be within the site bund area and could be forwarded for treatment under controlled methods. The leak would be detected at the earliest opportunity during the Operators daily checks.

In the unlikely event of a spillage -

Actions required

- The leaking tank must be identified and isolated by the United Utilities Industrial site staff at the earliest opportunity, and both inlet and outlet valves manually locked off.
- The leaking tank would then be taken out of commission, and labelled to inform other site users.
- If it was one of the Balance tanks then it is possible to override the automation and operate on one tank only, but a repair would become a necessity at the earliest possible time, so it would be very important to inform the line manager immediately. Dairy Crest must be informed immediately and a decision taken as to whether to initiate emergency procedure 17.
- If it was one of the Leachate tanks then it is possible to remove the leaking tank out of commission completely until a repair can be arranged. Leachates could also be tankered into the Balance tanks in cases of extreme emergency. (i.e. more than one tank failing at the same time).
- Any detained spillage within the site bund could be passed forward for treatment, or could be held back by switching off the bio-filter wet well pumps and then tankering this waste back into the works inlet.
- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- Dairy Crest (24 hour contact 01437 762852 or mobile no. 07989 836679) is to be informed at the earliest possible convenience and kept updated as necessary.
- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for a major increase of influent volume
into the United Utilities Industrial Treatment Plant,
due to a fire and the use of fire fighting water,
or due to severe storm conditions at the Dairy Crest Factory

Number 9

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for a major increase of influent volume
into the United Utilities Industrial Treatment Plant,
due to a fire and the use of fire fighting water,
or due to severe storm conditions at the Dairy Crest Factory

Note - United Utilities Industrial would endeavour to take all the run off water from Dairy Crest Factory and Compound, as is normal during storm conditions, and feed this effluent through the treatment process, due to a holding capacity within the combined balance tanks of 4,000m³. This would be equivalent to approx 3 days normal production.

In the unlikely event of an occurrence -

Actions required

- The Dairy Crest factory duty manager would have to keep the United Utilities Industrial site staff up-dated on the situation.
- The United Utilities Industrial site staff would liaise with the Dairy Crest factory duty manager to keep him informed of the volume storage situation at the treatment plant.
- If the volume storage became at risk due to storm water or fire fighting water, then United Utilities Industrial would request the Dairy Crest factory duty manager to divert run-off water to the river but keep the process water flowing to the treatment plant. (In any event run-off storm water is diverted as a standard procedure by Dairy Crest Staff.)
- If United Utilities Industrial had a volume problem, but the effluent was weak, there is the option of doubling the through-put into the process by either running both DAF feed pumps together (increasing treatment capability from 60m³ p/h to 120m³ p/h), or alternatively over pumping by road tanker from the balance tanks to either the DAF or into T9 to feed the High Rate Filter.
- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for a fire at the
United Utilities Industrial's Treatment Plant.

Number 10

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for a fire at the United Utilities Industrial's Treatment Plant.

Note - United Utilities Industrial Operate the Dairy Crest Treatment Plant at Haverfordwest, but share the office accommodation and welfare facilities with UUOS.

In the event of a fire occurrence -

Actions required

- All United Utilities Industrial Staff and Visitors should familiarise themselves with the site fire instructions which are displayed on all notice boards at site.
- All United Utilities Industrial staff should make sure that fire extinguishers, within their remit (inside the Dairy Crest control cabinet) are within date, and notify UUOS of any others at the combined treatment plant site which are not within their inspection date.
- All United Utilities Industrial Staff should report any appliance condition or situation to your line manager, which you feel might be causing a fire hazard.
- All United Utilities Industrial Staff should familiarise themselves with the location of the mains isolator for the electricity supply to the Dairy Crest Treatment Plant.
- In the event of a fire, the primary concern must be for your own personal safety, and that of your colleagues or visitors. Do not take risks for the sake of personal belongings or company property.
- The Muster Points are clearly sign-posted outside the main entrance to the office block in the middle of the grass, and outside the emergency escape from the conference room in the middle of the gritted area. Use the signing in book if possible to account for all the personnel on the United Utilities Industrial Site.
- In the event of a fire incident, once you have dealt with the immediate situation, do not forget to report the matter to the fire brigade, whether the situation is serious or not.
- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- Dairy Crest (24 hour contact 01437 762852 or mobile no. 07989 836679) is to be informed at the earliest possible convenience and kept updated as necessary.
- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for
person falling into a tank
with the potential of drowning.

Number 11

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for person falling into a tank with the potential of drowning.

Note - All the tanks at the Dairy Crest Treatment Plant with the exception of the Final Settlement Tank are covered tanks and therefore the risk of drowning has been engineered out, by the fitting of small inspection doors and safe sampling points. However there is the possibility of someone finding their way into the Final Settlement Tank or into the adjoining Sewage Works Tanks.

In the event of a person falling into a tank -

Actions required

- Throw the nearest available life buoy into the tank as near as possible to the person. (These are located around the tanks at various locations).
- Do not let go of the rope attached to the life buoy - tie the loose end securely to the nearest handrail.
- If the person is able, get them to hold on tight to the life buoy, or place the life-buoy around their body and pull them to the outside of the tank.
- Switch off any moving parts within that tank such as half-bridge scrapers or mixers or pumps etc. at the earliest opportunity.
- Summon help if there are any other persons around, if not then use your mobile phone or the nearest available phone to call the emergency services, stating clearly the site location and the position of the tank involved in the incident within that works.
- Under no circumstances should you attempt to enter the tank to carry out the rescue yourself.
- If you have to wait for the rescue services, then secure the person as best as possible and stay with them to reassure and comfort them that help is on its way.
- If the person is unconscious or just floating, then wait for the emergency services to carry out the rescue and the resuscitation procedure.
- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- Dairy Crest (24 hour contact 01437 762852 or mobile no. 07989 836679) is to be informed at the earliest possible convenience and kept updated as necessary.

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for loss of electrical supply
to the United Utilities Industrial Treatment Plant

Number 12

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for loss of electrical supply to the United Utilities Industrial Treatment Plant

Note - The United Utilities Industrial Treatment Plant has its own Electrical Supply line, and this source of power has proven to be very reliable in the past, with no incidents of un-planned power failure. However the Industrial Plant does have a stand-by, 40kw generator to power the plant in cases of emergency or planned power interruptions.

In the event of power failure whether planned or otherwise -

Actions required

- Always make sure that the stand-by generator is fuelled up and available for use. (The servicing and monthly trial runs are carried out by UUOS planned maintenance schedules).
- If a planned power interruption is to occur, then a site electrician would be in attendance ready to switch over from mains supply to generator supply. (Because of the infrequent incidents it is not cost effective to automate the process).
- If an un-planned power interruption were to occur then alarms would be raised through the 24-hour telemetry system and would initiate an immediate site visit by an Operator.
- This Operator would then manage the incident and arrange for an electrician to carry out the switch over from mains supply to generator supply. (Always an electrician available for 24-hour call-out).
- United Utilities Industrial would contact the electric company (Swalec on 0800 0520400) to find out details of the fault and the likely time-scale of the incident.
- The United Utilities Industrial Treatment Plant can comfortably function by using the 40kw generator, and as a safeguard it is good practice to switch off all non-essential machinery until power is restored. (i.e. Duty assist pumps, Air Blowers, or if possible shut-down the plant altogether).
- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- Dairy Crest (24 hour contact 01437 762852 or mobile no. 07989 836679) is to be informed at the earliest possible convenience and kept updated as necessary.
- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for
serious process failure at the
United Utilities Industrial Treatment Plant.

Number 13

Procedure for
serious process failure at the

Haverfordwest Waste Management Centre operational plan
Appendix 7.11, Issue 4, April 2002
Emergency Procedure No. 13 Page 1 of 1

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Treatment Plant

Note - The United Utilities Industrial Treatment Plant has its' own 24 hour, pH monitoring system, and Plant Breakdown Alarms linked to the 24 hour telemetry call-out procedure in the event of a failure in Process or Machinery. The pH monitoring takes place at the Works inlet, the DAF inlet and the Bio-filter inlet, with pre-set alarm levels set to initiate an Operator call-out.

In the event of a process failure or otherwise -

Actions required

- The Operator that is called to site will first of all check the pH monitor and clean it to ensure the alarm is genuine.
- If the pH alarm is genuine then further investigation is required at that stage of the process to identify the fault.
- If the pH alarm is linked to a piece of machinery failure, then in most cases the duty stand-by piece of machinery can be used, and is an automated system.
- If the pH alarm is linked to either High or Low pH of the influent then Emergency Procedures 1 or 2 would be initiated.
- If the process failure is linked to the DAF breaking down (i.e. scraper failed, mixer failed, de-sludge system failed etc.) then the plant will be shut down until a repair can be arranged as there is always around 3 days holding capacity within the balance tanks.
- If the process failure is linked to the Bio-filter distributor breaking down, then the plant will be shut down until a repair can be arranged, as there is always around 3 days holding capacity within the balance tanks.
- If the process failure is due to the Bio-filter sloughing off due to seasonal variations, then the process can be run with careful monitoring, but the 2 settlement tank sludge pumps need to be switched onto hand (continuous de-sludging) until the sloughing period is complete, usually about 10 days.
- If the process failure is linked to the Final Settlement Tank half-bridge scraper, then the treatment process can continue until the repair can take place as soon as is practicable.
- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.

- Dairy Crest (24 hour contact 01437 762852 or mobile no. 07989 836679) is to be informed at the earliest possible convenience and kept updated as necessary.

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for serious process failure
at the Sewage Treatment Plant

Number 14

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for serious process failure at the Sewage Treatment Plant

Note - The United Utilities Industrial Treatment Plant has its own 24 hour, pH monitoring system, and Plant Breakdown Alarms linked to the 24 hour telemetry call-out procedure in the event of a failure in Process or Machinery. The pH monitoring takes place at the Works inlet, the DAF inlet and the Bio-filter inlet, with pre-set alarm levels set to initiate an Operator call-out. The Sewage Works has 24 hours Effluent Quality Monitoring for Dissolved Oxygen, Suspended Solids and Ammonia. Also all critical machinery on the Sewage Works is linked to a 24 hour, Operator call-out system.

In the event of a process failure or otherwise -

Actions required

- The UUOS Operator that is called to site will first of all check and clean the monitor causing the alarm, to make sure it is genuine.
- If the alarm is linked to a piece of machinery failure, then in most cases the duty stand-by piece of machinery can be used, and is an automated system.
- If the process failure is not linked to any activity from the United Utilities Industrial Plant, then there is no reason for the UUI Plant to be shut-down, unless requested by UUOS. This decision then needs to be taken once discussion with Dairy Crest has taken place.
- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- Dairy Crest (24 hour contact 01437 762852 or mobile no. 07989 836679) is to be informed at the earliest possible convenience and kept updated as necessary.
- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for blockage
or failure of the mainstream or condensate pipeline

Number 15

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for blockage or failure of the mainstream or condensate pipeline

Note - There are 2 sources of waste leaving the Dairy Crest Factory. One waste is the Mainstream Effluent Pipeline, which flows from the factory, down two adjoining fields below ground, to the United Utilities Industrial Treatment Plant some 600 metres away. The second waste is the Condensate Effluent Pipeline, which flows from the factory into the Sewer at the back-end of the factory. Both these pipelines are the responsibility of United Utilities Industrial from the flow measuring flumes located at the back-end of the factory to either the sewer or the treatment plant.

In the event of a pipeline failure -

Actions required

- United Utilities Industrial will initiate periodic (2 years) surveying of these pipelines in order to prevent Environmental Pollution.
- If the periodic surveying shows a need to carry out repairs to the pipeline, then this task will be planned and scheduled to coincide with the Dairy Crest factory periodic maintenance shut-down, if at all possible.
- United Utilities Industrial would endeavour to avoid any inconvenience to the Client (Dairy Crest Factory LTD), and would aim to effect repairs without any shut down of the factory process.
- If the pipeline was to fail at any other time then the first task would be to divert the mainstream flow into the condensate line or vice versa, by altering the channel plates at the measuring flumes at the back-end of the Dairy Crest factory. This action will stop the pollution spill immediately.
- A repair would then be arranged at the earliest possible time, using a competent and qualified contractor.
- United Utilities Industrial would then inform both the Environment Agency and United Utilities Operational Services of the situation.
- If the repair was going to be delayed for whatever reason, then United Utilities Industrial would arrange over-pumping from the Haverfordwest Waste Management Centre Sewage Works Inlet Well into the Industrial Plant to reduce the biological loading onto the Sewage Treatment Works.
- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

- Dairy Crest (24 hour contact 01437 762852 or mobile no. 07989 836679) is to be informed at the earliest possible convenience and kept updated as necessary.
- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for a failure of telemetry outstation at the
United Utilities Industrial's Treatment Plant.

Number 16

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for a failure of the telemetry outstation at the United Utilities Industrial's Treatment Plant.

Note - This will be identified by Swansea Control as a comms failure alarm. This is a level 6 alarm and the site must be attended immediately.

In the event of a comms failure-

Actions required

- The standby UUI operative will attend site and see if he can rectify the situation, if necessary calling out a technician.
- The site will remain manned until the telemetry system is operational to ensure that any alarms are responded to.
- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- Dairy Crest (24 hour contact 01437 762852 or mobile no. 07989 836679) is to be informed at the earliest possible convenience and kept updated as necessary.
- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

United Utilities Industrial Ltd

EMERGENCY PROCEDURE

Procedure for determining use of tankers to empty one of the balance
tanks at the
United Utilities Industrial's Treatment Plant.

Number 17

HAVERFORDWEST WASTE MANAGEMENT CENTRE EMERGENCY PROCEDURES

Procedure for determining use of tankers to empty one of the balance tanks at the United Utilities Industrial's Treatment Plant.

Note - This procedure will be implemented as a direct outcome of one of the other procedures.

Actions required

- UUI and Dairy Crest will assess the risks of the current site status. This will take into account such items as production rates on Dairy Crest site, likelihood of a repeat incident and timescales required to rectify situation.
- In the event that the decision is taken to tanker waste off site, UUI will require approval from senior management and a director. Approval and financial reimbursements will be required from an authorised person of Dairy Crest, subject to the incident being of Dairy Crests making.
- Tanker companies will be informed of the need to remove the waste offsite and the disposal site requested to open at short notice if possible.
- The Environment Agency will be informed.
- At the earliest convenience United Utilities Industrial line managers must be informed, and periodically up-dated.
- A log of events should be entered into the site diary.
- When the emergency is over, a full incident report will have to be forwarded to Head Office.

NB: All incidents should be actioned and reported in accordance with the flow charts given in the Business Systems and Procedures Manual, OP099

Appendix 7 – Bulk chemical delivery procedure

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SMALL BULK DISCHARGE PROCEDURE

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- J LEAKAGE OF PRODUCT DURING DISCHARGE
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APPENDICES

- Appendix I - Driver's Pre-Discharge Inspection Report
- Appendix II - Final Checks Before Discharge

SECONDARY DOCUMENT CONTROL

- "Ops Docs" - OPS/TYP.ARR.BLK/- Typical Arrangement of Storage tank for Small Bulk Deliveries
- "Ops Docs" - OPS/CUST.INSP/- Customer Installation Inspection

Policy & Procedure No: 93

No. of Appendices: 2

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SMALL BULK DISCHARGE PROCEDURE

A SCOPE

This procedure covers the transfer of material from an Intermediate Bulk container (IBC) (and Pressure Bins) on a Hays vehicle to a customer's small bulk storage tank.

B OBJECTIVES

The objectives are to ensure a safe discharge operation at the customer's premises and to minimise the risks from an interruption to the liquid transfer.

C RESPONSIBILITY

The Operations Manager is responsible for the equipment being used and that Section D is fully implemented. The Transport Manager is responsible for ensuring that drivers are fully trained in this procedure and that records of training are maintained at the depot.

Drivers are responsible for implementing the discharge procedure.

D CUSTOMER INSTALLATION INSPECTION RECORDS

The depot objective is to have on file a satisfactory completed Customer Installation Inspection form (see 'OPS.DOC' OPS/CUST.INSP/-

In the event that this is not in place, then the driver must complete the "Drivers Pre-Discharge Inspection Report" (Appendix 1) in addition to "Final checks Before Discharge" (Appendix II). If the full "Customer Installation Inspection Report" is in place then completion and full implementation of Appendix II will suffice.

E INTRODUCTION

There are 3 generic types of 1,000 litre container for the purposes of small bulk delivery:-

- i) "True" pressurisable IBC's, almost exclusively of Flo-bin manufacture:-
 - a) All metallic bodied, some plastic lined.
 - b) Pressurisable to 7.5 PSI with air or nitrogen
 - c) Fully subject to UN Ch 16 and ADR restrictions.

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SMALL BULK DISCHARGE PROCEDURE

- ii) Pressure vessels which are not in fact IBC's but transportable pressure vessels, to SI 743 (for the purposes of this procedure they are referred to as IBC's):-
 - a) All metallic bodies, some plastic lined.
 - b) Pressurisable to 20 PSI with air or nitrogen.
 - c) Not subject to ADR restrictions but tested and plated to UN Ch 16 as well as SI 743.
- iii) Gravity IBC's which may be all plastic, composite plastic/steel, or all metallic:-
 - a) Subject to UN Ch 16 and ADR
 - b) Only dischargeable by gravity or pump.

F ACTION ON ARRIVAL AT CUSTOMER

- i) On arrival at a customer's premises, the driver will present a Hays' Despatch Note, usually the top two copies of the set, at the gatehouse or plant office, confirm that the details are correct and await the customer's instructions.
- ii) When the vehicle is parked at the designated discharge point, it is essential that the driver obtains a signature on the Hays Despatch Note which authorises him to safely commence the discharge procedures. This instruction equally applies when the driver delivers to our own company locations.
- iii) The driver must ensure that he observes all safety measures required by the customer. In particular he should ensure that specified equipment, including necessary tank venting equipment, including scrubbers, is used as the customer directs. It must always be remembered that the customer has an obligation to provide suitable supervision and the driver should not proceed with any discharge operations unless he is sure that a customer's supervisor is always readily available.

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G PRE-DISCHARGE ROUTINE

(See Operations Support Manual Secondary Document OPS/TYP.ARR.BLK/- for Typical Storage Tank Arrangement)

- i) The following procedure should be observed as a normal system. However, special discharge procedures may apply to suit particular customer arrangements. Always ensure that safe working practice is incorporated in any variance from these procedures. The customer's installation should have been subject to a pre-delivery inspection (see Policy & Procedure 9.8 - Customer Installation Inspection) using the current approved form or a previously authorised form/document and any special requirements determined - these should be specified on the Despatch Note as "Special Instructions". Drivers should fully understand these requirements at all times. Note also that this step should be completed without delay because undue delay could itself cause hazardous circumstances due to product movement in pipelines, etc.

- a) Implement Paragraph D. If satisfactory, continue. If not, report to base for further instruction.
- b) Any driver involved in this type of transfer operation or when attempting to clear a blockage must wear a full PVC suit, goggles/visor, hard hat, gauntlets, PVC/nitrile wellingtons (preferable) or safety boots.
- c) All IBC discharge despatch documents will contain only one product line and prior to any connections that product name, grade and strength must be checked as being the same as the labels on the IBC's for discharge and the customer's inlet point. If they do not, **STOP** and report to the customer and Hays' base.

Note also that this is reconfirmed for each individual tank connection as per Section (f) of this same section.

- d) Ensure that the bottom valve on the IBC is closed before removing the safety "dust" cap. Remove the dust cap (acting as a secondary seal) from the valve on the IBC. The closure on the customer's inlet point should be removed by the customer's representative. Take care to release the lower end of the fitting initially, so that any residual product/pressure is directed downwards.
- e) Under the supervision of the customer's representative, inspect hoses and couplings for defects, check gaskets, ensure cleanliness of discharge point and securely couple-up the delivery hose camlocks, or other connections as appropriate. Ensure that only gaskets compatible with the products are used. In the case of flammable liquids, the customer's inlet fitting, Hays' hose and the IBC must all be electrically linked together. This will be via an earthing lead incorporated with the hose and by the customer's own lead, if available, but the IBC and customer inlet point must be electrically connected before discharge starts.

Dedicated hoses must be used for Solvent deliveries to avoid the possibility of cross contamination from water, corrosives etc.

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- f) Complete "Final Checks Before Discharge" (see Appendix II), sign and obtain customer's signature **PRIOR TO EACH INDIVIDUAL TANK DISCHARGE.**
- g) Where a scrubber is fitted to control fumes discharged from the customer's tank, confirm with the customer's representative that the water supply is on and the scrubber is draining.
- h) Assist customer in taking a sample if applicable.

H DISCHARGE METHODS

If, during the following discharge methods at steps i(c), ii(c) or iii(d), the customer declines the invitation to open his own inlet/reception valve, then the driver must contact base to receive further direction. Customers are invited to open their reception valve for each individual IBC.

i) COMPRESSOR DISCHARGE METHOD

- a) Confirm that the IBC outlet valve is closed and then remove the dust cap (secondary seal) from the top of the IBC and fit the pressure hose to the IBC.
- b) Fit the pressure hose head to the compressed air take off point.
- c) Check that any drain valves on the line are closed. Invite the customer representative to open the customer's reception valve and open the outlet valve on the IBC. Check to ensure there is no leakage from hose or connections.
- d) Open the inlet valve on the IBC "manifold unit", checking that the exhaust valve is shut. One piece manifold units, although more common on nitrogen discharge systems, have direct compressor discharge equivalent assemblies, in that a valve is available to vent the system down prior to disconnection.
- e) Start the compressor and the open inlet valve on IBC manifold unit, checking that the vent valve is shut. Check the pressure control valve on the compressor unit is operating correctly. Maintain pressure at a minimum level sufficient to discharge the IBC. **Ensure the pressure rating of the IBC used is not exceeded.**
- f) Check for product leakage as pressure builds up in the IBC and product begins to transfer. In cases of any leakage, take the necessary actions where applicable as described in Section H.
- g) Where practicable, allow the discharge pressure to fall at the final stages of discharge, so that any vented fumes or vapours are kept to a minimum.
- h) When product transfer is completed, allow time for the customer's pipeline to be blown clear into the storage tank point. Under normal circumstances allow the IBC to depressurise by venting through the customer's system.
- i) When discharge is complete, close all valves and shut down the compressor.
- j) Close the customer's inlet valve.

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SMALL BULK DISCHARGE PROCEDURE

- k) Close the IBC discharge valve. If a "one piece" manifold unit is in use open vent valve and then remove supply hose and manifold unit.
- l) In the event of total de-pressurisation not being achieved through the customer's systems, you should obtain authorisation from the customer's representative to carefully release all pressure in a safe place by the careful operation of the IBC vent valve, taking care that you do not affect people or the environment by these actions.
- m) If still attached, disconnect the pressure supply hose from the compressor system to the inlet valve on the IBC.
- n) Disconnect the product delivery hose or pipe, initially at the customer's end, remembering to open the lower part of the fitting first in order to direct any spillage downwards.
- o) After confirming the arrangements for discharge hose washing, thoroughly wash out flexible hoses and secure them safely on your vehicle.
- p) Replace blank plates or cap to the IBC outlet. The customer's representative should replace the cap or closure to their tank point.
- q) Protective clothing may now be removed.
- r) Obtain a signature from the customer's representative on the Hays' Despatch Note in order to signify the safe completion of the discharge procedures and to establish proof of the actual delivery.
- s) The driver should remain at the side of the vehicle throughout the discharge operation. He should always be in a position to deal quickly with any emergency situation which may arise. He should not be seated in the vehicle cab during the product discharge operation.
- t) **STOP DISCHARGE AT ANY TIME IF NECESSARY.**
- u) **REPORT ANY SUSPECT DELIVERIES OR INCIDENTS AS SOON AS POSSIBLE, TO BASE. STOP DISCHARGE AT ANY TIME IF NECESSARY. USE THE APPROPRIATE DOCUMENT, FOR A WRITTEN REPORT ON RETURN.**

ii) NITROGEN DISCHARGE METHOD

- a) Confirm that the IBC outlet valve is closed and then remove the dust cap from the top of the IBC and fit the valve manifold unit to the IBC.

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SMALL BULK DISCHARGE PROCEDURE

- b) Fit the pressure head to the nitrogen cylinder and fit the short nitrogen hose from the pressure head to the sealed pre-set pressure reducer. Fit the long hose from the outlet of the reducer to the IBC manifold unit (long brass connection).
- c) Check that the drain valves on the line are closed. Invite the customer's representative to open the customer's reception valve and open the outlet valve on the IBC. Check to ensure that there is no leakage from hose or connections.
- d) Open the inlet valve on the IBC manifold unit, checking that the vent valve is closed.

Check that the pressure control valve on the pressure head unit is closed (fully anti-clockwise), open the gas cylinder and adjust the pressure to read no more than the pressure rating of the IBC. Maintain pressure at a minimum level sufficient to discharge the IBC. Do not exceed the IBC pressure rating.
- e) Check for product leakage as pressure builds up in the IBC and product begins to transfer. In cases of any leakage, take the necessary actions where applicable as described in Section H.
- f) Where practicable, allow the discharge pressure to fall at the final stages of discharge, so that any vented fumes or vapours are kept to a minimum.
- g) When product transfer is completed, allow time for the customer's pipeline to be blown clear into the storage tank point. Under normal circumstances, allow the IBC to depressurise by venting through the customer's system.
- h) When discharge is complete, shut down the nitrogen supply and close the inlet valve on the manifold unit.
- i) Close the customer's inlet valve.
- j) Close the IBC discharge valve.
- k) Open the vent valve on the manifold. In the event of total de-pressurisation not being achieved through the customer's system, you should obtain authorisation from the customer's representative to carefully release all pressure, in a safe place by the careful operation of the IBC vent valve, taking care that you do not affect people or the environment by these actions. Remove the unit.
- l) Close the IBC vent valve when the IBC is completely de-pressurised.

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THE BUSINESS SERVICES GROUP**SMALL BULK DISCHARGE PROCEDURE**

- m) Disconnect the product delivery hose or pipe, initially at the customer's end, remembering to open the lower part of the fitting first in order to direct any spillage downwards.
- n) After confirming the arrangements for discharge hose washing, thoroughly wash out flexible hoses and secure them safely on your vehicle.
- o) Replace blank plates or cap to the IBC outlet. The customer's representative should replace the cap or closure to their tank point.
- p) Protective clothing may now be removed.
- q) Obtain a signature from the customer's representative on the Hays Despatch Note in order to signify the safe operation of the discharge procedures and to establish proof of the actual delivery completion.
- r) The driver should remain at the side of the vehicle throughout the discharge operation. He should always be in a position to deal quickly with any emergency situation which may arise. He should not be seated in the vehicle cab during the product discharge operation.
- s) **STOP DISCHARGE AT ANY TIME IF NECESSARY.**
- t) **REPORT ANY SUSPECT DELIVERIES OR INCIDENTS AS SOON AS POSSIBLE, TO BASE. USE THE APPROPRIATE DOCUMENT, FOR A WRITTEN REPORT ON RETURN.**

iii) DISCHARGE BY GRAVITY OR PUMP (CUSTOMER'S OR HAYS)

THE USE OF POSITIVE DISPLACEMENT PUMPS IS NOT PERMITTED UNLESS WRITTEN AUTHORITY FROM TECHNICAL SERVICES MANAGER IS OBTAINED

- a) After checking that the outlet valve is closed, remove the IBC outlet blank plate or cap. The closure on the customer's inlet point should be removed by the customer's representative. Take care to release the lower part of fittings initially so that any residual product/pressure is directed downwards.
- b) Under the supervision of the customer's representative, securely couple up the delivery hoses or pipes as appropriate. Ensure that only gaskets compatible with the products are used.
- c) Gravity or pump discharge procedures require the IBC to be vented so that a vacuum effect is not produced within the tank which could cause the implosion of the IBC or prevent discharge of the product.

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Hays
THE BUSINESS SERVICES GROUP

SMALL BULK DISCHARGE PROCEDURE

- d) Invite the customer's representative to open the customer's product inlet valve.
- e) Open the IBC discharge valve, then check to ensure that there is no leakage from the hose or the connections.
- f) Certain customers have vent-return systems which allow vapours to circulate between their storage tank and the vapour ullage section of IBC's. These systems should be utilised wherever practicable. Connection compatibilities should be established before arrival on site and should be referred to as "Special Instructions" on the Despatch Note.
- g) In the above procedure, drivers are required to use their practical expertise and particular care to ensure the safe discharge of the product.
- h) Where applicable, arrange for the customer's suction pump to be started by the customer's representative or start own vehicle suction pump.
- i) In cases of any leakage, take the necessary actions where applicable, as described in Section H.
- j) When transfer is complete, close the customer's inlet valve and the IBC outlet valve. Switch off the pump. (**Note** Ensure (if pump discharge) that the pump is not switched off until this is done, unless a dry-run protection system has already shut the pump off).
- k) Close and secure the IBC vent.
- l) Disconnect any tank venting equipment if used during the discharge process, eg flexible connections to customer's vent systems.
- m) Disconnect the product delivery hose or pipe, initially at the customer's end, remember to open the lower part of the fitting first in order to direct any spillage downwards.
- n) After confirming the arrangements for discharge hose washing, thoroughly wash out flexible hoses and secure them safely on your vehicle.
- o) Replace blank plates or cap to the IBC outlet. The customer's representative should replace the cap or closure to their tank point.
- p) Protective clothing may now be removed.

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SMALL BULK DISCHARGE PROCEDURE

- q) Obtain a signature from the customer's representative on the Hay's Despatch Note in order to signify the safe operation of the discharge procedures and to establish proof of the actual delivery completion.
- r) The driver should remain at the side of the vehicle throughout the discharge operation. He should always be in a position to deal quickly with any emergency situation which may arise. He should not be seated in the vehicle cab during the product discharge operation.
- s) **STOP DISCHARGE AT ANY TIME IF NECESSARY.**
- t) **REPORT ANY SUSPECT DELIVERIES OR INCIDENTS AS SOON AS POSSIBLE, TO BASE. USE THE APPROPRIATE DOCUMENT, FOR A WRITTEN REPORT ON RETURN.**

I BLOCKAGE IN LINE**i) COMPRESSOR OR NITROGEN PRESSURE DISCHARGE**

If at any time, either before discharge can begin or during the discharge itself, a line blockage occurs, the following sequence of actions must be implemented:-

- a) If it is suspected that a line is blocked anywhere, check that all protective clothing is properly fitted, especially eye protection - goggles and visor. Start by closing off the IBC outlet valve.
- b) Quickly close the pressure system inlet valve, switch off compressor or shut off nitrogen supply.
- c) Start a washdown hose running in the immediate vicinity and have a second person standing by to use it.
- d) Relieve any pressure in the IBC slowly by venting from the top of the container, or from the pressurising pipeline, as appropriate. Disconnect the manifold from the top of the pressure bin, leaving the pressure bin open to atmosphere.

Open the IBC outlet valve to back depressurise the flexible line. Once settled, close all product valves, including customer's inlet valve.
- e) If the customer's pipework has a drain or sample valve, use it to relieve pressure and/or remove any liquid possible from the line. Close any drains before proceeding further.
- f) Disconnect the hose from the customer's end, keeping fitting pointing downwards and ensuring any spillage is neutralised or washed away in an appropriate manner.

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SMALL BULK DISCHARGE PROCEDURE

BLOCKAGE IN LINE - Continued

- g) Disconnect the hose from the pressure bin and wash out to a safe place, checking for any blockage in the hose.
- h) If the blockage is in Hays' hose, clear the blockage or use alternative hose, after first making the original hose safe.
- i) If the problem is with the customer's equipment, re-secure the outlet camlock on the IBC.
- j) Contact base.
- k) Site management are then responsible for communication with the customer to ensure adequate remedial action is taken to avoid recurrence.

ii) DISCHARGE BY GRAVITY

- a) If it is suspected that the line is blocked anywhere, check that all protective clothing is properly fitted, especially eye protection - goggles and visor. Start by closing off the IBC outlet valve.
- b) If the customer's pipework has a drain or sample valve, use it to relieve pressure and/or remove any liquid possible from the line.
- c) Close any customer inlet valves.
- d) Start a washdown hose running in the immediate vicinity and have a second person standing by to use it.
- e) Disconnect the delivery hose from the customer's connection. Collect or wash away any spillage as appropriate.
- f) Disconnect the hose from the IBC and check for blockage by washing out the hose to a safe area.
- g) If the blockage is in Hays' hose, clear the blockage or use alternative hose, after first making the original hose safe.
- h) If the problem is with the customer's equipment, re-secure the outlet camlock on the IBC.
- i) Contact base.
- j) Site management are then responsible for communication with the customer to ensure adequate remedial action is taken to avoid recurrence.

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SMALL BULK DISCHARGE PROCEDURE

iii) PUMPED DISCHARGE METHOD (CUSTOMER'S OR HAYS' PUMP)

- a) If it is suspected that a line is blocked anywhere, or there is a pump failure at any stage, check that all protective clothing is properly fitted, especially eye protection - goggles and visor. Start by closing off the IBC outlet valve.
- b) Quickly switch off the pump - either our transport pump or customer's suction pump.
- c) Close any customer inlet valves.
- d) Start a washdown hose running in the immediate vicinity and have a second person standing by to use it.
- e) Relieve any pressure in the line by opening the IBC outlet valve. Once settled, close all product valves including the customer's inlet valve.
- f) Disconnect the hoses from the pump to the inlet point, if used, and from the IBC to the pump. Check for blockage by washing out the hose to a safe area.
- g) If the blockage is in Hays' hose, clear the blockage or use alternative hose, after first making the original hose safe.
- h) If the problem is with the customer's equipment, re-secure the outlet camlock on the IBC.
- i) Contact base.
- j) Site management are then responsible for communication with the customer to ensure adequate remedial action is taken to avoid recurrence.

J LEAKAGE OF PRODUCT DURING DISCHARGE

- i) Ensure that the designated protective clothing is worn and fully fitted.
- ii) In the case of a leak on the IBC or pipeline, take the following action:-
 - a) If possible isolate the leak by closing the relevant valves.
 - b) Ensure that persons in the area are warned and kept clear, then inform the customer's management staff in order that they can institute their own company safety procedures.

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SMALL BULK DISCHARGE PROCEDURE

- c) Close the IBC pressure inlet valve and shut off the compressor or inlet gas supply or switch off the pump.
- d) Close the IBC outlet valve and the customer's inlet valve.
- e) Open the tank vent release valve providing that it is safe to do so. Obviously, it would not be safe if as a result persons or animals could be affected by toxic or corrosive fumes.
- f) If possible, make the necessary adjustments to pipelines or gaskets.
- iii) In all cases, the driver will use his training and experience to deal with or assist the customer's staff in emergency control procedures.
- iv) The driver should report all leakages to the Operations Manager or Transport Manager at his depot as soon as is practicable. If this is not possible, and if the leakage is sufficient to give cause for complaint by the customer or a member of the public, he should report the facts to the Shift Manager at Sandbach (Tel: 01270 759759) at the first opportunity. Emergency Response actions can then be taken, if necessary.
- v) On return to base, a formal written report must be made by the driver without delay and handed to a company supervisor.

K CARRIAGE OF DANGEROUS GOODS BY ROAD REGULATIONS

As the delivery tank will not have been washed out, for the purpose of the above regulations, it must be treated as full when determining whether or not to remove the Hazard Placard from the vehicle. Specific restrictions may also have to be considered, eg Blackwall Tunnel (Greenwich). In this case the Hazard Placard should be removed if notionally empty containers only, such as the delivery tanks are on the vehicle, ie no others "classified" under CDG.

K REPORTING OF SUSPECT DELIVERIES, ACCIDENTS OR INCIDENTS

- i) STOP DISCHARGE AT ANY TIME IF NECESSARY.
- ii) REPORT ANY SUSPECT DELIVERIES OR INCIDENTS AS SOON AS POSSIBLE, TO BASE. USE THE APPROPRIATE DOCUMENT, FOR A WRITTEN REPORT ON RETURN.

OPERATIONS SUPPORT MANUAL

SMALL BULK DISCHARGE PROCEDURE

Policy & Procedure No. 9.3

Revision No. 3

Page 1 of 1

DRIVER'S PRE-DISCHARGE INSPECTION REPORT

Customer Name: _____

Delivery Address: _____

Despatch

Note No: _____

Date of Delivery: / /

Product: _____

	YES	NO	COMMENTS
Inlet labelled			
Tank Visible from Inlet point & labelled			
Vent: 3" minimum preferable if Pump Delivery Only NB - <i>Pressure Discharge</i> - Vent 4" minimum - if only 3" fit 1" restrictor fitted to discharge line <i>Pump Discharge</i> - Vent 3" minimum - absolute minimum is 2" and if less than 3", discharge using restricted delivery rate and 1" restrictor fitted to discharge line			
Valve on Inlet Pipe *			
Inlet Locked			
Hose Connection Sound & Inlet Pipe Secure			
Discharge Point Visible from Vehicle Parking Area and Readily Accessible			
Water Hose Available (NB note if shower also available)			
Contents Gauge (Mark method under comments)			
Build Wall Round Tank *			
Scrubber Fitted If Applicable *			
Earthing System Available if Applicable			
Required to Park on Public Highway During Discharge			
Discharge Supervised by Customer **			
Area Secured During Discharge			
Sampling Procedure OK? (if applicable)			

* THESE MAY NOT BE AVAILABLE TO VIEW. IF NOT ASK CUSTOMER

** CUSTOMER MUST BE PRESENT AT THE START & COMPLETION OF DISCHARGE OF EACH CONTAINER AND ABLE TO BE SUMMONED IF REQUIRED

	GOOD	BAD	COMMENTS
General Condition of Intake Fixtures			
	TOP	BOTTOM	COMMENTS
Filling Point			
Length of Hose Required			
Driver's Name: _____	Vehicle Reg No: _____		

☒ - UNABLE TO PROCEED
CONTACT BASE

☐ - PROCEED AFTER CHECKING SAFE METHOD OF WORK AVAILABLE

Appendix 8 – Controlled waste transfer note

Section A - Description of Waste

1. Please describe the waste being transferred:

2. How is the waste contained?

Tank ☐Lagoon ☐Skip ☐Drum ☐Other ☐

Please describe

3. What is the quantity of waste (tones m3 etc.):

Section B - Current holder of the waste (Transferor)

1. Site Name and address (BLOCK CAPITALS):

2. Which of the following are you? (Please tick one or more boxes)

producer of the waste

☐holder of waste disposal or
waste management licence☐

Licence number issue by:

importer of the waste

exempt from requirement to
have a waste disposal or
waste management licence☐

Give reason:

Section C - Person collecting the waste (Transferee)

1. Full Name (BLOCK CAPITALS):

2.

Name and address of Company:

3. Which of the following are you? (Please tick one or more boxes)

holder of waste disposal or
waste management licence☐

Licence number issue by:

exempt from requirement to
have a waste disposal or
waste management licence☐

Give reason:

registered waste carrier

☐

Registration number issue by:

exempt from recruitment to
register☐

give reason:

Section D

1. Address of place of transfer/collection point: 2.

Date of transfer

3. Time(s) of transfer (for multiple
consignments, give 'between' dates):

4. Name and address of broker who arranged this waste transfer (if applicable):

Transferor

Transferee

5. Signed

Signed

Full Name
(BLOCK CAPITALS)Full Name
(BLOCK CAPITALS)

Representing:

Representing:

w^t - site copy blue - carrier copy yellow - disposal site copy

Appendix 9 – Operational consents summary

To be completed once PPC conditions finalised

A10 Site drainage procedure / arrangements

NEW PLANT

In order to prevent any contamination caused by spillage or tank failure to surrounding and underlying grounds within the whole site the following measures will be taken to prevent this occurring.

The new plant will sit within a complete concrete bund. The volume that the bund can contain is approx 330 cubic metres, well in excess of 25% of the total volume contained within the plant tanks equating to approx 180 cubic metres. In addition to this the concrete bund sits on top of a 1200 gauge visqueen membrane, which in turn is drained back to the containment sump via a perforated sub-surface drain system. A surface drain runs through the centre of the new plant to collect any run-off/spillages and discharges into a stand alone pre-cast concrete containment sump (also within the bund area). A submersible pump will then pump the sump contents to one of two locations. If the sump contents is rain from surface run-off then a 2 way valve, controlled manually by the operator, will be set to discharge to sewer. If the run-off is not rain water or is contaminated rainwater then the valve will be set to discharge back into the new plant inlet sump for processing through the plant. As the plant is only manned during the day, the valve will only be controlled during this time. When the site is left unmanned at the end of each day the valve will be set so that the sump contents discharge into the new plant inlet sump. In the event that a tank fails and loses its contents then the drain and sump will pick up the spillage and the contents can be put back into the plant for processing. The waste streams that will be taken into the plant will be pH neutral – between 5 and 9, any process pH alterations will have been carried out in line (within pipework, or within a GRP pH resistant tank) before they are put into storage, it will not be possible for high or low pH wastes to come in contact with the concrete bund.

Note very high or low pH's can dissolve concrete, even at short term exposure, which could result in contamination.

It should be noted that the chemical storage tanks which store the chemicals necessary to neutralise any waste streams are separately bunded as well. These tanks have an integral bund designed to contain any spillage. The existing hardstanding area around the new inlet screens and skip areas is laid to falls which will discharge permanently to the new inlet sump.

It should be noted that Armco barrier or similar will be installed in front of all chemical storage tanks/areas to prevent the risk of vehicular damage.

EXISTING PLANT

The existing site and tanker unloading/hardstanding area will be completely bunded, this will be achieved by the addition of some kerbing and the installation of a ramp at the site entrance. The existing hardstanding drains two ways. Half of the area, nearest the entrance side, drains to both a containment sump No.1 and to some existing drains. The containment sump has a submersible sump which pumps run-off/spillages back to either the main new inlet sump if its contaminated or to sewer via a 2 way valve if its rain-water. The same operation as in "new plant" above will operate for the control of this discharge. The existing drains will each be fitted with a valve to allow the plant operator to close them in the event of a spillage on site. These valves will be clearly identified as such and their operation will be written into the procedures and will be identified to tanker drivers prior to unloading any tanker contents. The isolation of these drains will prevent spillages from draining direct to

sewer. The operation of these will be the same as above insofar as that at the end of each day the valves will be left shut so that there is no risk of contamination to sewer. In the event of a catastrophic failure ie a tanker losses all its contents, then the total containable volume within the hardstanding area is approx 100 cubic metres – a tanker volume would be 25cubic metres. The depth of liquid over the hardstanding area if 1 tanker discharged its contents would equate approximately to 30mm. If such an occurrence took place then the spillage would be picked up by the 2 containment sumps and partially by the main inlet sump. In any event the spillage would be pumped into the new plant for processing. The operation of the pumps in these sumps will be automatic on level control. In the event of the submersible pump within a containment sump failing, a portable spare will be kept on site for emergency use and a power connection point available so that the pump can be plugged in for immediate operation.

In order to control incoming tanker discharges to both the new and existing plant, the hardstanding is divided into parking bays. When a tanker driver has parked itself, and met the requirements within the Operational Plan, he will then connect to a Bauer Coupling tanker connection point. To facilitate this, behind the tanker bays, will be a length of Armco or similar barrier to prevent damage to pipelines and structures. Immediately behind the barrier will be two Bauer tanker connection points, each point gravitating into a pipeline which runs to either inlet sump 1 or 2. The tanker driver will be supervised during the connection procedure by a member of the site operations team. Minor spillages from the connection and disconnection to these points will drain onto the hardstanding which in turn will gravitate or be hosed down to either of the containment sumps. The frequency of this cleaning operation will be dependent upon the volume of spillage.



A11 Waste pre-acceptance form



Company Information

Contact _____
Title _____
Customer _____
Address _____
Postcode _____
Telephone _____
Fax _____
E-mail _____

Details of waste produced

Process of Origin _____
Description of waste _____
Quantity _____
Frequency _____
pH _____
COD (if known) _____ mg/l
Odour _____
UN number _____
Health & Safety Data sheet available Y/N _____

Declaration

United Utilities, under the terms of their site Licenses, are prohibited from accepting wastes containing substances listed in Regulation 6 (2) Schedule 5 of the Environmental Protection Act (Prescribed Processes and Substances) Regulations 1991. Therefore, please complete this form and declare to the best of your knowledge that the information given is correct. This will help us deal with your enquiry. Thank you for your co-operation.

Signed _____
Print _____
Position _____

United Utilities Industrial Pre-Acceptance Form

Composition of Waste (Please tick the appropriate box)

	Y	N	Not Known
Flammable and immiscible liquids with a flash point of less than 21°C			
Flammable liquids (eg acetone) with a flash point between 21 & 55°C			
Other organic liquids with a water immiscible layer			
Substances which produce a flammable gas or vapour			
Free emulsified fat, grease or oil			
Emulsified materials liable to separate on dilution (eg latex)			
Surface active agents (eg detergents)			
Tar or tar-oil			
Phenol or derivatives of phenol (phenolic compounds)			
Carbohydrates (eg glucose, dextrose or general sugars)			
Organo-sulphur compounds (eg thiophene)			
Organo-halogen compounds (Organo chlorine, fluorine or bromine compounds)			
Organo-phosphorus compounds			
Organo-tin compounds			
Organo-silicon compounds			
Mineral acids (eg hydrochloric, sulphuric, phosphoric, nitric)			
Organic acids (eg acetic, acrylic, citric, benzoic)			
Alkalis (eg caustic soda, caustic potash)			
Ammonia or ammonium compounds			
Any compound which produces ammonia on basicification			
Amines			
Amides			
Sulphides or Sulphates			
Bromide or Bromates			
Fluoride			
Iodide or Iodates			
Cyanide or compounds which liberate hydrogen cyanide on acidification			
Sulphur dioxide or substances which liberate sulphur dioxide on acidification			
Elemental phosphorus			
Boron and its compounds (Borates)			
Flocculating or coagulating agents such as polyelectrolytes			
Heavy solids (capable of rapid settlement)			
Nitrate			
Phosphate			
Biocides or herbicides			
Antibiotics or medicines			
Oxidisers			
Radioactive Material			

Prescribed Processes & Substances Regulations 1991 (Environmental Protection Act 1990)

(Please tick if present leave blank if absent)

Mercury & it's compounds	
Cadmium & it's compounds	
Gamma hexachlorocyclohexane (HCH)	
DDT	
Pentachlorophenol & its compounds	
Hexachlorobenzene (HCB)	
Aldrin	
Dieldrin	
Endrin	
Carbon Tetrachloride (CTC)	
Chloroform	
Polychlorinated biphenyls (PCBs)	
Tetrachloroethylene (perchloroethylene)	
Dichlorovos	
1,2-Dichloroethane (EDC)	
Trichlorobenzene (TCBs)	
Atrazine	
Simazine	
Tributyl tin compounds (TBT)	
Trifluralin	
Fenitrothion	
Azinphos - methyl	
Malathion	
Endosulfan	

Is the waste classified under the special waste regulations 1996?
Y/N
If yes which hazard codes are assigned?

UUI Enquiry Number _____

United Utilities Industrial Environmental Policy

Policy

United Utilities Industrial operates in the areas of treatment and disposal of liquid waste and the sourcing, treatment and supply of non-potable water. Our policy is consistent with that of United Utilities plc. We recognise our responsibilities to safeguard public health and the environment. This policy is communicated to all employees and is publicly available.

Objectives

We recognise the importance of environmental protection, social responsibility and the conservation of natural resources. In conducting our business we will: -

- Conduct our operations in a manner so as to prevent pollution, maximise operational efficiency, conserve natural resources, minimise the impact and quantity of waste and operate with regard to local circumstances.
- Comply with all relevant legislation and regulations.
- Develop and implement an environmental management system that conforms to ISO 14001:1996, and achieve external certification where appropriate.
- Promote awareness of environmental and sustainability issues amongst our staff, customers and suppliers, where appropriate.
- Communicate openly with all interested parties about our environmental policy, plans and performance, unless prevented by commercial constraints, confidentiality or personal rights.
- Seek opportunities to have a positive influence on the business practices of clients, suppliers and other stakeholders.
- Participate fully in group level environmental performance monitoring and reporting.
- Follow a programme designed to deliver continual improvement, through specific objectives and targets based on this policy and evaluation of our significant environmental impacts.
- Promote training and education to encourage a culture of continual improvement.

Management Responsibilities

Ultimate responsibility for executing this Policy rests with the Director of United Utilities Industrial. Specific responsibilities, performance standards and reporting requirements are documented in the United Utilities Industrial Business Systems Manual and Procedures.

Where Joint Venture Projects or use of sub contracted staff are concerned, the Director and his management team will seek to ensure that: -

- All bids, contracts and agreements shall incorporate the necessary environmental and social commitments that are consistent with the aims and objectives set out in this policy.
- The company uses its influence so far as possible to ensure that the appropriate environmental practices are put into place. We will show a demonstrable commitment to managing the social and environmental impacts of our business when selecting venture partners and suppliers of goods and services.
- Managers within United Utilities Industrial shall assess the social and environmental impacts of their business areas and ensure that they are effectively managed. They must allocate sufficient resources to carry out the requirements of this policy. These resources include competent staff, training for themselves and their employees and requesting specialist advice when required.

Individual Responsibilities

All employees have a responsibility to themselves, their colleagues, the company and to the community to care for the environment, and to co-operate in achieving the high standards required by this policy.

Monitoring of the Policy

The implementation of this Policy will be audited regularly in line with the United Utilities Industrial internal audit programme. These audits will be made available to the company directors and management staff.

Policy Review

Top management will review this policy annually.



Fred McArthur
Director
United Utilities Industrial
October 2001

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●

Health and Safety Policy

Prepared by:

Authorised by:

Issue date: March 1999

Review date: March 2000

Part 1: General statement of policy and health and safety organisation

The Managing Director and directors of Hyder Industrial believe that the most valuable asset the Company possesses is its employees. We are therefore committed, with the help and co-operation of all our employees, to a policy of ensuring that the highest standards of health, safety and welfare which are reasonably practicable to attain are provided for all employees of the Company.

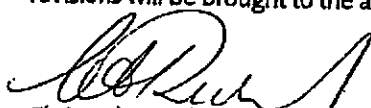
In order to ensure that these standards are achieved, the Company has established an organisation with responsibilities for controlling all aspects of health, safety and welfare.

The specific aims of this organisation will be:

- to have responsibility for controlling all aspects of health, safety and welfare in order to secure the health, safety and welfare of all persons at work, and to provide such protective devices, equipment and systems of work as may be reasonably necessary to achieve these ends
- to ensure compliance with all statutory requirements relating to health and safety at work including those relating to the design, construction and operation of plant and equipment which is the responsibility of Hyder Industrial
- protect members of the public, clients and contractors from risks to health, safety and welfare due to work activities in investigative surveys, new construction and day to day operational activities
- promote the application of Company health, safety and welfare procedures, and to include them in all relevant training programmes
- reduce, as far as is possible, lost time due to accidents (and damage to property, plant and equipment) and to regularly review procedures to eliminate, as far as is practicable, any potential hazards by use of the techniques of risk assessment
- provide adequate instruction, training and supervision for all employees and contractors
- provide protective clothing and equipment as necessary, and ensure that its correct and proper use is implemented
- provide adequate first aid and welfare facilities at work
- provide safe arrangements for the use, handling, storage and transport of articles and substances
- consult and co-operate with employees in promoting and developing measures and a climate that ensures health, safety and welfare at work.

The Company has issued a statement defining the duties and responsibilities of the directors, the health and safety function, managers and individual employees. Persons given specific duties will, where it is deemed necessary, be given relevant training to carry out their tasks. This statement comprises Part 2 of the Company policy.

The policy statements will be reviewed regularly to take account of any new hazards and risks or to introduce improved procedures with previously known hazards. Any revisions will be brought to the attention of all persons who may be affected.


Christopher Richards
Managing Director



Part 2: Health and safety organisation - individual duties and responsibilities

Introduction

Part 1 of this policy outlines the organisation and arrangements which the Company has established in order to provide for its employees the highest standards of health and safety, which it is reasonably practicable to attain.

Part 2 of the policy lists the duties and responsibilities which are placed on individuals with the objective of ensuring that the aims of the policy are achieved.

It is an important part of this policy that any of the persons identified below who, in the course of their duties, discover contravention of the policy, take appropriate action within the scope of their duties, and at the earliest possible opportunity, to rectify the contravention. Particularly they must bring to the attention of their immediate supervisor, or the Managing Director, the circumstances of the contravention.

Managing Director will:

- cause the health and safety policy to be translated into effective action at all levels within the Company
- make adequate financial provision for carrying the policy into effect
- ensure that the health and safety performance of the Company is monitored
- promote an interest in, and an awareness of health and safety matters throughout the Company.

Directors will:

- be responsible for the formulation and implementation of the Company health and safety policy
- ensure that the Company policy on health and safety is periodically reviewed and, whenever necessary, arrange for draft amendments to be produced
- ensure that the managers of each establishment within the Company are fully aware of their responsibilities as determined by this policy
- monitor the health and safety performance of the Company and take such steps as may be necessary to improve the performance
- promote an interest in, and an awareness of health and safety matters throughout the Company
- organise an effective communication and consultation procedure for dealing with health and safety issues within the Company
- organise the implementation of any Company occupational health and welfare policy
- create, at all levels within the Company, a positive approach to accident prevention and the health, safety and welfare of all employees at work
- initiate and maintain positive measures to raise the level of safety at all places of work.



Health and safety advisor will:

- advise the Company on matters relating to health and safety legislation, advisory publications, codes of practise and working practises including those relating to construction operations
- ensure consistency of approach to the implementation of health and safety issues throughout the Company
- assist in preparing Company health and safety procedures for dealing with specific hazards for inclusion as Part 3 of the policy, including the reception and handling of industrial chemicals and effluents
- ensure that they are fully conversant with all current legislation, codes of practice, guidance notes and other literature affecting the health, safety and welfare of the Company's employees, and those people who may be affected by the activities of the Company, in offices, construction sites and on the premises of third party companies with whom the Company is working
- liaise with the Inspectors of The Health and Safety Executive, local authorities, fire authorities and any other professional body employed in the enforcement of health, safety and welfare regulations
- liaise with the health, safety and welfare advisors and officers of Hyder Utilities and Hyder Consulting, in particular with respect to work being carried out on Hyder Utilities sites or involving Hyder Utilities or Hyder Consulting employees
- liaise, as appropriate, with the health, safety and welfare officers of third party companies with whom the Company is working to ensure that any risks to the Company's employees, whilst on or adjacent to the third party site, are minimised
- provide advice to management and employees, as requested, on any matter affecting health, safety and welfare, prevention of injury and damage, working methods and systems of work
- lead investigations into all serious accidents and dangerous occurrences within the Company and initiate reports to the respective managers and the nominated director
- advise on or provide relevant specialist training as appropriate
- monitor the effectiveness of the Company health and safety policy by carrying out site and workplace inspections, reporting the results to the respective managers
- prepare statistical information on the health and safety performance of the Company, reporting the results to respective managers, safety committee and employees
- provide a quarterly report on the performance of the Company with respect to health, safety and welfare matters to the senior management group.



Health and safety committee will:

- provide a forum for the discussion of health, safety and welfare issues
- receive quarterly reports from business - regional managers and the health and safety advisor on the performance of the Company with respect to health, safety and welfare matters
- consider the quarterly reports and advise the Managing Director on recommended amendments to, or instructions relating to, health and safety matters
- ensure that Company health and safety procedures are in place
- periodically review the health and safety arrangements of the Company
- report to, and advise, the Managing Director on the adequacy of the health and safety policy and procedures.

Business and operational managers will:

- cause the health and safety policy to be implemented throughout the function/area under their control
- ensure that all employees under their control are adequately trained in health and safety matters
- ensure that all Company health and safety procedures, as they affect their function, are produced, observed and implemented
- ensure that, when dealing with or organising non-routine work tasks, sufficient and suitable health and safety procedures are implemented
- ensure, where required, that statutory registers are maintained, and that any plant, equipment or device subject to statutory inspection is examined in accordance with regulations
- ensure that all injuries, incidents and dangerous occurrences are properly investigated and reported as appropriate
- liaise with the Company's health and safety advisor, and any other specialist officer, over any major changes in work practices, plant, materials etc.
- provide a quarterly report on the performance of the Company with respect to health, safety and welfare matters to the senior management group
- ensure that all employees or contractors under their direction or control are aware of, and comply with, the Company's health and safety policy
- liaise with companies for whom the Company is providing services to ensure that appropriate health and safety procedures are in place and complied with, with respect to operations on or adjacent to third party company premises
- set a high personal example of health and safety standards.



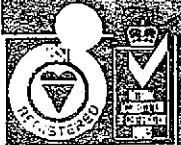
All employees

It is the duty of all employees to take reasonable care to ensure that you do not endanger yourself or anyone else who may be affected by your work activities.

You must co-operate fully with your employer in helping to meet all statutory requirements.

In addition you should:

- ensure that any staff or persons working under your control or direction are aware of, and comply with, the Company health and safety policy
- report any hazardous condition, situation or occurrence to your immediate manager
- report any injury or accident to your immediate manager at the earliest opportunity and ensure that details concerning these accidents are entered in the accident book
- follow the approved Company health and safety procedures to minimise the risk of injury to yourself, fellow workers, contractors, employees of other companies whose sites you are working on or near and members of the public
- comply with approved procedures when working on or near, or passing through the premises of companies to whom the Company is providing services
- wear protective clothing and equipment provided for specific tasks and notify your immediate manager should any faults or deficiency arise with the equipment or clothing
- participate in safety training courses and apply any knowledge, skills and techniques acquired
- take an active and personal interest in promoting health and safety at work.



Definitions

Company	:	Hyder Industrial
Area of operation	:	UK and Republic of Ireland
Managing Director	:	Christopher Richards
Directors	:	Kevin Houston Harvey West Steve Rogers
Health and safety advisor	:	John Needs (Hyder Utilities)
Health and safety committee	:	Steve Rogers (Chair) Graham Muir Roger Jones Kevin Houston Harvey West Robert Ryan Clwyd Jones Colin Cheal Barry O'Toole Helen Gant Geraldine Swanston Bob Ayres

UNITED UTILITIES INDUSTRIAL BUSINESS SYSTEMS MANUAL

1. Introduction

1.1 Business Introduction

1.1.1 United Utilities Industrial Limited is a wholly owned subsidiary company within the United Utilities plc group of companies. It is responsible for the management of the following business units: -

- The control, treatment and disposal of liquid wastes
- The sourcing, treatment and supply of non-potable water

(The organisational structures shown at (Appendix A) of this manual)

1.2 Philosophy

1.2.1 Whilst this document may be referred to as the Quality Manual, our philosophy at United Utilities Industrial is that 'quality systems' and 'environmental management systems' and 'business management systems' are one of the same, therefore we consider it beneficial to refer to such activities as 'business' related rather than 'quality' related or 'environmentally' related.

1.3 Business Policies and Environmental Policy

1.3.1 The United Utilities Industrial policies for the business are authorised by a Director. They are shown at the beginning of the manual and also displayed at prominent locations around the company and associated sites where they can be read by our customers, visitors and staff alike. The business policy is prescribed and maintained by this manual and associated management operating procedures. The environmental policy is publicly available.

1.3.2 The manual, associated procedures and process instructions are mandatory requirements on all our staff. They are "living" documents and will be updated and amended as required.

1.4 Organisation

1.4.1 Responsibility and Authority

1.4.1.1 The outline organisation and functional responsibilities for United Utilities Industrial are shown at the appendices to this manual.

Note: These charts indicate structural relationships and responsibilities and lines of internal communication. They do not refer to, or imply, relative importance of positions.

Internal communications may take place as required by e-mail, telephone or meetings. Lines of internal communication between sites and office/management staff will be documented in each Site Operational or Project Plan.

1.4.1.2 The Senior Managers and Directors within United Utilities Industrial have specific responsibility for its operation. However, the overall

UNITED UTILITIES INDUSTRIAL BUSINESS SYSTEMS MANUAL

philosophy is to effectively create a team of people providing specialist skills at a specific time and place in order to satisfy the contract specification and/or client requirement.

- 1.4.1.3 Specific responsibilities for site activities are delegated to the Operations Managers, while, the overall management and control of individual projects are delegated to nominated Project Managers.

The prime responsibilities for each post are: -

Director

- Sets company policy and goals
- Provides overall business planning and strategy
- Develops marketing and sales policy
- Ensures business units meet their performance targets
- Provides overall direction and management of the individual business units
- Has overall authority for quality assurance, health and safety and environmental compliance and thereby the business systems
- Management review

General Operations Manager

- Manages risk, particularly in connection with contract management and legislative compliance
- Responsible for the day to day management of operations, sales and overseeing individual projects
- Responsible for developing and maintaining procedures which ensure compliance with client, contract, legislative and health and safety requirements
- Reviews client requirements and provides for client satisfaction;
- Responsible for meeting the financial targets and controls of the business
- Identifies future investment opportunities
- Advises Director on business planning strategy issues

Regional Operations Managers

- Responsible for the day to day management of Operations Managers
- Responsible for achieving customer satisfaction at individual sites
- Responsible for operational control of sites through the development, maintenance and adherence to formal systems which ensures the safe and effective handling of product and compliance with environmental legislation
- Company representation to customers, regulators, internal service providers and the public
- Management Representative with regard to Health and Safety
- Responsible for the gathering and collating of research and development information relating to site process technologies
- Responsible for the control of costs and achieving key performance

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Indicators (KPI's)

- Responsible for ensuring that environmental objectives are met wherever possible, and ensuring that site environmental policy reviews take place
- Responsible for ensuring that operations staff under their management are trained to adequate standards to perform their job safely and efficiently
- Carries responsibility for development of O&M contracts
- Carries overall responsibility for project performance during the operating life and optimising profit for the project
- Identifies major considerations to be taken into account on health, safety and environmental matters during the operating phase of the project as early as possible in the project life cycle prior to construction
- Carries responsibility for operational health and safety
- Monitors and reports project performance to the Business Managers and assesses risks of key targets not being met in the Business Plan
- Manages the building/cost control functions during the operation stage

Operations Managers and Process Scientists

- Manages the process plant and is responsible for ensuring process security
- Responsible for identifying potential improvements in the performance of process plant and associated management systems
- Responsible for achieving customer satisfaction through the implementation of the site operations
- Where necessary, to manage operational teams towards the successful delivery of the intended service
- Assist in achieving and maintaining regulatory compliance
- Assist in the effective implementation of documented management systems
- Responsible for the control of costs and achieving key performance indicators
- Responsible for regular review and implementation of site-specific environmental policies
- Responsible for corrective and preventative actions if operating specifications are exceeded

Sales, Marketing and Customer Services Team

- Point of contact for customer enquiries and ensuring those customers are provided with a value for money service
- Ensures that customers' products are managed effectively and safely
- Responsible for the development and maintenance of marketing, sales, after sales systems
- Responsible for adherence to formal systems, in particular environmental, legislation, process and operational controls
- Company representative to customers, regulators and internal service providers
- Usually the initial customer contact regarding complaints of service
- Responsible for the management of customer complaints

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Business Planning, Finance and Support

Business Systems Manager

- Manages the day to day activities associated with business systems
- Monitors the effectiveness of the business systems and reviews changes
- Manages the implementation of system audits
- Responsible for determining the environmental and quality training requirements of employees through consultation with managers and operatives
- Is the company wide nominated Management Representative for quality assurance and environmental management and the co-ordinator of QA and environmental activities
- Oversees the individual business Management Representatives activities
- Ensures that the service delivery provided by internal and external service providers are monitored satisfactorily by the relevant business managers
- Management Representative for the company Environmental Management System (EMS)
- Updates company legislation register for issue to operational sites

Systems Administrator

- Administers the day to day activities associated with business systems and document control under supervision of the Business Systems Manager
- Co-ordinates the implementation of system audits under direction of the Business Systems Manager
- Books and co-ordinates all company training
- Manages training database for all employees
- Provides a monthly summary of training information to the board
- Provides all line managers with training data as requested
- Acts as management representative under the co-ordination of the Business and Systems Manager
- Responsible for control and issue of all company systems documentation (excluding Health & Safety).

Health and Safety Manager

- Advises the business on the management of health and safety
- Formulates action plans for improvement
- Monitors and evaluates health and safety performance, across the business and reports directly to the board
- Carries out investigations into accidents across the business
- Carries out site inspections and audits
- Reviews the Health & Safety training requirements of the business to ensure that staff have received appropriate training to carry out their activities safely
- Liases with relevant regulatory authorities
- Responsible for control and issues of company Health and Safety documentation.

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Financial Controller

- Manages the day to day activities of the Financial Administration Team
- Plans and assesses financial data to produce budgets and the 5-year business plan
- Assesses and recommends on capital investments
- Ensures the implementation and maintenance of monthly budgets and key financial performance measures
- Monitors and controls the reporting of financial business performance, in order to influence the decisions of the board
- Controls the management of working capital
- Controls the collation of financial information to produce statutory accounts in order to satisfy legal, taxation and external audit requirements
- Shares in the process of determining the value of the business and advising on the future financing strategy of the company.

Financial Administration Team

- Carries out invoicing, debt collection, purchasing etc.
- Provides accurate financial management information for the effective control of the business unit
- Develops and maintains effective financial accounting systems
- Records financial transactions with other companies
- Maintains an asset register for United Utilities Green Energy
- Collects and collates financial data and the compiles financial reports.

Business Support Team

- Provides communication control for the business and associated site operations
- Ensures filing systems, both manual and computer based, are efficient, current, available for use and in line with documented company system and procedures
- Produces documents, letters and reports for business units
- Acts as a first line of effective and efficient communication with customers and internal service providers
- Maintains register of communications
- Maintains register of incidents and accidents
- Maintains register of complaints
- Develops and maintains an administrative system
- Issues and controls Health & Safety documentation to company staff under supervision of Health and Safety Manager.

Project Development

Project Manager

- Supports Senior Project Manager
- Project delivery on an as required basis from Project conceptualisation/initiation
- Supports the Senior Project Manager on setting the Terms of Reference including level of development budget required on a Project by Project

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basis;

- Ensure projects are developed works within these terms
- Manages project delivery through the development stage up to construction contract award stage whilst carrying responsibility for delivery to time/cost/quality and environmental objectives
- Carries responsibility for managing the change control process and monitoring/reporting on project delivery to the Business Manager from concept up to construction handover point
- Seeks approval from the Senior Manager - Project Delivery for commercial decisions which fall outside the Terms of Reference
- Establishes the project team and ensures optimum resourcing and expenditure levels to achieve project deliverables and objectives as set out within Terms of Reference
- Sets project programme and change control process with advice from the Senior Project Managers
- Has responsibility for decision on procurement route following advice from the Senior Project Manager.

Senior Project Manager

- Manages project delivery up to and including commissioning
- Responsible for delivery to time, cost, quality and environmental objectives
- Advises and supports the project manager in meeting project objectives during the project development stage up to award of construction contract
- Supports the project manager in establishing suitable change control processes that are compatible throughout the life of the project to commissioning
- Advises the project manager on procurement route required to deliver to project parameters
- Supports the project manager whilst making the change control process for site based activity by providing suitable reports on project delivery and any changes to the scope of works that could cause the project to fall outside the Terms of Reference set to the Project Manager as required
- Supports the Project Manager in preparation of final accounts
- Manages on site relationships between key parties
- Carries responsibility for ensuring site matters in relation to health, safety and environmental issues are properly managed and dealt with during the construction period including commissioning.

Business Development Team

- Identifies business development opportunities
- Undertakes conceptual analysis and considers business plan issues including the consequences of not proceeding
- Prepares business case/justification and determines level of priority to be attached
- Procures/provides development budget
- Sets Terms of Reference for Project Delivery Team including levels of budgetary control and expenditure authority
- Leads commercial negotiations with client/landowners and acts as focal point for all legal and commercial issues

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- Takes responsibility for commercial decisions which go outside the Project Manager's Terms of Reference
- Sets levels of reporting within team and reports on Business Unit progress on a monthly basis on business development, project and operational matters and KPI performance
- Manages all marketing and PR initiatives

All Staff

- To work in manner consistent with company quality, environmental and health and safety systems
- To report and request necessary changes to the systems and procedures, to the relevant management representative or administrator in line with company procedures

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1.5 Resource

- 1.5.1 United Utilities Industrial will provide adequate resource for the satisfactory completion of project activities, customer requirements and environmental management.
- 1.5.2 Inspection, verification and audit checks are identified and incorporated into our operating procedures. These are designed to ensure that the requirements of our project and customer contracts are always met and our business management system continues to be effective. In addition, they provide valuable source information for further improvement.

1.6 Quality and Environmental Management

- 1.6.1 All employees of United Utilities Industrial have a responsibility to comply with the business systems as well as ensuring that cost and business targets are met. However, the management of the prime features of quality assurance and environmental management, i.e. the overall business system, are assigned as follows: -
- 1.6.2 The Director has overall authority for the Business Systems.
- 1.6.3 The Management Representatives, on behalf of the Director, are responsible for: -
 - The control, updating and issuing of the documented business system procedures within the businesses
 - Ensuring the requirements of BS.EN.ISO 9001 and BS.EN.ISO 14001 (where applicable) are implemented and maintained
 - Monitoring of verification activities independent of those staff directly carrying out the work and thereby ensuring that the service is in accordance with the customer requirements and the operating system remains effective
 - Maintaining a system, which aims to prevent the reoccurrence of individual problems
 - Providing an overall review of our service towards possible improvements
 - Co-ordinating the documented business system activities for United Utilities Industrial
 - Reporting on the performance of the system to top management (Management reviews)

1.7 Management Reviews

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- 1.7.1 The Director, in conjunction with the Senior Managers and other relevant company personnel, will carry out annual reviews of business/management systems to ensure their continued effectiveness.
- 1.7.2 The Management Representatives will co-ordinate the programming and recording of these reviews and supervise the collection of the necessary information.
- 1.7.3 These reviews will consider such topics as systems audit findings, significant corrective and preventative action, training requirements of personnel, calibration, customer complaints, supplier performance and the continuing suitability of our formal business policy, environmental policy and management system.

2. Formal Control of the Business Systems

2.1 Structure of the Business Systems

The prescribed system for United Utilities Industrial has four intended levels: -

- Business System Manual
- Management Operating Procedures
- Site Operational Plans
- Project Plans

2.1.1 Business System Manual

This lays down the overall policy requirements to provide adequate and economic levels of quality and environmental management assurance for the business. It is also the key document in ensuring compliance with the requirements of BS.EN.ISO 9001 and BS.EN.ISO.14001, hence our registration to that standard.

2.1.2 Management Operating Procedures

Are used to document the prime procedures and controls being implemented for each function of the business activity in order that the necessary consistency and effective management of our operations is maintained.

2.1.3 Site Operational Plans

To ensure the effective and consistent management and operation of individual operational sites, Operational Plans have been developed and documented. These plans contain the prime information, topics, practices and controls that relate to specific site activities. It is therefore a unique plan or schedule, which brings together all those requirements of the business, customer, regulatory authority and local environment.

2.1.4 Project Plans

- 2.1.4.1 These documents contain information pertinent to the successful control and completion of individual projects undertaken by the business. The Project Development Plan will therefore identify, where

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applicable, such criteria as the project/contract brief, personnel responsibilities within the project, planned programme of activities, legislative controls and authorisations, design reviews, verification activities, records, etc.

2.1.4.2 When the satisfactory completion of a project results in United Utilities Industrial being contracted to operate the associated facility, then an appropriate site operational plan will be developed.

2.1.5 Planning

All sites projects or contracts will be executed in accordance with documented procedures and operational plans. These will consider and identify the current practices, prime controls, verifications, equipment and records necessary for the confirmation of compliance to specified customer or project requirements.

3. Contract Review

3.1 Customer Contracts

3.1.1 A formal review of the project is carried out and recorded for each customer contract whether for the design, build, fund and operation of a new facility or the upgrade and operation of an existing plant. Such a review will ensure that -

- All client, legislative and other requirements are clearly documented and understood
- There are no unresolved discrepancies between any previously prepared submission quotation and the subsequent contract
- The business is able to meet all the requirements of the contract, or have at least an approved sub-contractor for the supply of those requirements outside their capability

3.2 Contract Amendments

3.2.1 The same authority that carried out the original contract review will review all amendments to customer contracts. Where appropriate the implications of the amendment will be addressed within the appropriate operational plan.

3.2.2 Formal actions will be taken to control and implement all such amendments. Due consideration will be given to the possible implications of costs, the project programme, design, product handling and processing.

4. Design Control

4.1 General

4.1.1 Within the business, "design" should be regarded as an integral part of the total service we initiate on behalf of our customer. In carrying out the contract it is essential we establish the requirements and 'design' the most effective practicable solution that satisfies all the requirements, both desired and

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mandatory.

4.1.2 Where the contract requirement relates to the accepting and disposing of waste at United Utilities Industrial Waste Management Centres then such 'design' will involve the development and implementation of the most effective and economical process.

4.1.3 Alternatively, the 'design' element of a contract may relate to part or all of the feasibility, design, construction, funding, commissioning and operation of a new or existing facility. All such design activities therefore will be performed controlled and verified in accordance with a formal plan and/or documented procedures. For further detail see Section 9 of this Manual.

4.2 Design Planning

4.2.1 Projects may be initiated through the identification by United Utilities Industrial or by our client of a service or process facility. Such a requirement will be evaluated and documented in the form of a proposal or outline scheme. Upon acceptance of the proposals a formal Project Plan will be prepared and authorised. Such a plan may relate to the provision of a desired facility or the operation of a new or existing plant. The Plan shall fully address the project requirement and the means of controlling all activities carried out during the execution of the plan.

4.3 Technical Interfaces

4.3.1 The organisation, responsibilities and technical interfaces involved in carrying out the project activities will be identified within the appropriate Project Plan. All personnel or groups with defined responsibility within the Plan shall be issued with controlled copies of the document together with any subsequent amendments.

4.4 Design Input

4.4.1 All information and criteria pertinent to the project and its successful completion will be reviewed, documented and either contained, or suitably referenced, within the Plan.

4.5 Design Output

4.5.1 At completion of the design activity - whether for a service or process facility - the output will be documented and reviewed in accordance with procedures. This review shall ensure that the output has: -

- Met the project and design input requirements
- Identified or referenced the final project acceptance criteria
- Specified any characteristics that are crucial to the safe and proper

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functioning of the processing facility (such as operation, maintenance and security).

4.6 Design Review

- 4.6.1 Where appropriate and throughout the design activity, reviews shall be carried out and recorded to ensure that the initial requirements of the contract/project are being addressed and the most suitable solutions and actions continue to be applied. Relevant project personnel or groups will be involved in these reviews.

4.7 Design Verification

- 4.7.1 Each completed design output, whether for service or processing facility shall be reviewed and verified to confirm it satisfies the contract or project requirement (i.e. design input). The responsibility and most appropriate timing of such design verification will be identified within the Project Development Plan.

4.8 Design Validation

- 4.8.1 Where appropriate to the project, the service or facility provided will be validated to assess whether the planned criteria and requirements have been attained. The degree of design validation may range from a review of the project completion details to a full appraisal of the performance of the completed processing facility.

4.9 Design Change

- 4.9.1 All amendments to design or modifications to equipment will be documented, reviewed and approved in accordance with formal procedures.

5. Document Control

- 5.1 United Utilities Industrial will ensure adequate control of all documentation and other information relating to the requirements of this Manual and its associated management procedures. Such control will be applied to both hard (paper) and electronic versions.
- 5.2 Prior to issue, all documentation will be reviewed and approved for correctness so as to ensure that the contract and management system requirements are met.
- 5.3 Only the current issues of relevant documents are available at locations, (including location of relevant subcontractors), where operations essential to the effective functioning of our systems are carried out. These may be in paper or electronic form.
- 5.4 Obsolete copies of documents are removed from all points of possible usage or suitably annotated to prevent their inadvertent use.
- 5.5 In the case of paper versions, a list of recipients of the documents will be maintained to ensure an effective update.
- 5.6 The document originator will review its content and all subsequent changes to that document. However, when this is not able to be the case, there will be documented evidence showing the reasons for designated alternative signatory.

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- 5.7 Changes will be approved, identified and recorded. Each document will be identified with an issue reference.
- 5.8 An up-to-date master list of all relevant documents will be maintained. The master list will clearly identify the current issue of each document in order to preclude the use of obsolete or inaccurate information.
- 5.9 Procedures have been prepared for the effective and proper control of projects and contract documentation and correspondence.

6. Purchasing

6.1 Purchasing Policy

- 6.1.1 Materials, products or services purchased or sub-contracted by the business will be adequately specified and conform exactly to specification and/or contract requirements.

6.2 Selection of Suppliers

- 6.2.1 Suppliers to the business are selected on the basis of their ability to consistently meet the requirements imposed upon them, including quality assurance requirements.

- 6.2.2 The selection of suppliers will be determined on the basis of one or both of the following: -

- the ability of the supplier to provide independent evidence of the effective functioning of a formal management system
- the supplier's proven capability to supply materials, products or services of an acceptable quality
- the suppliers acceptable environmental performance.

- 6.2.3 A formally controlled master list of approved suppliers and subcontractors will be maintained and issued by the Management Representative of the business, or nominated deputy. Materials, products, services or sub-contracted work which has a direct influence on our ability to fully comply with the requirements of the agreed customer contract or project will be procured only from suppliers selected from the approved listing.

6.3 Purchase Information

- 6.3.1 All requirements for purchases will be documented and reviewed by the originator before the purchase is actioned.

6.4 Verification of Purchased Material

- 6.4.1 If necessary, a business representative will arrange to inspect and verify materials or products at their supplier's premises. The requirement for the

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business to arrange for its customer to verify goods at United Utilities premises, or that of the supplier, may be arranged provided it is specified within the project/contract.

6.5 Invoicing

6.5.1 Invoices will be prepared and dispatched as described in the relevant procedure.

7. Customer Supplied Product

7.1 The nature of the business dictates that all the contract related product is provided by our customer, for onward processing by United Utilities Industrial. Such product would therefore be received and processed in accordance with documented procedures and/or process instructions.

7.1.1 The above referenced procedures will contain at least the following controls: -

- Receipt verification to check that the plant, waste, water, goods or items supplied are in accordance with the type and specification advised by the customer, and the items are therefore suitable for their intended purpose
- Adequate identification to prevent incorrect processing or use on the wrong project
- If appropriate, periodic checking shall be carried out during storage to assess any possible contamination, analysis change or deterioration; and
- Reporting of all uncertain or unspecified goods to the customer and relevant organisations or other appropriate regulatory authorities

8. Product Identification and Traceability

8.1 General

8.1.1 Within United Utilities Industrial the term "product" will refer to the actual waste or water being processed.

8.2 Identification

8.2.1 Appropriate procedures have been developed within the business to ensure that all services, plant, materials, documents, products and contracted activities are properly identified for effective verification and control throughout all stages of the project activity including transportation, storage and processing.

8.3 Traceability

8.3.1 Where explicit traceability of documents, product and/or materials conformance is a specific requirement of the contract or legislation, then this will be provided. The business procedures have been prescribed and are maintained for the

UNITED UTILITIES INDUSTRIAL BUSINESS SYSTEMS MANUAL

correct and effective identification of items or individual product consignments.

- 8.3.2 Product certification will be made available where mandatory or otherwise specified.

9. Planning Control and Services Provided

9.1 United Utilities Industrial has established, and continues to maintain, up-to-date management procedures, plans and instructions for the effective execution and control of all services provided. For each activity which has a direct influence upon the effectiveness or efficiency of the business, a defined and approved procedure has been developed and issued to pertinent personnel throughout the organisation

9.2 Such procedures will consider the most suitable method of executing the activity, taking full account of: -

- The plans and aims of the business
- The contracts/projects normally carried out within the business
- The importance or risk involved in carrying out the task and the associated health safety requirements
- The standard of workmanship required
- The personnel carrying out the tasks, including any possible training which may be necessary
- The materials and equipment available or required
- Regulatory requirements
- The degree of verification and/or monitoring
- The records required to be made available

9.3 It is a requirement of the business that contract related product is subjected to monitoring during prescribed stages of service and processing. Where considered appropriate or necessary, the documented procedures will be modified to improve the results of processes or our operational system.

9.4 Pertinent equipment conformance records will also be maintained. These records are reviewed to provide the essential basis of incoming and outgoing product conformance.

9.5 Specific requirements and controls pertinent to each part of the business will be contained in Site Operational Plans.

9.6 The management requirements and controls associated with the possible design, construction and commissioning of a treatment facility will be documented into a formal Project Plan.

10. Inspection and Testing

10.1 General

10.1.1 Procedures have been documented within United Utilities Industrial, which fully stipulate the verification, inspection and test requirement at progressive stages of the project and associated product processing.

10.1.2 Where a treatment is to be provided such confirmation will be undertaken during project execution i.e. from design through construction to commissioning.

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In the case of plant operation, such checks will be carried out from initial product review through collection, transportation, delivery, storage and processing (as appropriate).

10.2 Goods Inward Inspection

10.2.1 Material and project related documents would not be used until verified as conforming to purchase specification, customer contract or project requirements.

10.2.2 The degree of verification for each product, delivery, consignment or batch for processing will be addressed in the appropriate procedure or operational plan.

Note: Unacceptable material, equipment or incorrect product will be quarantined until reviewed and cleared for use. If un-cleared or suspect material is required urgently to meet imperative contract requirements, it will be uniquely identified so as to permit subsequent recall if found to be necessary at a later time.

10.3 In-process Inspection and Testing

10.3.1 The business will control its service, storage and subsequent processes through the use of documented management procedures stipulating the necessary inspection and testing.

10.3.2 Successive operations will not proceed until each identified stage of the inspection or test programme has been completed and the results demonstrate that the product or service complies with the planned acceptance criteria. Any non-conforming consignment will be clearly identified and where possible segregated from acceptable consignments.

10.3.3 Due to the variety of contracts/projects undertaken by the business and the range of project outputs, from design and build to operation of processing facilities, the degree of in-process verification will be identified within the Project Plan or Site Operational Plan.

10.4 Final Inspection and Testing

10.4.1 Final verification of all products and services will be carried out in accordance with documented procedures, in order to confirm that the resultant product or service is in accordance with the contract or legislative requirements.

10.4.2 No contract will be considered complete until all elements of the service, process and associated verification procedures have been satisfactorily completed and the relevant documentation is available so as to demonstrate that the results comply with the relevant acceptance criteria.

10.5 Inspection and Test Records

10.5.1 Appropriate records of inspection and testing will be retained in accordance with the requirements of documented procedures, the Project Development Plan or the Site Operational Plan.

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11. Test, Inspection, Monitoring and Measuring Equipment.

- 11.1 Operating procedures ensure that all test and measuring equipment which is used to verify our products, processes, output and thereby overall service, will be adequately identified and in a known state of calibration.
- 11.2 Such equipment, whether the property of the company or our customer, is included in this or a similar controlling procedure. Equipment, which does not affect the conformance of our product or service, will not be included in this system, and where appropriate will be identified accordingly.
- 11.3 Records of calibration will be maintained.

12. Inspection and Testing Status

- 12.1 Procedures and instructions will ensure that, at all stages of project or contract execution, the specified verification status of material, products, processes and service is known.

13. Control and Nonconforming Products

- 13.1 United Utilities Industrial will be responsible for the development and maintenance of the necessary operational procedures, which ensure that all non-conforming material, product, or document is always clearly known, thus preventing its inadvertent use or processing.
- 13.2 All non-conforming product, material or service will be recorded, reviewed and dealt with in accordance with these documented and approved procedures.
- 13.3 Items, which have been rejected against the contract or internal specification, may, in some controlled circumstance, be considered suitable for further processing. On such occasions the item will be the subject of a formal concession.
- 13.4 A record will be kept of all such consignments, which have been accepted on concession and associated documentation suitably annotated.

14. Corrective and Preventative Actions and Communications

14.1 Corrective Actions

- 14.1.1 Procedures have been established and maintained for investigating the cause of non-conformance, whether related to products, materials, processes, legal and other regulations, objectives and targets, incidents, accidents, service and customer or public complaints so that effective corrective action may be identified and taken.

14.2 Preventative Actions

- 14.2.1 Our procedures provide for the recording and review of undesirable

UNITED UTILITIES INDUSTRIAL BUSINESS SYSTEMS MANUAL

occurrences such as complaints, adverse audit findings and supplier/subcontractor under performance. The objective of these reviews is the identification of the means by which such problems can be eliminated and overall improvements in our management system and service achieved.

14.3 Communication

14.3.1 Receipt, documentation and response to all communication from external interested parties shall be carried out in accordance with our procedures. Lines of internal communication for each site or project will be recorded in the appropriate plans. General internal communication lines are indicated in the company structure and responsibilities as listed in Section 1.4 of this manual.

15. Handling, Storage, Preservation and Delivery

15.1 Procedures and facilities have been established and maintained, where appropriate, for the safe and secure collection, transportation, delivery, storage and processing of project related or customer contracted product throughout the time it remains within the control of the business.

15.2 Similarly, procedures have been developed to ensure all relevant documents are used and stored in such a way as to prevent their damage, deterioration or loss.

16. System Records

16.1 Documented procedures have been established for the compiling, storage archiving and destruction of essential records. These records will be necessary to demonstrate the effective operation of our management system and satisfactory fulfilment of specified project, contract and legislative requirements.

16.2 The procedures will ensure that these records are: -

- Legible and where necessary traceable to a specific contract, project or consignment of product
- Readily retrievable and stored in conditions which minimise deterioration, damage or loss
- Made available at the project or operational site for evaluation by the customer, his representative or legislative body as agreed; and
- Retained for an identified period prior to their disposal.

17. Internal Systems Audits

17.1 An effective system of audits has been established and is maintained in accordance with a planned schedule.

17.2 The United Utilities Industrial Management Representative will be responsible for the programming of these audits, which will: -

- be carried out on each function across the whole of the business at least once a year to determine if the activities comply with documented procedures, relevant legislation and other relevant regulatory constraints

UNITED UTILITIES INDUSTRIAL BUSINESS SYSTEMS MANUAL

- record the need for corrective and preventative action in areas where deficiencies are found
- indicate areas where changes or improvements to the existing business system may be considered

17.3 Audits and subsequent follow-up action will be carried out in accordance with documented procedures.

17.4 The auditor will document and circulate the results of formal audits to the Business Management Representative and the responsible personnel in the respective area of the business being audited. Personnel responsible for such areas will promptly record and implement the completion of corrective action for those deficiencies found during the audit.

17.5 A review of the complete system and its effectiveness will be carried out as described in paragraph 1.3 of this manual.

18. Training

18.1 It is the policy of United Utilities Industrial that only experienced or trained personnel are employed on duties, which have a direct effect on the service provided. As training needs become apparent they will be noted and met.

18.2 Training records are reviewed at regular intervals by the Business Manager to evaluate their continued acceptability.

19. Servicing

19.1 Where a project or service includes the design of a facility with planned operational requirements, such as design, build and operation of a processing facility. Then the operational procedures, criteria, maintenance and inspection requirements will be formally documented to ensure the continuing safe and correct operation of the facility.

19.2 Such requirements will be identified in the Project Plan or Site Operational Plan.

20. Statistical Techniques

20.1 We are not a manufacturer of product which requires, or would benefit from, such techniques as statistical process control or similar.

21. Environmental Aspects

21.1 Where a project or service requires the implementation of an environmental management system, environmental aspects and impacts will be identified, scored and actioned formally in accordance with our procedures.

22. Environmental Objectives and Targets

22.1 Environmental objectives and targets for individual sites implementing an environmental management system (EMS), shall be set in accordance with our procedures.

23. Legal and other requirements

UNITED UTILITIES INDUSTRIAL BUSINESS SYSTEMS MANUAL

- 23.1 Legal and contractual requirements, and requirements set by relevant regulators shall be identified in the individual site operational and project plans. It shall be the responsibility of site operations managers to ensure that changes to these requirements are recorded in the relevant plan(s). Legislation relevant to site operations shall be held in a controlled register. It shall be the responsibility of the Business Systems Manager to ensure that this register is updated via the Systems Administrator.

24 Emergency preparedness and response

- 24.1 Operations Managers shall ensure that site staff are directed and trained in relevant emergency procedures for their sites. These procedures shall be documented in the Site Operational Plan, and periodically reviewed via the Systems Administrator.

UNITED UTILITIES INDUSTRIAL OPERATING PROCEDURES

Training of Personnel

Amendment Record

<u>Issue</u>	<u>Date</u>	<u>Originator</u>	<u>Authorisation</u>
1	October 2001	H Gant	F McArthur _____

DO NOT PHOTOCOPY

Χονταχτ Σψστεμσ Αδμινιστρατορ φορ χοντρολλεδ ανδ υνχοντρολλεδ χοπιεσ
(σεε ΟΠ011, Σεχτιον 3.6)

UNITED UTILITIES INDUSTRIAL OPERATING PROCEDURES

Procedure for Training of Personnel

1. General

- 1.1 This procedure identifies the means by which the training needs of all staff employed by United Utilities Industrial are assessed, planned, implemented and recorded.
- 1.2 Training is based upon individual needs while taking full account of the requirements of the organisation.

2. Assessment of requirements

- 2.1 Upon joining United Utilities Industrial a Training Record for each employee is initiated by the training administrator. This record being in addition to the confidential Personal Record/History detail retained by the Personnel Department.
- 2.2 Staff are selected and engaged by the Managing Director, Business Manager or Departmental Heads as appropriate, on tasks which they are required to undertake as aligned with their 'qualification' and ability.
- 2.3 Further to the induction training, all staff are regularly assessed to ensure their continued suitability in carrying out their assigned tasks. Such an assessment may be part of the annual performance review or a specific consideration at any other time. The purpose of any assessment being to identify possible further training requirements which would assist the employee in effectively carrying out their activity.
- 2.4 In preparation for their annual performance review each member of staff is provided with an information pack and Self-Appraisal Form as shown at Appendix A. At the same time the appropriate assessing manager will be provided with a similar information pack and an Appraisal Form as shown at (refer to Appendix B).

3. Planning of Training

- 3.1 At the conclusion of each assessment the manager will identify any further training needs and initiate the planned requirement to satisfy those needs.

Further training requirements are documented by the Manager and copied to the training administrator for updating of the staff training record. Should the training be for personal development type courses, then a copy should be forwarded to the Group Development Section for subsequent arranging.

UNITED UTILITIES INDUSTRIAL OPERATING PROCEDURES

- 3.2 In addition to the training requirements identified through the performance appraisal process, further training may also be realised as a result of such criteria as:-
- Information established during the job application
 - Change of job within United Utilities Industrial
 - Specific job requirement
 - Additional requirement resulting from changes to company policy or business plan (i.e. introduction of ISO 9001, ISO14001, change to services or processes, etc)

Where such further training has been identified the procedures for requesting the requirement will be as above.

4. Implementation of Training

- 4.1 The training requirement identified will be accomplished in the most effective and economical methods, with due regard for the complexity and/or specialised content of the task.
- 4.2 Training methods will normally be one or more of the following:
- In-House training by either internal or external persons
 - On-the-job training
 - External training courses arranged with recognised training organisations or educational authorities
- 4.3 Levels of training and attainment may be indicated, where necessary.
- 4.4 Duration of training courses will be carefully considered in determining its effectiveness.

5. Training Records

- 5.1 Upon completion of the planned training the individual Training Record will be suitably updated and a copy of the course/attainment certificate passed to the training administration of the business and, where appropriate, the Personnel Department for addition to the confidential personal record file.
- 5.2 All staff will report to their manager on the suitability, technical contents and 'value for money' aspects of the course by using the proforma shown at (refer to Appendix C).

NB. Code of Conduct and Disciplinary Procedure and Quality of Opportunity Policy may be obtained on request from the Personnel Manager.

UNITED UTILITIES INDUSTRIAL OPERATING PROCEDURES

Procedure for the Acceptance of Waste (Waste Management)

Amendment Record

<u>Issue</u>	<u>Date</u>	<u>Originator</u>	<u>Authorisation</u>
1	October 2001	H Gant	F McArthur _____

DO NOT PHOTOCOPY

Χονταχτ Σψστεμσ Αδμινιστραπεφφφρ χοντρωλλεδ ανδ υνχοντρωλλεδ χοπιεσ
(σεε ΟΠ011, Σεχτιον 3.6)

UNITED UTILITIES INDUSTRIAL OPERATING PROCEDURES

Procedure for acceptance of Waste

1. General

- 1.1 This document identifies the formal procedures carried out at Waste Management Centres for the correct acceptance of customer waste on behalf of United Utilities Industrial.
- 1.2 The procedures are to be strictly adhered to so as to ensure the incoming waste is identified, recorded, stored and controlled in a manner which satisfies the requirements of our internal quality, health & safety and environmental management principles, and our external regulatory authorities.
- 1.3 For continuity of actions, this procedure also identifies the practices and requirements for our ongoing sampling of incoming customer waste.

2. Delivery of Customer Waste

- 2.1 To assist in the understanding of procedures for waste delivery the appropriate stages have been presented on a flow chart format Exhibit 1.
- 2.2 The following additional notes are intended to provide further information as appropriate.
 - 2.2.1 The customer/carrier must complete a 'Waste Reception Form' as (Appendix A) and must make available a Duty of Care Document corresponding to each delivery, number of deliveries or a specified volume.
NB. No waste whatsoever will be accepted at the site without these documents.
 - 2.2.2 Information regarding the incoming waste specification, acceptable volumes, description, storage arrangements, ongoing sampling frequency and processing/disposing arrangements are detailed on the Site Planning Schedule (SPS).
NB. No waste will be accepted on individual sites unless United Utilities Industrial has made an appropriate, authorised Site Planning Schedule available.
 - 2.2.3 Where a sample requirement has been identified in the SPS for specific deliveries, suitable containers will be provided by United Utilities Industrial. These containers are to be adequately identified so as to provide the necessary degree of traceability to its corresponding delivery.

See Ongoing Sampling Procedure at paragraph 6 of this document.

3. Non-conforming Waste

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- 3.1 Should the documentation, sampling results or any other feature of the delivered waste not be in accordance with the specification, agreement or Site Planning Schedule, or, should any other feature give rise for concern, then the Operations Manager must be informed.
- 3.2 The Operations Manager may resolve the situation or refer it to the Regional Operations Manager, Business Development Manager or the Process Manager. However on all such occasions a suitable comment will be added to the Waste Reception Form (if completed) and noted in the Site Diary.
- 3.3 Wastes, which may be 'special waste' and are unacceptable at the delivery site should be impounded, if possible in the emergency holding area, and the 'Procedure for Refusal of Special Waste' (Appendix B) followed.
- 3.4 Should additional discussion with other authorities such as waste regulator, waste producer, carrier, etc. be necessary, then records of all such discussion and associated correspondence will be retained in the customer contract file and site diary.
- 3.5 Instances where deliveries have been rejected after testing and carriers are directed to leave the site, will be recorded boldly on the already completed Waste Reception Form. At the most appropriate time, the Sales and Customer Services Manager will review the available details and contact the customer and regulator (as necessary) for clarification and agreement on the corrective action. Records of such actions being retained in the appropriate customer contract file.
- 3.6 Following the identification and evaluation of nonconforming waste it may be possible to accommodate the incoming waste by amendment to the Site Planning Schedule and the contract. See Contract Review Procedure (OP023). Such specification changes will be formally carried out and re-issued. It will then be necessary to develop a new Site Planning Schedule to address the processing requirements of a newly advised and agreed waste.

During the evaluation it is appreciated that changes to waste specification may result in an alteration to contract/pricing conditions. In which case the resulting business may be regarded as a new contract and actioned accordingly either in whole or part.

4. Acceptance of Customer Waste

- 4.1 Upon acceptance of the delivery conditions noted above, the carrier will be directed to the location for unloading of the waste. The Operations Manager will ensure that adequate sign-posting and storage identification is available to permit correct unloading by the carrier.
- 4.2 Having completed the unloading, confirmation of delivery will be provided by the signature of the Site Operator at the bottom of the Waste Reception Form.

5. Records

- 5.1 Formally authorised copies of Site Planning Schedules for individual waste substances, will be made available at Waste Management Centres nominated for the storage, processing and disposition of that waste.

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5.2 For each delivery or nominated quantity of customer waste, the following documents will be completed and made available:-

- a) Duty of Care Document
- b) Waste Reception Form (multi-part) which will be circulated as follows:-

First	(white) copy	to Contractor
Second	(pink) copy	to Finance Dept
Third	(yellow) copy	held at site
Fourth	(green) copy	held by United Utilities Operations

NB: The conditions of contract regarding the acceptance of waste are detailed on the reverse of the top (white) copy of the form.

6. Ongoing Sampling Procedure

6.1 To assist in the understanding of procedures for ongoing sampling of incoming customer waste the appropriate stages have been presented on a flow chart format (Exhibit 3).

6.2 The following additional notes are intended to provide further information as appropriate.

- 6.2.1 Information regarding the ongoing sampling requirements will be obtained from the Site Planning Schedule for the specific waste being delivered.
- 6.2.2 Where such a requirement is to be actioned, a suitably labelled container is to be provided by United Utilities Industrial.
- 6.2.3 Should the waste receiving equipment be fitted with an automatic sampling facility, then the necessity for a further container may be ignored unless the Site Planning Schedule or Operations Manager identifies an additional sampling requirement.
- 6.2.4 Where samples are retained on site they will be kept in a refrigerator.
- 6.2.5 Sample results will be checked in accordance with Sections 3.4 – 3.6 of the Dwr Cymru Cyfyngedig and United Utilities Industrial Effluent Agreement. Exceptional data received by the Customer Services Team will be acted upon as appropriate. Should it be necessary to change the contract with the client, refer to paragraph 3.4 of this procedure.

7. Non Conforming Ongoing Waste

7.1 For details of necessary actions when sampling results, or any other feature, are considered unacceptable, refer to paragraph 3 of this procedure.

7.2 We recognise the fact that the results of ongoing samples are not available prior to the delivered customer waste being stored on our site, which in some instances may be by

UNITED UTILITIES INDUSTRIAL OPERATING PROCEDURES

addition to, and contamination of, currently stored waste. However, on the basis of previous and current waste Management controls, together with our responsible customer base, we have no reason to provide additional intermediate controls.

- 7.3 Should the situation change at some time in the future and we experience an unacceptable business or environmental risk, then we will seriously review our practices.
- 7.4 Should the result of ongoing sampling reports of paragraph 6 show an unacceptable condition of the delivered waste, then the Operations Manager, in conjunction with the Sales and Customer Services Team or Operations and Process Manager, will discuss the possible effect and take the necessary action.
- 7.5 Such action may involve the implementation of the Contract Review Procedure (OP023).
- 7.6 Information and records of such actions will be retained as paragraph 3, together with any customer contract and procedural amendments.

WASTE RECEPTION FORM

Delivery site: _____

Delivery point: _____

Carrier name: _____

Waste: _____

Delivery date:

--	--	--	--	--	--

Delivery
time

--	--

Contact number: _____

Tanker registration
no: _____

Volume delivered:

m³

--

gallons

--

tonnes

--

Waste: _____

Collection point: _____

Duty of Care reg no: _____

Order no: _____

Carrier's signature: _____

SAMPLE AND ANALYSIS RECORD

Sample taken:

yes

☐

no

☐

Sent to laboratory
for analysis:

yes

☐

no

☐

Tested on site:

yes

☐

no

☐

Site test result:

yes

☐

variance

☐

United Utilities Industrial
operator:

Signature: _____

Date _____

Entered to database
(Official use only)

Date _____

white – contractor copy pink – United Utilities Industrial copy Yellow – site copy green – Dwr Cymru copy

United Utilities Ind. – collection/delivery

The acceptance of any liquid waste at the works shall be subject to the terms and conditions contained overleaf.

UNITED UTILITIES INDUSTRIAL OPERATING PROCEDURES

Procedure for Incoming Complaints

Amendment Record

<u>Issue</u>	<u>Date</u>	<u>Originator</u>	<u>Authorisation</u>
1	October 2001	H Gant	F McArthur _____

DO NOT PHOTOCOPY

Χονταχτ Σψστεμσ Αδμινιστρατορ φορ χοντρολλεδ ανδ υνχοντρολλεδ χοπιεσ
(σεε ΟΠ011, Σεχτιον 3.6)

UNITED UTILITIES INDUSTRIAL OPERATING PROCEDURES

Procedure for Incoming Complaints

1. General

- 1.1 This document identifies the procedures adopted by United Utilities Industrial for the identification, recording, evaluation, and review of corrective and preventative actions for complaints, which have been made against the service, product, or processes of our business.
- 1.2 Due to the nature of our business, our customers, regulatory bodies, local authority or even members of the public may initiate such complaints.
- 1.3 This procedure will apply to all complaints, whether made verbally or in writing, to the business. All letters of complaint shall be logged by administration in the Communications Register (refer to Procedure for the Control and Issue of Documents (including Receipt and Handling of Communications, OP011))

2. Receipt of a Complaint

- 2.1 Any employee of United Utilities Industrial, having been informed of a complaint, will immediately, either record its relevant detail on a Complaints Form or relay such information to another senior employee for them to record.
- 2.2 In all cases, the Business Support Team will be contacted in order to allocate a unique reference number allocated to the complaint. The number will be prefixed by the letter 'CC' and extracted from the Complaints Register held by the Business Support Team (refer to Appendix B).

3. Evaluation and Approval

- 3.1 The evaluation and subsequent corrective action for individual complaints may be carried out by any employee of United Utilities Industrial, provided the activity to which the complaint refers is within their scope of work and authority. Should their authority not encompass the necessary action then the complaint form (as completed at that time) will be passed to the relevant Manager, Senior Manager or Director for action or for onward transmittal to the most appropriate person, department or division.
- 3.2 With due regard for the most relevant information applicable to the complaint, e.g. client/contract requirement, regulatory requirement, local conditions, etc. the appropriate person will undertake an evaluation of the situation noted.
- 3.3 The conclusions of this evaluation, together with any suggested corrective actions, will be added to the report.
- 3.4 A copy of the report will then be made available to the relevant Senior Manager for overall review and approval of the actions noted.
- 3.5 Approval of such corrective actions by the relevant Senior Manager shall be indicated by completion of the appropriate section of the Complaint Form (refer to Appendix A).

4. Corrective Action

- 4.1 Following approval of the proposed corrective action a copy of the completed form will be passed to the appropriate person for the necessary action (in line with that already

UNITED UTILITIES INDUSTRIAL OPERATING PROCEDURES

noted on the form).

- 4.2 It may be considered an appropriate corrective action to change the practices, procedures or methods currently operating within United Utilities Industrial.

Should this be the conclusion of the evaluation and then a copy of the completed complaint form will be passed to the business Management Representative who will make the necessary changes to the procedure or instruction and circulate the revised documents accordingly.

- 4.3 At completion of the agreed corrective action, the person responsible for such action will sign and date the form and pass a copy to relevant Manager, so that its satisfactory conclusion may be recorded in the Complaints Register.

5. Preventative Action

- 5.1 In addition to those corrective actions taken to rectify the complaint or problem advised, it may be possible to identify further (preventative) actions, which would eliminate its cause. Such preventative actions may be realised at the time of the complaint or following an overview or analysis prepared in readiness for our Management Review Meeting.

- 5.2 This analysis will primarily be to ascertain any similarities in the reasons for such complaints, or to identify any possible changes that could be made to our business practices or procedures, which may eliminate the cause of such complaints or problem.

- 5.3 Preventative actions may include the amendment of our Management Procedures as mentioned in paragraph 4.2 above.

6. Recording

- 6.1 The Business Support Team will retain a copy of the complete report in a suitably identified file for future reference. Where necessary a copy may be included in the customer/contract file. The Business Support Team as described above will hold the register of complaints.



COMPLAINT REPORT

No: _____

Detail of Complaint

Recipient of complaint
(Any member of staff receiving complaint)

Print name: _____ Position: _____
Sign: _____ Date: _____

Evaluation and Corrective Action

Corrective Action Approved by:

Print name: _____ Position: _____
Sign: _____ Date: _____
(Relevant Senior Manager/Director)

Corrective Action Completed by:

Print name: _____ Position: _____
Sign: _____ Date: _____
(Relevant member of staff to complete action)

Suggested Preventative Action: (Is it possible to identify actions, which may prevent this occurrence)?

Print name: _____ Position: _____
Sign: _____ Date: _____

Preventative Action

Authorised and Complete

Print name: _____ Position: _____
Sign: _____ Date: _____
(Relevant Senior Manager/Director)

UNITED UTILITIES INDUSTRIAL OPERATING PROCEDURES

Internal Audit and Management Review of Business Systems

Amendment Record

<u>Issue</u>	<u>Date</u>	<u>Originator</u>	<u>Authorisation</u>
1	October 2001	H Gant	F McArthur
2	January 2002	H Gant	F McArthur

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Contact Systems Administrator for controlled and uncontrolled copies
(See OP011, Section 3.6)

UNITED UTILITIES INDUSTRIAL OPERATING PROCEDURES

Procedure for Internal Audit and Management Review of Business Systems

1. General

- 1.1 This document identifies the procedures adopted by United Utilities Industrial for the audit and review of the formal Business Systems. The purpose of internal audits is to ensure that the Systems conform to the planned arrangements, including the requirements of ISO9001 and ISO 14001, and have been properly implemented and maintained.

The purpose of management reviews is to ensure the continuing suitability, adequacy and effectiveness of the Systems.
- 1.2 The Management Representative will prepare a programme of formal audits at the start of each 12-month audit cycle as shown at (Appendix A). Each noted feature of our business system will be audited at least once during the planned programme. The frequency of auditing will take into consideration the status, importance and potential environmental impact of activities and the results of previous audits
- 1.3 Formal audits are based on our Business Systems Manual, procedures, process instructions, operational plan, records, customer contract requirements and those of BS EN ISO 9001: 1994 and BS EN ISO 14001:1996 as required.
- 1.4 Additional formal or informal audits, including environmental audits, may be undertaken on an ad-hoc basis so as to examine particular topics or features as deemed necessary.
- 1.5 Periodic audits for evaluating compliance with relevant environmental legislation and regulations will be carried out.

2. Implementation

- 2.1 Suitably qualified persons will perform the audits or the task will be sub-contracted to a firm of consultants to have the benefit of an outsider view and also the experience of registered auditors.

In all cases, however, the auditor will be independent of the department/function being audited.

Internal auditors from within the company will be selected for auditor training by the Business Systems Manager in agreement with the individual's line manager.
- 2.2 Where the audit team consists of more than one auditor a programme for the audit will be drawn up, by the lead auditor, showing activities to be reviewed by each member of the audit team.
- 2.3 A copy of the programme will be made available to each departmental representative (including site personnel) prior to the audit.

UNITED UTILITIES INDUSTRIAL OPERATING PROCEDURES

3. Execution of the Audit

3.1 Upon arrival at the audit location, which may be an operational site, Head Office or an associated administrative location, the auditor will meet with the appropriate representative to address details such as: -

- (a) Scope of audit
- (b) Relevant part of BS EN ISO 9001 and/or BS EN ISO 14001
- (c) Availability of management functions i.e. best sequence of the audit activities
- (d) Introduction to other department/site personnel to be audited (when applicable)
- (e) Any restrictions, safety precautions, etc

3.2 The audit will be processed as far as practicable along the notations of the audit programme. Any changes to this programme will be discussed with the department representative and an alternative arrangement agreed.

3.3 Throughout the duration of the audit, the auditor will be thorough in his examination and insist on objective evidence that the systems, procedures and instructions have been carried out meticulously.

3.4 Should the audit be carried out over more than one day then it may be beneficial to meet with the department representatives at the finish of each day. This will allow discussion of individual points raised during the day and possible corrective action. The decision to hold such an interim meeting will be that of the Lead Auditor.

3.5 For the purposes of identifying unacceptable practices found during the audit, each occurrence will be categorised as a non-conformance.

4. Recording

4.1 Throughout the execution of the audit a record will be kept, by the auditor(s) of specific evidence reviewed, such as a procedure reference, waste batch references, sample details, purchase order numbers, equipment used, etc. These will be noted onto a sheet similar to Appendix B, together with indications of any unacceptable features found. Such unacceptable occurrences will be brought to the attention of the department representative as they arise.

4.2 At some convenient time, following the noting of an unacceptable condition, but always before leaving the department/site, the auditor will formally document the occurrence onto the appropriate report, as shown at Appendix C. The auditee or appropriate representative of the function being audited will be requested to sign the report thereby indicating the accuracy of the observed fact.

4.3 Prior to the final (wash-up) meeting between the auditor(s) and appropriate function representatives, each reported unacceptable situation will be reviewed and categorised.

4.4 Having fully reviewed the findings and records of the audit, an NCR status log as Appendix D will be completed. The audit record may also include any recommendation that may be considered towards possible improvement of the company's management system.

5. Reporting

5.1 Upon completion of the audit and having reviewed the findings, the auditor will request a

UNITED UTILITIES INDUSTRIAL OPERATING PROCEDURES

final (wash-up) meeting with the appropriate representatives or the site or function being audited.

The purpose of the meeting is to: -

- (a) Present the findings.
- (b) Present the summary/conclusions.
- (c) Advise on recommendations.
- (d) Agree on follow-up action, which may include a re-audit, document review, etc.

- 5.2 The audit report, together with the individual NCR report sheets, will be left with the function representative and a copy passed to the Business Manager.

6. Corrective Actions

- 6.1 All unacceptable situations found during the audit will be documented.
- 6.2 Depending upon the seriousness of individual non-conformances, the auditor will indicate on each NCR whether a re-audit is considered necessary. Should the conclusion be "Yes" then the auditor will provide confirmation of satisfactory completion of the corrective action noted. However, should "NO" re-audit be indicated, then satisfactory the Management Representative may provide completion of the corrective action.

Where non-compliances have been recorded and corrective actions have not been completed within the agreed/noted timescale then the situation will be brought to the attention of the Business Manager for conclusion.

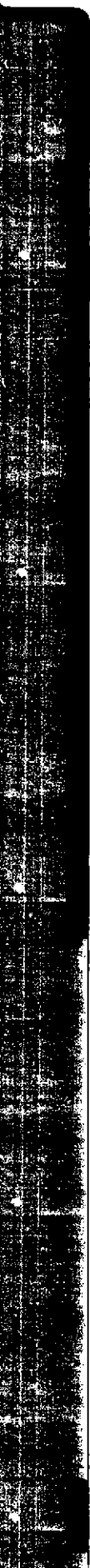
7. Management Review & Preventative Actions

- 7.1 The overall effectiveness of the business system will be seriously considered and reviewed at least annually. The findings of this review being recorded at a formal Management Meeting.

This meeting will consider and minute the following topics as a minimum, together with any appropriate actions needed.

- * Supplier performance.
- * Customer Complaints.
- * Serious internal problems and rejects. (Ref. also 6 monthly incident review)
- * Personnel training requirements.
- * Calibration.
- * QA Audit findings
- * Continued effectiveness and suitability of our Business QA Policy and supporting Systems.

- 7.2 In addition to the documentation and review of individual corrective actions resulting from audits, it is expected that the Management Representative will consider and identify whether there are any common areas of concern and whether there could be changes to the appropriate section of the management system. Which may eliminate the cause of such concerns, and may improve the overall performance/effectiveness of business activities.



B2.2 MATERIALS INPUTS

This section covers the use of raw materials and water and the techniques used for both minimising their use and minimising their impact by selection.

The information provided has been organised under the following sections :

1. Inventory of inputs
2. Chemical selection / substitution procedure
3. Waste minimisation arrangements
4. Water use arrangements

1. Inventory of Inputs

The table below describes the key inputs to the process, indicative quantities, fate of the materials and any associated environmental impact :

Input	Constituents (If a mixture)	Indicative quantities per annum*	Fate of the materials	Associated environmental impacts
Existing process				
Water (wash down use only)	N/a	700m ³	Discharged to sewer	Resource consumption
New process				
Water (wash down and flocculant dilution)	N/a	500m ³	Discharged to sewer	Resource consumption
Acid – typically hydrochloric (32%) or sulphuric (similar concentration)	N/a	10 tonnes	Neutralised and discharged with effluent	Minimal operational impact. Potential spill hazard is key risk.
Alkali – typically sodium hydroxide (47%)	N/a	50 tonnes	Neutralised and discharged with effluent	Minimal operational impact. Potential spill hazard is key risk.
Coagulant	Typically poly aluminium chloride, ferric chloride, ferric sulphate or ferrous chloride	50 tonnes (split between types dependent on effluents being treated)	99.9% settled out of treated effluent and disposed of as filter cake / sludge waste	Minimal operational impact. Residues in sludge comprise low hazard constituent in special waste stream.
Flocculant (various proprietary polyelectrolytes)	Typically non hazardous solvent based materials	1 tonne (split between types dependent on effluents being treated)	99.9% settled out of treated effluent and disposed of as filter cake / sludge waste	Minimal operational impact. Residues in sludge comprise low hazard constituent in special waste stream.

* exact quantities may change depending on the exact composition of wastes received and hence treatment required.

2. Chemical selection / substitution procedure

Chemical selection / substitution may be required on a fairly regular basis to optimise treatment conditions for different waste streams. A standard procedure is used to test different chemicals for operational effectiveness, while section 8.12 of the Operational Plan (Document reference 01/BWTC/03) outlines the additional considerations made from a HSE perspective.

3. Waste minimisation arrangements

Consideration of waste generation and options for minimising waste generated have been built into the design of the proposed plant.

Chemical consumption is minimised through the requirement to analyse waste and calculate dosing for each 'batch' of effluent treated.

Packaging waste has been minimised through the use of bulk containers where possible – all chemicals except the flocculants will be delivered to site in returnable IBC containers. The flocculants will be delivered in 25kg plastic drums.

4. Water use arrangements

Water is only used for wash down purposes and only constitutes a process input as a dilution agent for the flocculants used. Usage within the process will be minimised through the use of treated effluent wherever possible within the system. Hoses used for yard washdown etc will be carefully used and maintained to ensure that all are turned off after use.



B2.3 MAIN ACTIVITIES & ABATEMENT

This section describes the process on which this application is based including the 'directly associated activities', which comprise the existing facility for receiving tanker waste.

The description is broken down into the following sections :

1. Normal Operations –
 - 1.1 Process description
 - 1.2 Annual throughputs
 - 1.3 Discharge standards and control measures
 - 1.4 Justification of process design selection
2. Abnormal operations
3. Emergency conditions – pollution prevention and control

Appendix 1 – Process flow diagrams / drawings

Appendix 2 – Current trade effluent discharge consent

Appendix 3 – Plant manufacturer's odour assessment report

1. NORMAL OPERATIONS

1.1 PROCESS DESCRIPTION

1.1.1 Existing Process

The existing operation comprises a tanker receipt facility, effluent storage tanks and controlled discharge facility to main sewer. Incoming tanker loads of domestic waste (typically from cess pits etc) are discharged direct to sewer. Incoming loads of industrial effluent from specified sources are sampled, blended and discharged under controlled conditions to ensure compliance with the terms of Trade Effluent Consent No. 371 of 2001 issued by Welsh Water. The process plan is included in Appendix 1 as Figure 1 – existing process layout)

1.1.2 New Process

Overview

The process comprises a pre-treatment facility designed to effect oil recovery, metals and solids removal prior to discharge to the mains sewer at a discharge point shared with the existing process. The anticipated incoming waste streams include but are not confined to the following groups : -

Group 1

1. Interceptor wastes
2. Anti-freeze mixtures
3. Drilling muds
4. Water based paint wastes
5. Gully detritus
6. Car wash effluent
7. Saline solutions
8. Boiler blowdown waters
9. Spray booth and wet backs
10. Surface and flood waters
11. Oil storage tank bottoms
12. Emulsion and cutting oils

Group 2

1. Ink wastes
2. Food wastes
3. Foundry effluent
4. Caustic/acid washings
5. Pharmaceutical/cosmetic wastes

6. Latex solutions
7. Dewax washings
8. Activated polymers & carbon dusts in solution

Group 3

1. Mineral sludges/concrete & stone washings
2. Drink waste
3. Sugar/starch water
4. Formation waters
5. Landfill leachates

The process has been designed so that the three waste streams can be readily split and blended to meet all consent limits. Group 3 wastes are seen as dilutants for other streams. They may need some treatment in their own right on occasions depending upon strengths. Group 2 wastes are seen as requiring chemical dosing for pH correction for metals precipitation. Group 1 wastes (being the bulk of plant inputs) are seen as requiring straight chemical dosing for removal of offending contaminants. There may be instances where odd streams require a mix of processes possibly involving recycling within the treatment plant. A summary of the stages involved in each waste stream process is provided in the following table.

	Process 1 (existing)	Process 2 (new)	Process 3 (new)
INPUTS	Influent (domestic & industrial)	Influent (group 1 & 3 wastes) Caustic / acid Coagulant Flocculant	Influent (group 3 & 3 wastes) Caustic / acid Coagulant Flocculant
PROCESS	Influent analysis Tank storage Sampling and blending as required Discharge to sewer	Influent analysis Coarse screening on receipt Holding tanks Oil recovery (settlement & tilted plate separator) Addition of acid / caustic to regulate pH Addition of coagulant & flocculant Dissolved Air Flotation process (separation of sludge) Sampling & Blending Discharge to sewer	Influent analysis Coarse screening on receipt Holding tank Addition of acid / caustic to regulate pH Addition of coagulant & flocculant Lamella settler (separation of hydroxide sludge) Sampling & Blending Discharge to sewer

OUTPUTS	Effluent to sewer	Effluent to sewer Screening waste (special) Recovered oil Sludge (special)	Effluent to sewer Screening waste (special) Sludge (special)
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Detailed description

Process flow diagrams are included in Appendix 1 as

Figure 2 – New process layout

Figure 3 – Process 2 (DAF)

Figure 4 – Process 3 (Lamella).

The plant incorporates 9 existing storage tanks each of 65m³ capacity. Two tanks are reserved for treated liquor prior to discharging to sewer. One tank is reserved for sludge holding/concentration. Another tank is reserved for storing recovered oil. The other 5 are for storing incoming wastes prior to processing/blending. This gives a total holding capacity of approximately 325m³ of unprocessed liquor.

All tanks will have high level alarms, linked back to an audible Klaxon. All process pump systems are duty/standby with Manual and Auto control. All chemical storage tanks will have integral bunding and sit within the main bunded area. All storage tanks will have lockable valves on all discharge points

The various processes proposed for this site include screenings, dilution, mixing, blending, settlement, flotation, concentration, chemical dosing, pH correction. This description gives an outline of the overall process stream rather than treating each individual waste. It is not possible to describe precisely the process to be used on each of the above listed waste streams, with dosing and chemical agents varying depending on influent analysis.

Some of the contaminants cannot be removed by the process equipment to be supplied and will involve a degree of flow balancing and blending to achieve consent levels via dilution. The problem contaminants include Phenols, anti-freeze/glycol, detergents, chlorides and some heavy metals (although metals are generally suitable for precipitation).

Incoming tankers will discharge the liquid waste through a coarse screen to remove the large debris (rags, cups, wood, tools, nuts/bolts etc.). The screenings will slide down a chute into a skip positioned under the curved screen. The liquid and small solids will flow into a sump within the bund area. This sump also caters for run off/spillage flow from half of the area of the existing tanker hard standing. A sump pump will then pump the contents either to the main inlet sump, or in the case of rainwater direct to sewer, via a manually operated divert valve. Similarly on the remaining half of the tanker hard standing an existing sump will pump run off/spillage to the same points via the same control system. Note that tankers are only permitted to discharge during site operationally manned times. Tankers will not be permitted to stand on site overnight or in periods when the site is not manned.

There are a total of 5 reception tanks that are valved off from each other but with a drain line back to the main sumps such that they can be re-routed to alternative tanks for blending/mixing/diluting etc. The waste will be left in the reception tanks for up to 24 hours to allow sludge/solids to settle. Sludge pumps will be used to transfer the sludge in the bottom of each tank to a main sludge holding tank where it will be left to concentrate. Drain valves will be used, in conjunction with tun-dishes, to drain the supernatant back to the main sumps from where it will be pumped back to the reception tanks.

Hodge Separators surface skimmers will skim the free-oils/lighter fractions to a small recovered oil holding tank from where it will automatically be pumped to the main 65m³ recovered oil tank. The oil will be discharged from the reception tanks via a valved pipe into a tun-dish.

Sampling points are provided in the reception tanks to enable analysis of the various waste streams i.e. COD, SS, TOG, pH etc. This will be necessary to enable accurate diagnosis of the waste to ensure correct treatment.

For the wastes that fall within discharge consent, either through blending or those within consent on arrival at the depot, will be pumped direct to sewer via the magflow meter and automatic sampler.

Process 2 (see Figure 3)

The Group 1 wastes outside of consent will be pumped through a Hodge Separators TS180 Tilted Plate Separator where free-oils will be recovered that will be automatically gravity discharged to a small recovered-oil tank. The oil is then automatically pumped to the main 65m³ recovered oil tank. The clarified liquor is gravity discharged to a Dissolved Air Flotation (DAF) plant where chemical dosing and/or pH correction will take place. SS/COD reduction and soluble/vegetable oil splitting will take place in the DAF. The DAF is designed essentially as a flotation plant but the Hodge Separators unit is also designed to remove settleable solids and re-entrained matter as a secondary function. Sludge pumps will be used to automatically transfer the skimmings and sludge in the DAF tank to a main sludge holding tank where it will be left to concentrate.

The processed aqueous phase will then be pumped to the clarified water holding tank where it can be analysed prior to discharge to sewer. If it fails to meet the consent it can be re-circulated as appropriate. If consent is met then it can be gravity discharged to main sewer via the magflow meter and auto-sampler.

Sludge will initially be tankered off-site for disposal by as licensed waste contractor. It is anticipated that at some point following commissioning sludge dewatering using a centrifuge system will be introduced. While it is not intended to introduce this facility on construction provision is being made within the design to allow easy subsequent incorporation. With the introduction of the centrifuge a waste skip will be required to hold the dried 'cake' prior to collection by waste contractor.

Process 3 (see Figure 4)

The second part of the waste treatment plant designed for Group 2 wastes comprises straight pH correction and alkaline precipitation in the Hodge Separators Lamella Settler to remove contaminants as Hydroxide Sludge. The initial screening, as described above, is undertaken with the product directed to a second sump. From here it will be pumped to a reception tank. One reception tank has a venturi air mixer to keep some of the wastes 'sweet' prior to

treatment. If a non-mixer tank is used then the waste will be left in the reception tank for up to 24 hours to allow sludge/solids to settle. Sludge pumps will be used to transfer the sludge in the bottom of each tank to a main sludge holding tank where it will be left to concentrate.

The waste stream will then be pumped to a chemical dosing tank where pH correction will take place. Alkaline dosing and flocculation will then be done to precipitate any metals present. The processed aqueous phase will then be pumped to the clarified water holding tank where it can be analysed prior to discharge to sewer. If it fails to meet the consent it can be re-circulated as appropriate. If consent is met then it can be gravity discharged to main sewer via the magflow meter and auto-sampler.

Sludge pumps will be used to automatically transfer the hydroxide sludge in the bottom of the lamella settler to the sludge holding tank where it will be left to concentrate. Sludge disposal will be as described for process 2 above.

The following list comprises a range of chemicals/contaminants that may be present in the typical waste streams listed above. In many instances only very low-level traces will be found on occasions. The contaminants will arrive in various forms in the waste streams e.g. dissolved, 'free', fine particles, large particles etc. depending upon the product and the source.

Hydrocarbons	Oil (crude, vegetable, synthetic and mineral)
Fats and greases	Detergents (anionic, cationic and amphoretic)
Anti-foaming agents	Anti-corrosion agents
Bactericides, fungicides	Hydrogen Sulphide
Caustic	Petrol/diesel/kerosene
Paint	Dyes (nitro phenol, nitro aniline)
Ethylene Glycol (anti-freeze)	Silt/sludge
Pigments and emulsifiers	Carbon
Bilge water	Drilling muds
Pharmaceutical wastes	Saline solutions
Latex solutions	Paraffin waxes
Activated polymers	Leachate
Ferric chloride	Ferric sulphate
Sulphuric acid	Sodium bisulphate
Ammoniacal Nitrogen	
Aluminium, iron, steel, titanium, nickel, zinc etc. from 'metal-bashing' industry	
General food wastes (dairy, abattoir, sugars, starches, proteins, casein, lactose, animal waste, gelatine, brewery etc.)	

Possible traces of: -

Cadmium	Chromium	Copper	Zinc
Nickel	Lead	Tin	Silver
Phenols	Cyanide		

1.2 ANNUAL THROUGHPUTS

1.2.1 Existing Process

Inputs to the existing plant are of the order of :

- ◆ Domestic waste stream – 40,000 tonnes per annum
- ◆ Industrial waste stream – 30,000 tonnes per annum

The current site licence allows for inputs of up to 75,000 tonnes per annum. All inputs are discharged to sewer.

1.2.2 New Process

The new plant capacity is 45,000 tonnes per annum. Of that total approximately 85% would be discharged to sewer, with 7.5% of input mass being disposed of as sludge and 7.5% being recovered as oil which will be sold on for re-use. These conversion figures are influenced by input composition but are based on current anticipated input streams.

1.3 DISCHARGE STANDARDS & CONTROL MEASURES

1.3.1 Point source emissions to air

The only point source air emissions associated with the existing or new processes are from vent points on tanks. The low volatility of the waste streams mean that such emissions are not considered to be significant either in terms of environmental impact or nuisance potential. Control techniques are described in section 1.3.5 below.

1.3.2 Point source discharges to sewer

Current discharge standards for the existing process are defined in the Trade Effluent Consent for the site (Welsh Water Consent No. 371 of 2001). A copy of this consent is included in Appendix 2, together with a letter from Welsh Water confirming that no amendment to the consent is required in relation to the new plant. In the absence of BAT benchmarks for this type of process the clear and indicative requirements relating to discharge standards are taken to be the parameters included within the trade effluent discharge consent.

The process itself is designed to treat incoming wastes to standards within the terms of the trade effluent discharge consent. The confirmation mechanisms that ensure that this is achieved are the pre-treatment and pre-discharge sampling and analysis procedures. These are described in sections 8-10 of the Site Operational Plan (included within section B2.1 of this application).

1.3.3 Fugitive emissions to air

Potential for fugitive emissions in the form of odour exists during unloading operations and during tank circulation and discharges. These are discussed in section 1.3.5 below.

1.3.4 Fugitive emissions to sewer / controlled waters

No fugitive emissions are anticipated under normal operating conditions.

1.3.5 Odour

Experience from similar plants with comparable waste streams suggest that odour is not likely to be a significant issue (see manufacturer's report in Appendix 3). However, plant design precautions such as ground level vent pipe discharges and the avoidance of open tanks in all areas except the discharge point, reduce the risk of nuisance occurrences. Effective deodorising systems are available and if necessary can be fitted post commissioning.

1.4 JUSTIFICATION OF PROCESS DESIGN SELECTION

The establishment of BAT standards for effluent treatment plants is difficult because plants tend to be designed specifically to treat particular waste streams and therefore vary widely.

During the design phase of this project a number of alternative plant designs were considered, all of which were based on :

- ◆ the input criteria defined by anticipated waste streams to be received and,
- ◆ output criteria based on the trade effluent discharge consent standards.

The alternatives considered are briefly described below :

Alternative 1 – heat enhanced gravity separation process.

This process uses steam boilers to heat effluent to facilitate the breakdown of emulsions. It also involves chemical precipitation but is less efficient than alternative 3 in precipitating metals and has little flexibility in the treatment process. There is also significantly more manual handling involved in the plant with attendant health and safety risks.

Alternative 2 – single stream mixing process

This option is similar in treatment concept to alternative 3 but is designed as a single stream process. This design again limits the flexibility of the process to respond to input variation or process problems / abnormalities.

Alternative 3 – DAF / Lamella process (selected)

This option was selected on the grounds that the DAF process was the most efficient in terms of contaminant concentration (in the form of sludges) and also the most flexible in terms of manipulation of chemical dosing in response to input analyses. The process also provides the opportunity to easily recycle effluent through the process if necessary. The process is also largely automated and based on bulk chemical deliveries and dosing, reducing the attendant health and safety risks associated with process operation.

2. ABNORMAL OPERATIONS

The key abnormal operating conditions considered were :

- ◆ tank cleaning operations
- ◆ process chemical deliveries
- ◆ IBC input deliveries
- ◆ Sludge and recovered oil removal

Although different risks of accidental releases were identified during the abnormal operations listed above, no planned emissions changes were expected that were beyond those existing during normal operations :

Tank cleaning is expected to give rise to additional process sludges and a dilute waste stream that could be fed back into the treatment plant.

Process chemical deliveries generates additional risk in terms of the transfer of materials from tankers / IBC's into site holding tanks / storage areas. However, these risks are managed through the control procedures described in the operational plan.

IBC deliveries of effluent for input into the treatment process may on occasion be required. Input and output parameters remain the same however, and secondary containment in the unload areas safeguards against any accidental releases to sewer or adjacent land.

Sludge and recovered oil removal from site will be by appropriate contractor vehicles. Additional risks generated from the movement are addressed through the operational controls. With the exception of vehicle emissions there are no anticipated changes to the emissions / discharges generated during normal conditions.

3. EMERGENCY CONDITIONS – POLLUTION PREVENTION AND CONTROL MEASURES

The most significant emergency scenario relating to plant operation is tank failure and uncontrolled release of effluent to either sewer or land. Although this would be a serious incident there are significant safeguards in place to ensure that such an incident is extremely unlikely. Emergency scenarios and pollution prevention and control measures are discussed in detail in section B2.8 of this application.

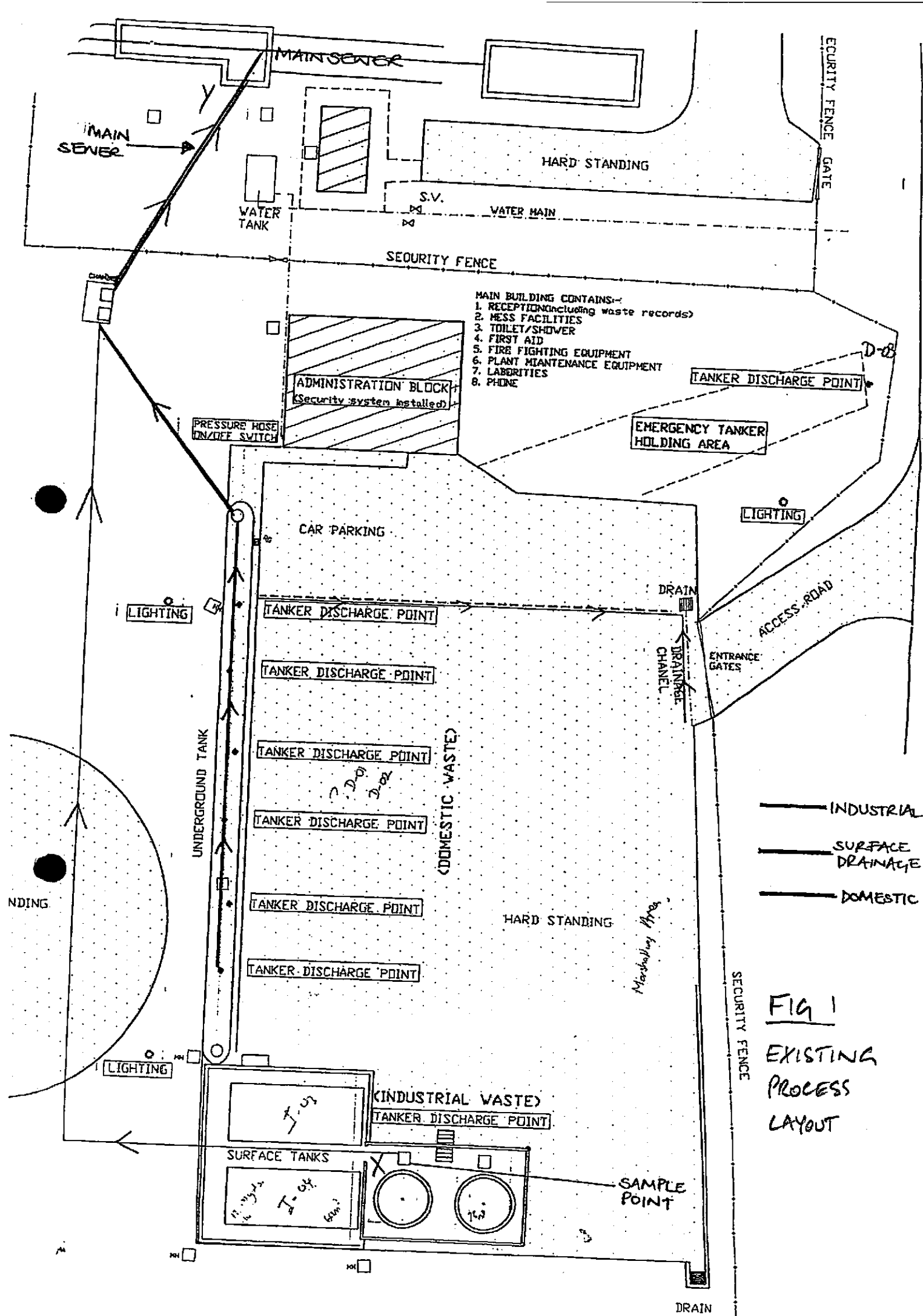
Appendix 1 – Process flow diagrams / drawings

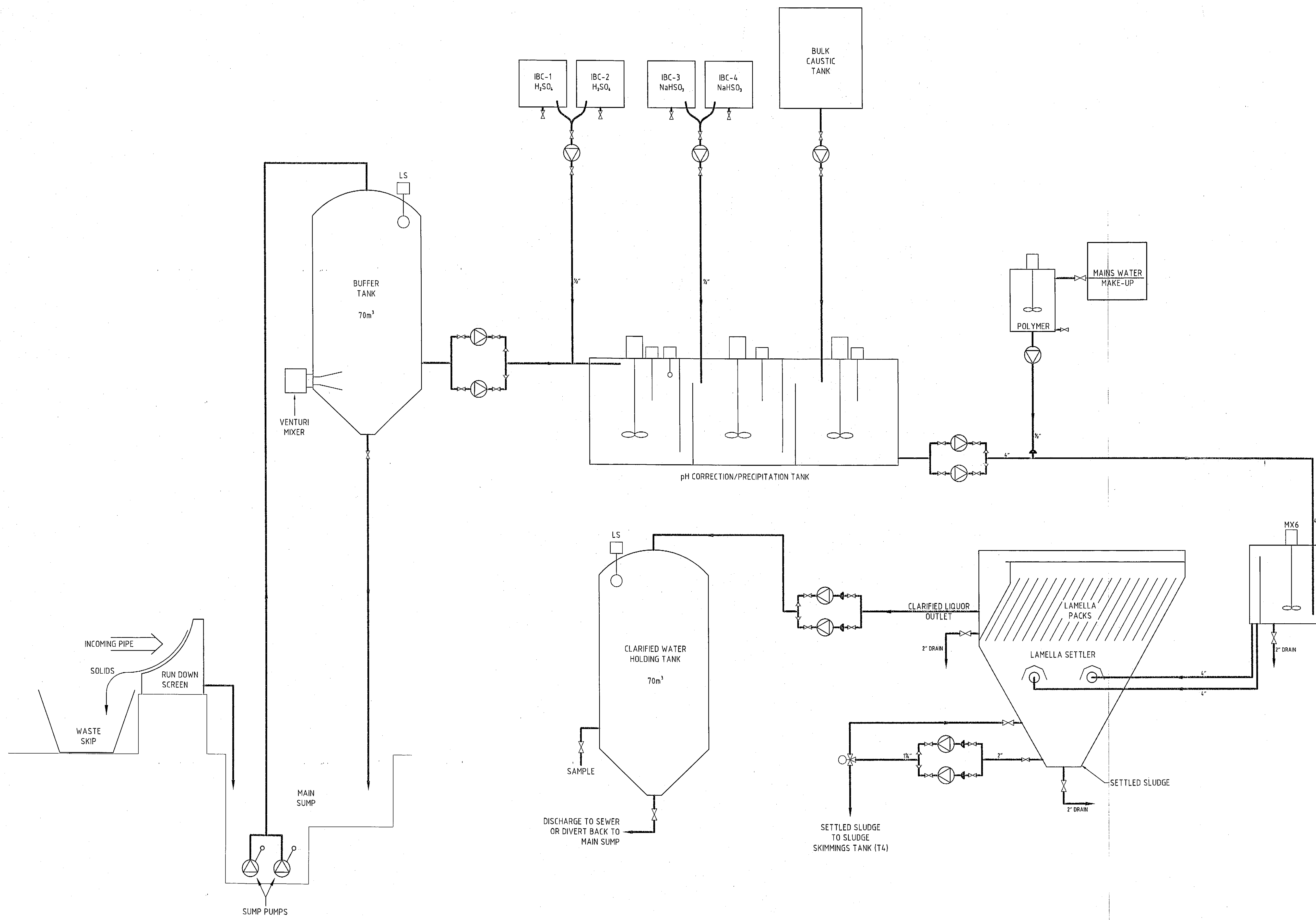
Figure 1 – Existing process layout

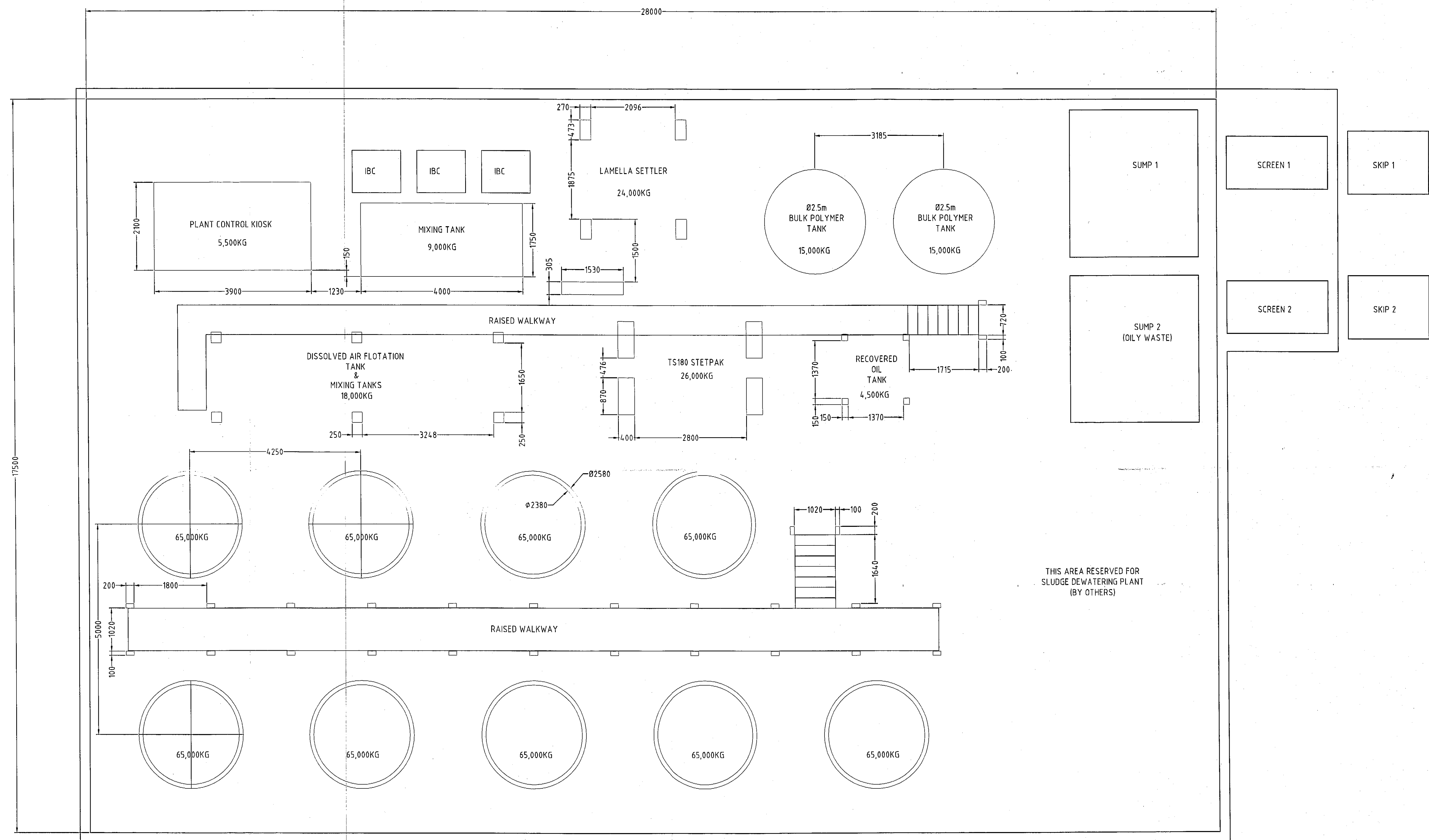
Figure 2 – New process layout

Figure 3 – Process 2 (DAF)

Figure 4 – Process 3 (Lamella).







DRAWING SHOWS THE NOMINAL FOOTPAD SIZES FOR THE MAIN TANKS & WALKWAY. WALKWAYS ARE RAISED AND MAY NEED ADDITIONAL SUPPORT COLUMNS & PADS.

THIS LAYOUT IS FOR GUIDANCE ONLY AND SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES



HODGE SEPARATORS LIMITED
JENNINGS ROAD, KERNICK INDUSTRIAL ESTATE, PENRYN,
CORNWALL, TR10 9LY. TEL (01326) 375388 FAX (01326) 377235

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TITLE:

**TYPICAL FOOTPAD POSITIONS FOR MAIN PLANT
FOR UNITED UTILITIES TREATMENT PLANT**

A		NEW DRG.		JCN		06-12-01	
REVISION		DETAILS		MADE BY	DATE		
SCALES	1:50	REVISION		A			
DRAWN	JCN	06-12-01					
CHECKED							
APPROVED							

DRG No. S3595-005-1



Date
May 2002

Plate No.:

1

Title: Site entrance



Date Drawn:
May 2002

Plate No.:

2

Title: View westwards across the site showing the historical concrete foundation and currently disused area

Client: United Utilities

Project: Bridgend WTC

Job No.: C712B



CELTIC
TECHNOLOGIES



Date
May 2002

Plate No.:
3

Title: View southwards across the site showing engineered concrete
hard standing and current chemical waste treatment facility



Date Drawn:
May 2002

Plate No.:
4

Title: View northwards across site showing office building



CELTIC
TECHNOLOGIES

Client: United Utilities

Project: Bridgend WTC

Job No.: C712B

Appendix 2 – Current Trade Effluent Discharge Consent



DŴR CYMRU
WELSH WATER

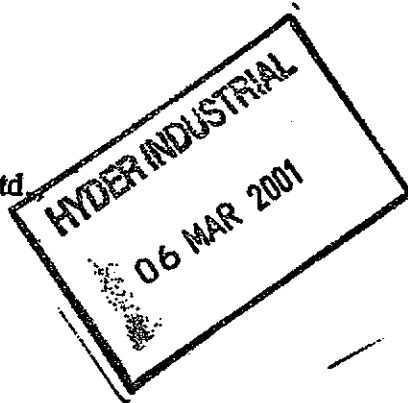
Dŵr Cymru Cyf
Rhanbarth y De
Gwasanaeth yr Amgylchedd
Gwaith Tŷn Dŵr Gnastraff
Heol Victoria
Tŷ Gŵyr
Abertawe SA4 3AB

Ffôn: (01792) 872 604

Dŵr Cymru Cyf
Southern Division
Environmental Services
Gowerton Waste Water
Treatment Works
Victoria Road
Swansea SA4 3AB

Fax: (01792) 872 604

Mr. W. Parfitt,
Hyder Industrial Ltd
P.O.Box 295,
Alexandra Gate,
Rover Way,
Cardiff



Rob Jones
01792 511814

2 March, 2001

Dear Will,

TRADE EFFLUENT CONSENT

Please find attached the Trade Effluent Consent for the Pencoed Waste Management Centre. I would be grateful if you could acknowledge receipt of these documents.

Yours sincerely

Robert S. Jones
Treatment Officer

ALL OUTPUTS TO SEWER
ARE IN LINE
WITH THIS
TRADE EFFLUENT
CONSENT.



A Hyder company

Dŵr Cymru Cyf, a limited company registered in Wales No 2366777
Registered office: Plas y Ffynnon, Cambrian Way, Brecon, Powys LD3 7HP
Dŵr Cymru Cyf, cwmni cyfyngedig wedi'i gofrestru yng Nghymru Rhif 2366777
Swyddfa gofrestredig: Plas y Ffynnon, Ffordd Cambria, Aberhonddu, Powys LD3 7HP

**DWR CYMRU CYFYNGEDIG
WATER INDUSTRY ACT 1991**

**CONDITIONAL CONSENT TO THE DISCHARGE
OF TRADE EFFLUENT TO THE PUBLIC SEWER**

TO: HYDER INDUSTRIAL LTD.

the Owner and/or Occupier of the trade premises (hereinafter called "the Occupiers") whose registered office is situated at P.O. BOX 295, ALEXANDRA GATE, ROVER WAY, CARDIFF.

RECITALS

1. The 13th December 2000 you applied for consent under Section 119 of the Water Industry Act 1991 for consent to discharge trade effluent from the following trade premises known as **PENCOED WASTE MANAGEMENT CENTRE, FACTORY LANE, PENCOED, BRIDGEND** (hereinafter, the Application) and which trade premises are for the purpose of identification only shown on the location plan attached hereto and marked "A" (hereinafter, "the said trade premises").
2. [Reference was made to the Secretary of State for Wales under Section 120 of the Water Industry Act 1991 and his Determination is dated] N/A
3. Compliance with the conditions hereunder shall be ascertained by reference to the method of analysis as from time to time employed by the Undertaker, its servants, agents or contractors, save where the said condition(s) otherwise expressly provide(s) **DWR CYMRU CYFYNGEDIG** ("the Undertaker) in the exercise of its powers under Section 121 of the Water Industry Act 1991, and thinking it fit to impose conditions as hereinafter appear, **GIVES ITS CONSENT** to the discharge of trade effluent from the said trade premises into the Undertaker's public sewers, **SUBJECT TO THE FOLLOWING CONDITIONS AND NOT OTHERWISE**
 - (1) The public sewer into which the trade effluent may be discharged is the 1200 mm more particularly identified by means of a line coloured RED drawn on the plan attached hereto and marked "B".

- (2) The discharge of trade effluent shall be made at the point marked "X" on the said plan and the said trade effluent shall enter into the public sewer shown on the said plan at the point marked "Y" thereon and not otherwise. Further, no connection, linkage, conduit, pipe, channel or other communication whatsoever shall be made to the said sewer between the said points "X" and "Y" without the prior approval in writing of the Undertaker.
- (3) The trade effluent to be discharged shall consist solely that which is specified in the Application and derived exclusively from sources as follows:-
- 1) Leachate from landfill sites.
 - 2) Garage interceptor waste.
 - 3) Food and beverage waste.
 - 4) Biodegradable waste from pharmaceutical industry.
 - 5) Biological sludges derived from treatment of industrial effluent.
 - 6) Biodegradable phenolic waste.
 - 7) Biodegradable dyestuff waste that leaves no residual colour after treatment at the receiving sewage works.
 - 8) Biodegradable natural adhesive waste.
 - 9) Biodegradable cosmetic waste.
 - 10) Natural cellulose waste.
 - 11) Biodegradable non-toxic waste from manufacture of water-based paints that leaves no residual colour after treatment at the receiving sewage works.
 - 12) Waste containing biodegradable alcohols.
 - 13) Animal processing waste excluding wastes containing BSE Specified Risk Material or from the slaughter of cattle aged over thirty months or from waste from animals known to or suspected to be suffering from foot and mouth disease.
- (4) Without prejudice to condition 3 above, the nature and/or composition of the trade effluent which may be discharged is as specified in the FIRST SCHEDULE hereto.
- (5) The trade effluent shall not include any of the substances or properties listed in the SECOND SCHEDULE hereto in concentration greater than stated therein.
- (6) The maximum quantity of trade effluent discharged on any day (being any continuous 24 hour period) shall not exceed 700 cubic metres. In addition the maximum quantity of uncontaminated cesspit waste or septic tank waste on

any one day shall not exceed 700 cubic metres. Flow from both these waste streams shall be measured independently by separate flow meters.

- (7) The highest rate at which the trade effluent may be discharged shall not exceed 10 litres per second.
- (8) The trade effluent may be discharged into the public sewer at any time.
- (9) No uncontaminated condensing water shall be discharged.
- (10) There shall be eliminated from the trade effluent before it is discharged the matters listed below:
 - (a) Effluent with a temperature in excess of 43° Celsius (110° Fahrenheit);
 - (b) Calcium Carbide;
 - (c) Petroleum Spirit within the meaning of Section 111 of the Water Industry Act 1991 and/or the Petroleum Act 1928, save as otherwise permitted herein;
 - (d) Other material forming a constituent of the trade effluent, whether alone or in combination with other materials, specified hereby as that which is explosive;
 - (e) Any other substance forming a constituent of the trade effluent which is hereby specified as that which is likely to injure the sewers or to interfere with the free flow of their contents or to affect prejudicially the treatment and disposal of their contents;
 - (f) Any other substance forming a constituent of the trade effluent which is hereby specified as that which in its pure state or in combination with other materials in the contents of the sewer(s) ("the sewage") is capable of producing toxic or flammable vapours.
- (11) No trade effluent shall be discharged the pH value of which is less than 6.0 or greater than 10.0.

- (12) No trade effluent shall be discharged the nature or composition of which includes a matter, substance, property or matters, substances or properties which would constitute the trade effluent as Special Category Effluent within the meaning of Section 138 of the Water Industry Act 1991.
- (13) The Occupier shall give to the Undertaker prior written notice of any change in the process of manufacture, materials, or other circumstances howsoever arising capable of altering the nature and/or composition of the trade effluent. No new substances or properties shall be discharged until the Undertaker has agreed thereto, either with or without imposing a limit and thereafter the said substance(s) and/or property(ies) shall be deemed incorporated into the SECOND SCHEDULE.
- (14) An inspection chamber or manhole shall be provided and maintained by the Occupier in a suitable position and/or at the point(s) marked "X" on the plan annexed hereto in connection with each pipe through which the trade effluent is discharged and such inspection chamber or manhole shall be constructed and maintained in accordance with the Undertaker's reasonable requirements as from time to time notified in writing to the occupier so as to enable a person readily at any time to take samples of the trade effluent being discharged.
- (15) A notch gauge, continuous recorder or some other apparatus suitable and adequate to the Undertaker for measuring and automatically recording the volume and rate of trade effluent so discharged shall be provided, such apparatus to be tested and maintained in accordance with the Undertaker's reasonable requirements as from time to time notified in writing to the Occupier.
- (16) Apparatus capable of accurately determining, measuring and recording the nature and/or composition of the trade effluent discharged shall be provided, such apparatus to be tested and maintained in accordance with the Undertaker's reasonable requirements as from time to time notified in writing to the Occupier.
- (17) The Occupier shall keep records of the volume, rate, nature and/or composition of the trade effluent discharged into the sewer(s) at all times available for inspection by any authorised officer of the Undertaker and copies of such records shall be sent to the Undertaker on demand.

- (18) (a) The Occupier shall pay to the Undertaker charges for the reception, conveyance, treatment and disposal of the trade effluent and the costs of sampling, measuring and/or analysis of the same under the Undertaker's trade effluent's functions, which charges shall be determined as set out below, and all sums payable under this condition shall be payable upon demand;
- (b) The charges under (a) above shall be calculated in accordance with Undertaker's Scheme of Charges as from time to time amended;
- (c) For the avoidance of doubt, the charge shall be payable by any person who is or was the Occupier of the said trade premises during the period of discharge of the trade effluent or at the time payment is due.
- (19) If the notch gauge, meter, recorder or other apparatus ceases to record or is suspected of not recording and/or measuring accurately, the quantity of trade effluent discharged into the sewer(s) during the period from the date and/or time at which the records were last accepted by the Undertaker as being correct up to the date when the notch gauge, meter, recorder or other apparatus again registers accurately shall for the purpose of any payment to be made under these conditions be based on the average daily volume of trade effluent discharged during the preceding period over which the records were last accepted by the Undertaker as being accurate or during the month immediately after the notch, gauge, meter, recorder or other apparatus or means of measurement and recording has been accurate whichever is the higher.

YOUR RIGHT OF APPEAL

Any person aggrieved by:-

The refusal of a Sewage Undertaker to give consent for which application has been made to the Undertaker under Section 119 of the Water Industry Act 1991; or

Any condition attached by a Sewage Undertaker to such consent may appeal to the Director General of Water Services at Centre City Tower, 7 Hill Street, Birmingham B5 4UA ;

On an appeal in respect of a refusal to give consent, the Director may give the necessary consent either unconditionally or subject to such conditions as he thinks fit to impose.

On an appeal in respect of a condition the Director may take into review all the conditions whether appealed against or not and may substitute for them any other set of conditions (whether more or less favourable to the Appellant) or annul any of the conditions and may include provision as to the charges to be made in pursuance of any condition attached to a consent for any period before the determination of the appeal.

On any appeal the Director may give direction that the trade effluent shall not be discharged until a specified date.

FAILURE TO COMPLY WITH CONDITIONS

If in the case of any trade premises a condition is contravened, the Occupier of the premises will be guilty of an offence and liable on conviction by a Magistrates' Court to a fine not exceeding the statutory maximum or on conviction by the Crown Court to an unlimited fine.

DATED 5th March 2001

For and on behalf of the Company

A.R. Andrews

Environment Quality Scientist

Dwr Cymru Welsh Water
Plas y Ffynnon
Brecon
Powys
LD3 7HP

SCHEDULE ONE

Nature and composition

The Trade Effluent may contain the following substances:-

- (1) Water (including such elements, compounds and organisms normally present in water at trace or harmless levels and not exceeding such level as may be imposed by any Regulations for the time being regulating the quality of drinking water).
- (2) The discharge shall not contain any "dangerous substance" as listed in Schedule 3 or as is for the time being notified by the Environment Agency for the purpose of the Discharge Consent for Penybont Sewage Treatment Works and associated overflows notified in writing to Hyder Industrial Ltd. Apart from those "dangerous substances" listed in Schedule 2.
- (3) Ammonia
- (4) Suspended solids.
- (5) Sulphate.
- (6) Oil and grease.
- (7) Chromium.
- (8) Copper.
- (9) Lead.
- (10) Nickel.
- (11) Zinc.
- (12) Cyanide
- (13) Sulphide
- (14) Phenols

(15) Detergents

(16) Alcohols

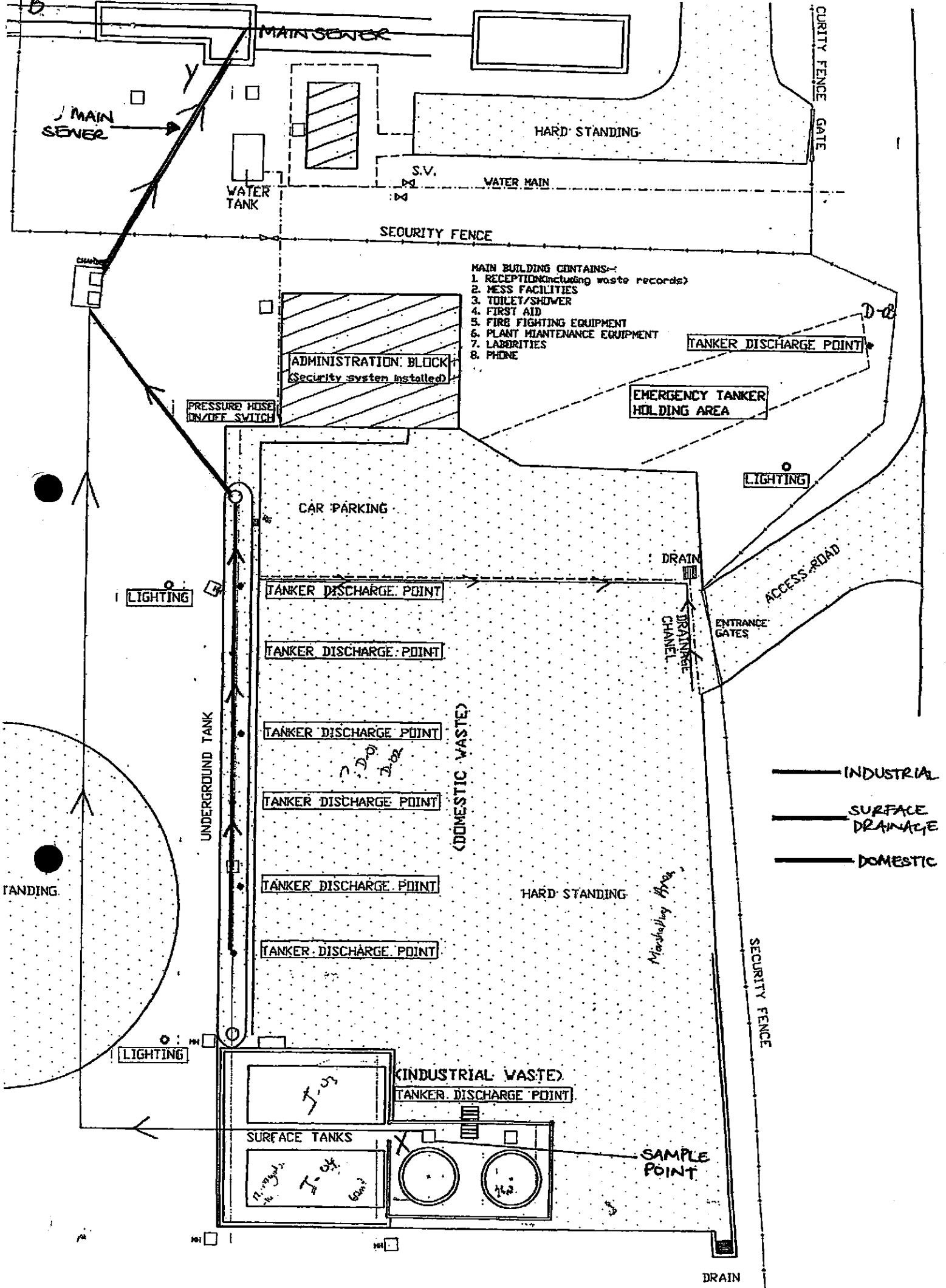
SCHEDULE TWO

- 1) Total suspended solids shall not exceed 1700 milligrams per litre.
- 2) Total free and/or emulsified oil and grease shall not exceed 100 milligrams per litre as determined by extraction into freon and measurement of the infra-red absorbances in the region 2700 - 3200 nanometres.
- 3) Total sulphate shall not exceed 1000 milligrams per litre (expressed as SO_4).
- 4) The Chemical Oxygen Demand load discharged in any 24hr period shall not exceed 5000 kilograms.
- 5) Total ammoniacal nitrogen shall not exceed 500 milligrams per litre (expressed as N). Total ammoniacal nitrogen load discharged in any one day (being a continuous 24 hour period) shall not exceed 140 kilograms.
- 6) Total Chromium shall not exceed 2 milligrams per litre.
- 7) Total Copper shall not exceed 2 milligrams per litre.
- 8) Total Lead shall not exceed 2 milligrams per litre.
- 9) Total Nickel shall not exceed 2 milligrams per litre.
- 10) Total Zinc shall not exceed 2 milligrams per litre
- 11) Total cyanide or compounds producing hydrogen cyanide upon acidification shall not exceed 2 milligram per litre (expressed as CN)
- 12) Total soluble sulphide or compounds producing hydrogen sulphide on acidification shall not exceed 3 milligram per litre.
- 13) Monohydric phenols shall not exceed 100 milligrams per litre (expressed as phenol).
Increase in phenol concentration up to the maximum limit should not exceed 10 milligrams per litre in any one day (being any continuous 24 hour period). Increase in phenol loading shall not exceed 7 kilograms in any one day.

- 14) Anionic synthetic detergent concentration shall not exceed 30 milligrams per litre (expressed as Monoxal OT).

Schedule Three

1. Mercury and its compounds.
2. Cadmium and its compounds
3. Hexachlorocyclohexane (lindane and related compounds).
4. Carbon Tetrachloride.
5. DDT (the isomers of 1,1,1-trichloro-2,2 bis{p-chlorophenyl} ethane)
6. Pentachlorophenol (PCP).
7. Aldrin.
8. Dieldrin.
9. Endrin.
10. Isodrin.
11. Hexachlorobenzene (HCB).
12. Hexachlorobutadiene (HCBD)
13. Chloroform.
14. Polychlorinated biphenyls
15. Dichlorvos.
16. 1,2-Dichloroethane.
17. Trichlorobenzene.
18. Atrazine.
19. Simazine.
20. Tributyltin compounds.
21. Triphenyltin compounds.
22. Trifluralin.
23. Fenitrothion.
24. Azinphos-methyl
25. Malathon.
26. Endosulfan.
27. Lead.
28. Chromium.
29. Zinc.
30. Copper.
31. Nickel.
32. Arsenic.
33. Iron.
34. Boron
35. Vanadium
36. PCSD'S.
37. Cyfuthrin.
38. Sulcofuron.
39. Flucofuran.
40. Permethrin.
41. 4-Chloro-3-methyl-phenol.
42. 2-Chlorophenol.
43. 2,4-Dichlorophenol.
44. 2,4-D (ester).



- MAIN BUILDING CONTAINS:-
1. RECEPTION (including waste records)
 2. MESS FACILITIES
 3. TOILET/SHOWER
 4. FIRST AID
 5. FIRE FIGHTING EQUIPMENT
 6. PLANT MAINTENANCE EQUIPMENT
 7. LABORATORIES
 8. PHONE

- INDUSTRIAL
- - - SURFACE DRAINAGE
... DOMESTIC



DŴR CYMRU
WELSH WATER

Rhanbarth y De Orllewin
Adran yr Amgylchedd
& Ffatriau
Gwaith Tŷin Carddon
Tŷ Gŵyr
Heol Victoria
Abertawe SA4 3AB

South Western Division
Environmental and
Engineering Department
Gowerton Sewage
Treatment Works
Victoria Road
Swansea SA4 3AB

Phone: (01792) 873 551
Fax: (01792) 872 604

Tel: (01792) 873 551
Fax: (01792) 872 604

9 July 2001

Ms. Jane Baker
Business Development Manager
United Utilities Industrial
PO Box 824
Alexandra Gate
Rover way
Cardiff
CF24 2SD

UNITED UTILITIES

12 JUL 2001

Robert S Jones
01792 511814

RSJ/AL

Dear Jane,

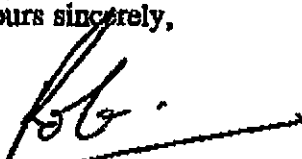
Bridgend Waste Management Centre

I refer to our meeting of 29 June 2001 and your subsequent letter of 3 July 2001 regarding changes to the Bridgend Waste Management Centre and consequences on your trade effluent discharge to the foul sewer.

My understanding is that this development will not result in contravention of your quality and quantity conditions of your current "consent to discharge trade effluent to the foul sewer". This being correct we do not propose reviewing the consent, but will attach a copy of your letter of 3 July 2001 and this reply to the register to reflect the new process.

I trust this meets with your approval.

Yours sincerely,


Robert S Jones
Treatment Officer



A Hydr company

Dŵr Cymru Cyl, a limited company registered in Wales No 2366777
Registered office: Plas y Ffynnon, Cambrian Way, Brecon, Powys LD3 7HP
Dŵr Cymru Cyl, cwmni cyfyngedig wedi'i gofrestru yng Nghymru Rhif 2366777
Swyddfa gofrestru: Plas y Ffynnon, Ffordd Cambria, Aberhonddu, Powys LD3 7HP



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Dwr Cymru – Welsh Water
Gowerton STW
Victoria Road
Gowerton
Swansea
W. Glamorgan

3rd July 2001

F.A.O ROB JONES – TRADE EFFLUENT OFFICER

SUBJECT – BRIDGEND WASTE MANAGEMENT CENTRE

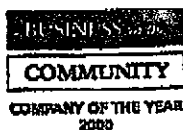
To Rob,

I am writing to inform you of the proposed changes that will be occurring at the Bridgend Waste Management Centre.

United Utilities Industrial seeks approval to build a treatment plant to treat wastes arising in the South Wales market containing low level oil, metal and inorganic contamination. The plant will be installed at our existing Bridgend Waste Management Centre and will be under the provision of IPPC. Planning permission has already been granted by Bridgend Borough Council and an application for an upgrade to the license is underway with the Environment Agency..

The facility will provide a basic three way separation for wastes primarily consisting of low strength oil, water and inorganic solids mixtures. The process itself is an enhanced gravity separation method through pH correction and will ultimately produce three separate waste types, a low grade recovered hydrocarbon product for recycling as industrial fuel feedstock, an effluent for discharge under current consent conditions, and a solids/sludge waste for reprocessing off site consisting of inorganic and organic solids.

I would be grateful if you could confirm acceptance of the proposed changes at our current licensed facility.



9/4200-6/01



United Utilities Industrial Limited
Cofrestredig yn Lloegr ac yng Nghymru No. 4204203
Swyddfa gelfystroddig Dawson House, Great Bankway
Warrington WAS 3LW

United Utilities Industrial Limited
Registered in England & Wales No. 4204
Registered office: Dawson House, Great
Warrington WAS 3LW

Appendix 3 – Manufacturer's odour assessment report**POLLUTANTS ENCOUNTERED IN THE AIR AROUND WASTE TREATMENT PLANTS**

Odours emanating from water treatment plants are due to gases or fumes given off by some of the components of wastewater. They are also caused by compounds formed during the various stages of treatment. The characteristics of the wastewater and of the treatment processes (particularly sludge treatment) affect the nature and intensity of plant odours. The following list gives an idea of the wide variety of pollutants to be encountered in the atmosphere of a treatment plant:

Nitrogen Compounds:	Ammonia
	Amines
	Amine oxides
	Nitrogen oxides
Sulphur Compounds:	Hydrogen sulphide
	Mercaptans
Hydrocarbons:	Saturated and/or unsaturated
	Aromatic
	Chlorine derivatives
Other compounds:	Aldehydes
	Acrolein
	Alcohols
	Saturated and/or unsaturated fatty acids
	Skatole
	Diamino sulphides

ODOUR CONTROL TECHNIQUES

Odour control entails two separate but complementary operations:

- a) reducing emissions;
- b) gas treatment.

Reducing Emissions

This is the first step in odour control and involves treatment applied during the liquid phase to prevent discharge of foul-smelling compounds and/or to break them down chemically.

Various chemicals may be added, depending on the case (FeCl_3 , FeSO_4 , lime, oxidants). Tests are needed to evaluate re-agent consumption levels, which are often high.

This type of action is necessary in the case of highly septic, H_2S -producing effluents (especially in the case of discharge under pressure).

Emission control measures.

Compliance with the following simple guidelines should be ensured to the greatest possible extent:

- ◆ limitation of cascades and other deaeration points (settling tank and thickening tank troughs, filtrate pumping from filter presses, etc.);
- ◆ continuous supply to treatment units;
- ◆ regular and frequent sludge extraction;
- ◆ minimum retention times, temperature and needless storage;
- ◆ roofing of treatment units.

The majority of the plant comprises enclosed vessels, although some vents will be necessary. This means odours will be kept to a minimum. If it becomes necessary to treat any odour problem at a later date, then it will be quite simple and relatively inexpensive to fit carbon filters (205 litre drum size) to the various tank vents.

The main odour problems arise when the effluent is agitated, pumped, dispersed, etc. in open sumps/channels, etc.

ODOUR ASSESSMENT FOR THE BWTC PLANT

The areas identified at Pencoed as potential odour problem areas are:

Initial inlet screens – when the waste tankers discharge their contents it will be via open mesh screens. It will take approximately 15 minutes to discharge a 25m^3 tanker.

The solids will slide down the screen into open skips and will stay in the skip until full. Any decaying material in these skips could emit odours.

The aqueous phase will be discharged via a pipe into the in-ground sumps. The sumps will be covered over, so once the effluent is in the sump, odours should not be a problem.

The effluent will be pumped out of the sump to the various storage tanks, so the only chance of odours being emitted is through vents in the storage tanks. Once the pumping sequence is complete, there will not be any turbulence/disturbance of liquid in the tanks.

The liquid to be processed will then be pumped from the storage tanks to one of the 2 process options:

To the TPI Separator that has top covers so odours will not be emitted.

The oil-free effluent then gravity discharges to the chemical mixing tank upstream of the DAF tank. Both the mixing tank and the DAF tank are open top (covers available as an optional extra).

The addition of chemicals and pH correction will have some neutralising effect on the odours, so in our experience, this section of the plant is generally a low odour area.

The clarified water is pumped direct to the holding tank for testing, then gravity discharged to sewer. This section of the plant does not cause odour problems.

Sludge/skimmings from the DAF plant are pumped to a sludge holding tank prior to tankering away, or dewatering at site. Odours from this section of the plant should not be a problem.

The second process to the Lamella Settler means liquid will be pumped to the chemical mixing tank (fitted with covers). The addition of chemicals and pH correction will have some neutralising effect on the odours. As the tank also has covers, odours are not seen as a problem.

The dosed effluent will be pumped to the Lamella Settler via a polymer mixing tank. The Lamella is open topped (covers can be fitted at extra cost). In our experience, odours are not a problem at this stage of the process.

The clarified water and settled sludge will be pumped to the respective storage tanks prior to disposal to sewer or tankered off-site (sludge). Odours from this section of the plant are not envisaged.



B2.4 EMISSIONS TO GROUNDWATER

This section deals with the requirements of the UK Groundwater Regulations with regards direct and indirect discharges of List I and List II substances to groundwater.

The information provided has been organised under the following sections :

1. List I and II substance identification
2. Prior investigation
3. Surveillance arrangements
4. Prevention of indirect discharges to groundwater

1. Identification of listed substances

None of the process chemicals (see section B2.2 of the application) fall under the definitions of listed substances included in the Groundwater Regulations. The table below provides an indicative example of maximum constituent criteria for received waste to the proposed process. The right hand column indicates the status of the listed contaminants with regard to the Groundwater Regulations, 1998.

Criteria	Maximum	Status in relation to Groundwater Regulations
Hydrocarbons (mineral & synthetic oils)	100%	List I substance
Vegetable oils	250mg/l	n/a
Fats & Greases	10mg/l	n/a
Water	100%	n/a
COD	20,000mg/l	n/a
BOD	10,000mg/l	n/a
Suspended solids	10%	n/a
Ammoniacal Nitrogen	500mg/l	List II substance
Total Cyanides	10mg/l	List I substance
Total Chromium	10mg/l	List II substance
Total Copper	50mg/l	List II substance
Total Zinc	50mg/l	List II substance
Total Nickel	20mg/l	List II substance
Total Lead	10mg/l	List II substance
Total Tin	10mg/l	List II substance
Total Silver	10mg/l	List II substance
Total Sulphides	50mg/l	n/a
Total Phenols	500mg/l	n/a
Maximum Temperature	80degC.	n/a

The above table does not represent an exhaustive list nor does it represent maximum contamination levels for incoming wastes. In practice input loads with much higher concentrations of contaminants are acceptable but are dependent on other operational criteria that determine the scope for blending of inputs. However, the above list provides a useful guideline and equates to a sustainable daily average.

It should be noted that none of the List I or II substances are subject to direct discharge to groundwater. However, the nature of the treatment operation means that breaches of containment could lead to indirect discharge via soil contamination and subsequent leaching. For this reason prior investigation (as defined in Regulation 7) is required to consider the risk and consequence of indirect discharge.

2. Prior Investigation

The site report included in relation to section B1.3 of this application provides a description of the site from a geology, hydrogeology and pedology perspective.

It also notes that the site is located on the outer perimeter of a level III source protection zone.

3. Surveillance

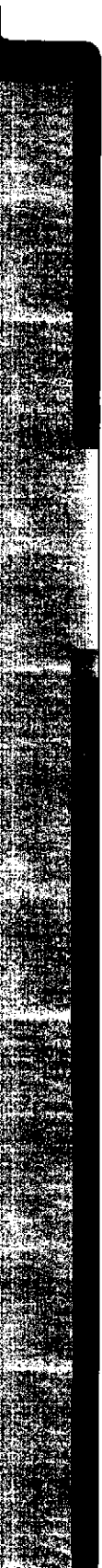
On annual basis groundwater analysis will be conducted on samples taken from boreholes strategically located on the site. The locations, sampling methodology and analysis details will be in accordance with the baseline assessment conducted as part of this application and reported in section 1.3 (doc. ref. 01/BWTC/01).

4. Prevention of indirect discharges to groundwater

The precautions in place to prevent the indirect discharges to groundwater of any of the substances in the above listing include the following :

- ◆ Operational standards eg waste receipt, process sampling and monitoring, site integrity inspections (details of all controls are included in the site operational plan (see section B2.1 of this application)
- ◆ Secondary containment measures throughout the process area (details are included in section B2.8 of this application)
- ◆ Emergency response procedures to initiate containment and appropriate clean up in the unlikely event of a material spillage (details are included in section B2.8 of this application)

These measures in conjunction with the annual surveillance procedures described above provide a high level of assurance that discharges to groundwater of listed substances from the site will not occur.



B2.5 AND B2.6 WASTE MANAGEMENT

This section outlines the waste management and disposal arrangements for the Bridgend Waste Treatment Centre. It is divided into the following sections :

- ◆ Identification and quantification of waste streams
- ◆ Waste management procedures, including site storage locations
- ◆ Implications of the Landfill Directive

1. IDENTIFICATION & QUANTIFICATION OF WASTE STREAMS

The following waste streams have been identified for the facility. Estimated quantities have been included together with waste classifications and proposed disposal / recovery route.

Waste stream description	Estimated quantities	Waste classification	Disposal / recovery route
Office / general waste	1 small wheelie bin per week	Controlled waste	Collected on weekly basis by municipal waste contractor – disposal to landfill
Waste testing materials	Approximately 6 COD vials and 4 Ammonia test vials daily	Special waste	Stored in boxes provided by the manufacturer and collected periodically by supplier
25kg process chemicals containers	Approx. 40 / year	Controlled waste	Included in general waste bin as above
Bulk containers – incoming waste	Unknown – demand for IBC input unlikely to represent a significant proportion of plant input	-	Returned to supplier
Bulk containers – process chemicals	Unknown – most will be pumped out directly to storage tanks	-	Returned to supplier
Process sludge	3375 tonnes (estimated at 7.5% of input)	Special waste	Licensed landfill
Process screening waste	Unknown – estimate at 1% of input = 450 tonnes	Special waste	Licensed landfill

The disposal routes specified represent the perceived current best option for the waste streams. Packaging waste has been minimised through the maximisation of bulk chemical provision as a requirement during the design phase. The 25kg electrolyte containers are currently not returnable but this will be reviewed on a

regular basis and a switch made to returnable containers should this become an option in the future.

2. WASTE MANAGEMENT PROCEDURES

The waste streams identified above are managed in accordance with the waste management Duty of Care. A description of site waste management procedures are included in section 8.11 of the operational plan included in part B2.1 of this application. The location of the site waste storage areas are shown on the site plan included in section B1.3 of the application (doc ref 01/BWTC/02).

3. IMPLICATIONS OF THE LANDFILL DIRECTIVE

The Landfill Directive will have no implications for the waste streams generated from the process. Although the Landfill (England & Wales) Regulations 2002 Regulation 9 (1) (a) prohibit the disposal to landfill of waste in liquid form, sludge is specifically excluded from this ban.



B2.7 ENERGY MANAGEMENT

This section outlines the energy requirements and energy management practices associated with the Bridgend Waste Treatment Centre. It is divided into two parts :

- ◆ Basic energy requirements
- ◆ Energy efficiency measures

1. BASIC ENERGY REQUIREMENTS

Energy supply is comprised entirely of electricity from the national grid and is allocated as follows :

	Delivered	Primary ³
Existing process	6,250 kwh / annum	16,250 kwh/annum
Proposed process ¹	56,250 kwh / annum	146,250 kwh/annum
TOTAL	62,500 kwh / annum	162,500 kwh/annum
Specific energy consumption ²	0.54 kwh / tonne of effluent input to plant	1.41 kwh / tonne of effluent input to plant

1. Proposed process totals are predicted figures only should only be considered indicative values
2. Specific energy consumption has been calculated by dividing the predicted plant energy consumption by the predicted effluent input total (taken as 115,000 tonnes per annum including both existing and new process)
3. Primary energy values have been calculated by multiplying national grid supply figures by a factor of 2.6 as instructed in the technical guidance.

2. ENERGY EFFICIENCY MEASURES

Energy efficiency measures for the site fall into 2 key areas which are described in section 10.12 of the site operational plan as follows :

Equipment selection – during the design phase, and thereafter during maintenance replacement of equipment, particularly pumps and motors, consideration will be given to the selection of equipment that is of the correct specification and of high energy efficiency rating, wherever economically feasible. The responsibility for ensuring that this is carried out lies with the UUI engineer tasked with ordering the electrical unit. In addition all equipment is checked maintained according to manufacturer's specifications and as detailed in the site operational plan.

Equipment shut down – during site operations the key energy efficiency control standard is the shutdown of all plant and lighting when not required. The responsibility for ensuring that this is done lies with the site operator.



B2.8 Emergency planning

The accident prevention and response arrangements for the BWTC are based upon the recognised approach described under the following steps :

- ◆ Identification of site hazards
- ◆ Assessment of accident / emergency risk and consequence
- ◆ Implementation of accident prevention and response measures to minimise both the risk and consequence of any accident scenarios

This section of the application outlines the results of the hazard identification and risk assessment stage and summarises the key operational control structures and procedures.

1. Hazard / risk assessment

The following table uses the following scoring method to show potential site hazards identified during an initial review of environmental risk undertaken during process planning :

1. **Frequency** – scores allocated as follows – 3 = the event described is an everyday occurrence, 2 = the event described is routine but only occurs infrequently, 1 = event or circumstances giving rise to the event described could only occur in emergency scenario
2. **Control** – scores allocated as follows – 3 = controls are weak or absent, 2 = controls are in place but are informal or inconsistent, 1 = controls are formal (structural and /or procedural)
3. **Consequence** – scores allocated as follows – 3 = off site environmental / human impact that would be considered of high significance and constitute a legal breach, 2 = off site or localised environmental / human impact that would be considered of medium significance and/or constitute a legal breach, 1 = an on site environmental / human impact of low significance but which may if unchecked constitute a more significant impact and/or a legal breach
4. **Risk** – total score achieved by multiplication of previous 3 columns. An assurance rating is generated in relation to these scores with scores of 9 or more constituting significant environmental issues for the site, demanding a tightening of control arrangements.

Hazard / accident scenario	Likelihood of accident occurrence		Summary of control measures	Consequence ³	Overall risk rating ⁴
	Frequency ¹	Control ²			
Spill during waste unload operations	1	1	Waste receipt procedure requiring closure of site containment isolation valves and supervision on unload	3	3
Tanker discharge to wrong connection point resulting in discharge of untreated waste to sewer	1	1	Waste receipt procedure requiring closure of site containment isolation valves and supervision on unload	3	3
Overfilling of vessels / tanks with either process chemicals or waste	1	1	High level alarms and transfer pump trips and unload procedures	2	2
Failure of bunding / secondary containment	1	1	Site design and routine inspection and maintenance schedules	2	2
Discharge of untreated or out of specification wastes to the sewer	3	1	Site planning schedules and discharge analysis and monitoring procedures	2	6
Spill during process chemical unloading operations	2	1	Chemical unload procedure and closure of site containment isolation valves during normal operations	2	4
Mixing of incompatible substances giving rise to explosion / fire risk	1	2	Waste analysis and receipt procedures and on site competency / responsibility via site chemist	2	4
Waste leak arising from failure of pipe work	1	2	Site design and routine inspection and maintenance schedules	1	2
Failure of storage tanks / vessels (waste or process chemicals)	1	1	Site design and routine inspection and maintenance schedules	2	2

Hazard / accident scenario	Likelihood of accident occurrence		Summary of control measures	Consequence ³	Overall risk rating ⁴
	Frequency ¹	Control ²			
Failure to contain firewater following a fire incident on site	1	2	Emergency plan consideration and closure of site containment isolation valves during normal operations	3	6
Vandalism leading to an unplanned release of waste or chemicals to sewer or land	1	2	Locks on all sump and tank valves when site is unattended	3	6
Flooding of the site leading to spread of wastes / chemicals beyond the site containment systems	1	2	Emergency plan specifies cessation of discharge and removal of all IBC's and small containers from site if appropriate. All tanks are in fixed positions and above the level of likely flooding, and are therefore are unlikely to be damaged or represent a potential source of pollution.	3	6

2. Accident prevention and response measures

The key accident prevention and response measures in place at the Bridgend Waste Treatment Centre are as follows :

- ◆ Site maintained inventory of substances
- ◆ Operational procedures covering all key risk areas including :
 - Waste receipt procedure and supervision of tanker discharge / unload
 - Chemical unload procedure
 - Site emergency response plan
 - Plant inspection and maintenance schedules
 - Discharge sampling and release to sewer protocol
 - Incident and near miss reporting as well as a site diary to highlight / communicate concerns and recurring issues
- ◆ Process controls designed to minimise the risk of accidental release from the site including – high level alarms, dedicated secondary containment at key risk points and general site bunding to ensure isolation of site is possible.
- ◆ Established security arrangements

Details of these controls and those referred to in the above table are included in the relevant sections of the site operational plan (section B2.1) and the process description section (section B2.2) of this application. In the light of the risk assessment carried out to date, the accident prevention and response controls in place appear to be adequate.



B2.9 NOISE & VIBRATION

This section describes the assessment conducted in relation to noise from site to determine the likelihood of nuisance occurring. The assessment was intended to determine whether a BS4142 style assessment was required. The findings of the assessment suggested that noise nuisance was unlikely to be a issue at the site and on-site survey work was therefore deemed unnecessary at this stage.

This section of the application is divided into the following sections :

1. Identification of sources
2. Identification of receptors
3. Assessment of scope for nuisance

1. Identification of sources

Sources of noise in the water treatment plant can be classified in three broad categories:

- aerodynamic noise (fans, compressors, blowers and air in the pipes);
- electromechanical noise (motors, reduction gear, pumps, gears, etc.);
- noise produced by water, or hydrodynamic noise (flow, mixing, splashing, etc.).

These noises can be summarised unit by unit for the treatment plant, as shown in the non-exhaustive table below:

Treatment Unit	Noise Source		
	Mechanical	Aerodynamic	Hydrodynamic
Lifting	• Archimedes' screw • Dry well pumps		
Pre-treatment	• Screens, grit screw conveyors, conveyor belts, scrapers • Banging of screens	• Blowers	• Overflow • Gravity flow discharge
Aeration and biological filtration	• Aeration turbines or rotors • Air compressors (drive systems) • Recirculation pumps • Backwash pumps and blowers (filters)	• Air compressors • Overhead pipes • Air scour blowers	• Spray from turbines or rotors
Settling-Flotation	• Scraper reducing	• Air compressors	• Overflow

	gear • Pumps and pressurising		
Sludge treatment	• Sludge pumps, especially diaphragm pumps • Centrifuges • Comminutors • Conveyors (cakes, ash) • Drier and furnace blowers	• Air compressors	
Other	• Exhaust ventilation	• Pneumatic gates • Compressed air systems • Air pipes	

Experience at similar existing plants suggests that noise nuisance is unlikely to be an issue at the Bridgend WTC. The main noise sources are as follows :

Vacuum Tankers	Vehicle noise and reversing alarms – (12 tankers per day currently visit the site – this will increase to 22/day with the new facility)
Pumps	various noise levels, generally <75 dB(A)
Air Compressor	enclosed in GRP Control Enclosure
Diaphragm Pumps	fitted with silencers
Gearmotor for DAF Scraper	<75 dB(A)
Venturic mixer	can be enclosed in, noise presents a problem

The noise levels quoted are taken 1m from the equipment and are worst case using hollow steel box test rigs, so figures given in the table are generally higher than those that will be heard in practice.

Quite a lot of the noisier equipment, such as the recycle pumps and air compressor will be installed in the fully enclosed GRP Control Kiosk, so noise will be contained within.

2. Identification of receptors

There is one residential property within 100 metres of the site – Cwrt Gwilym farm situated at SS955800. The farm is also within 300 metres of the busy A473 dual carriageway.

The next nearest receptors (at approximately 450 metres) are the residential properties on the other side of the A473 (958803) and the property shown on the OS 1:25000 map as Tan y Lan to the south east (956797).

3. Assessment of scope for nuisance

An assessment of the potential noise sources and predicted levels of the existing and new plant, with reference to the operating location has been conducted. With regard to the receptors identified above and in the context of the proximity to the busy A473 dual carriageway it is highly unlikely that a noise nuisance will be generated by the proposed expansion to operations at the BWTC site. The principle factors leading to this conclusion are as follows :

1. The noise levels generated at site are generally low or contained to levels that are highly unlikely to cause nuisance at the nearest receptors.
2. The noise source with the greatest perceived 'annoyance factor' is the reversing alarms and discharge pumps on tankers visiting the site. Currently 12 tankers per day visit the site between the hours of 0700 and 1700 (Monday – Friday) and 0700 –1300 on Saturdays. There has never been a complaint recorded at the site relating to noise. The increase in loads to 22 / day with the new process will be within the same operational hours and although increasing the frequency it will not increase the level of noise generated.
3. Probably the single most important factor in reaching the conclusion presented above is the close proximity to the site and the receptors of the busy A473 trunk road. Experience from the existing operations suggests that during the working hours of the site, traffic noise from the trunk road is more likely to be the dominant local noise source.
4. The restricted working hours of the site mean that noise sources are only operational at the least sensitive hours as far as receptors are concerned.
5. The planning application for the site expansion makes no reference to noise as a planning issue associated with the site.



B2.10 MONITORING

This section summarises the monitoring regimes proposed for the BWTC that relate to the control / improvement of environmental impact. Where detailed monitoring procedures exist cross reference is made to the appropriate document.

BWTC Monitoring regime

Emission / Issue	Monitoring frequency	Parameters checked	Sampling procedure (cross ref)	Sampling / analysis standards
Effluent for discharge to main sewer	Prior to each batch discharge	Analysis suite is based on waste characteristics defined in site planning schedule	UUI sampling protocol – Appendix 5 Operational Plan (doc ref – 01/BWTC/ 03 – application section B2.1)	See section 7.6 of the site Operational Plan (01/BWTC/03)
Borehole – groundwater quality	Annual	Effluent suite used in baseline site survey	See site report (doc ref – 01/BWTC/01 - application section B1.3)	See site report
Odour	Daily	Odour rating at site boundary	Daily walk by as part of daily inspection – see Operational plan Appendix 3 (doc ref – 01/BWTC/ 03 – application section B2.1)	N/A
Noise	Daily	Abnormal noise or vibration on key equipment	Daily inspection as part of equipment maintenance programme – see Operational plan Appendix 3 (doc ref – 01/BWTC/ 03 – application section B2.1)	N/A



B2.11 SITE CLOSURE PLAN

Decommissioning information

UUI will ensure that a decommissioning pack is maintained for the BWTC site. Information to be included in the pack includes the following :

- ◆ Site drawings and process diagrams, including drainage plans
- ◆ The initial site condition report and all subsequent monitoring data
- ◆ Incident reports that may be relevant of the risk of contamination on site

The decommissioning pack will be maintained by the Site / Operations manager.

Site closure plan

Site closure will be effected with due regard for and compliance with operational best practice and legal requirements in place at the time of decommissioning. Although it is not possible to predict the standards that will be appropriate at such a time the following issues are likely to require careful consideration :

1. the safe emptying and flushing of vessels and pipe work
2. the removal of any tank residues as well as potentially contaminated plant and equipment
3. the dismantling and disposal of structures and buildings with due regard for the potential for localised contamination
4. the assessment of ground conditions with reference to the baseline site condition report to assess the need for any additional remediation work in line with current day standards

Further details regarding site closure arrangements may be added to the decommissioning pack as developments in this area of operational planning advance.



B3 EMISSIONS

This section summarises the emissions likely to be generated from the operation of the BWTC. The information is provided in a tabular format for ease of reference and excludes noise, odour and heat, which are covered in their respective sections of this application.

BWTC Emissions (all are 'current' rates for the proposed process)

Emission groups in order of significance	Source	Receiving medium	Benchmark & relevant EOS	Max emissions as concentration and/or mass/unit time	Frequency of emission	Measured or calculated data
Effluent to sewer comprising				N/a		
Water	Incoming wastes discharged at sewer connection point following treatment	Sewer	The key operational benchmark in relation to these emissions is the trade effluent discharge consent issued by the receiving sewerage undertaker. Welsh Water in issuing the consent are required to have considered the implications of the discharge to sewer in relation to the final discharge by the Pen y Bont STW to controlled waters. Relevant EOS's used in that process would include the Urban Waste Water Treatment Regulations, 1994 and the Surface Water (Dangerous Substances Classification) Regulations 1992. The listed emissions include EC grey list but not black list substances.	500mg/l and 140 kg/day	Water is continuous but all other parameters will vary depending on incoming waste composition	Measured
Ammoniacal nitrogen				1700 mg/l		
Suspended solids				1000 mg/l		
Sulphate				100mg/l		
Oil and grease				2 mg/l		
Chromium				2 mg/l		
Copper				2 mg/l		
Lead				2 mg/l		
Nickel				2 mg/l		
Zinc				2 mg/l		
Cyanide				2 mg/l		
Sulphide				3 mg/l		
Phenols				100 mg/l and 7 kg/day		
Detergents				30 mg/l (expressed as monoxal OT)		
alcohols				No specified limit		
General waste	Process and support activities	Landfill	None	3 tonnes / month	Continuous	Calculated (based on estimated volume x 250kg / m3)
Sludge & screening waste	Process 2 & 3	Landfill	None	319 tonnes / month	Continuous	Calculated based on estimated percentage (7.5%) of maximum incoming wastes
Carbon dioxide (indirect emissions only)	Consumption of electricity supplied from national grid	Air	None	35 tonnes / annum	Continuous	Calculated based on primary supply totals multiplied by an emission factor of 166 kg/MWh



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B4 IMPACT

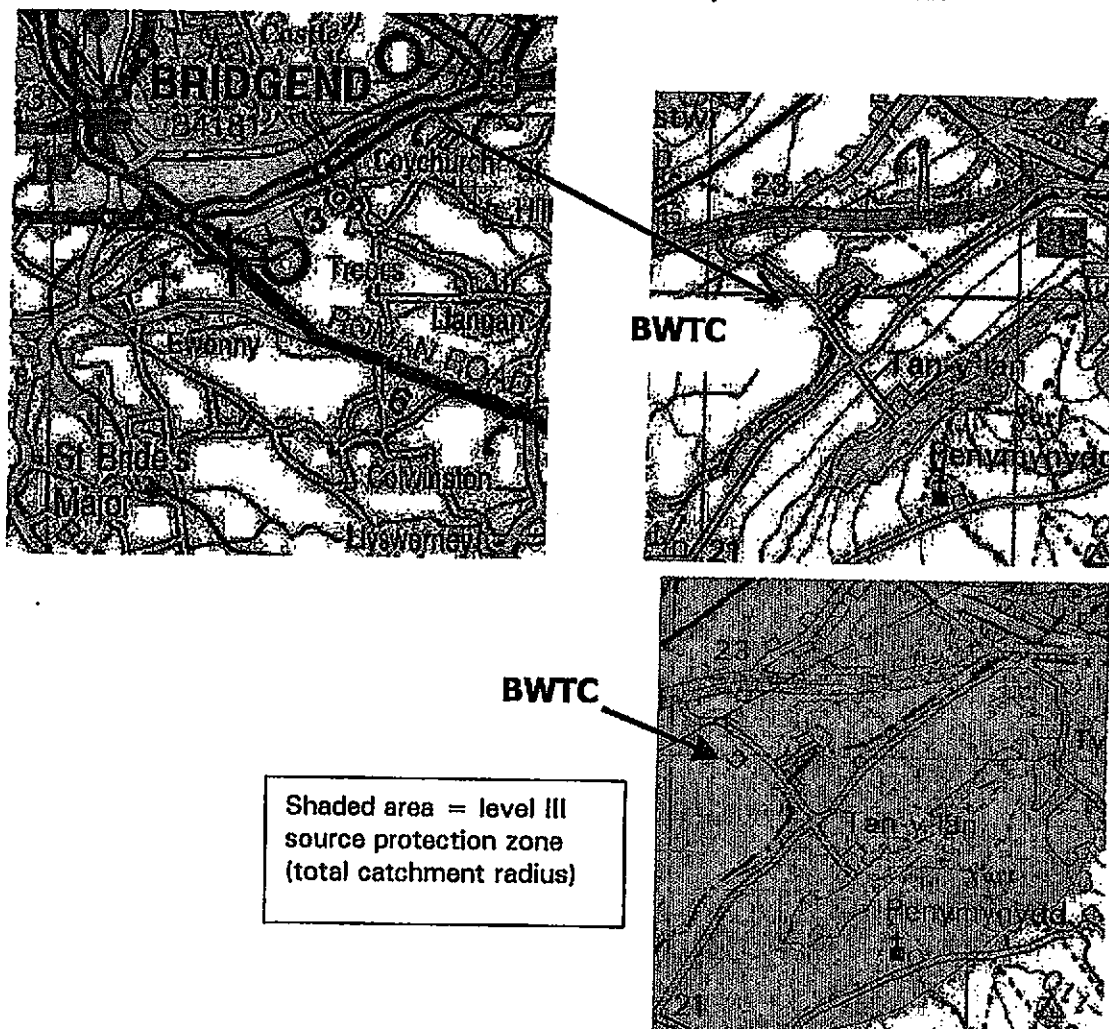
This section assesses the potential significant environmental effects associated with the emissions likely to be generated from the operation of the BWTC. It is divided into the following sections :

1. Identification of receptors and pathways
2. Impact assessment using a risk based model

1. Identification of receptors and pathways

The extract from the OS 1:25,000 map included in section B1.3 of this application, highlights the location of the Bridgend Waste Treatment Centre (BWTC) site and local areas of designated conservation interest, including the Moor Farm and Tan y Lan SINC's and the Coed y Mwstwr SSSI. The nearest residential properties are shown on the map as blue triangles.

The following maps show the location of groundwater source protection zones.



The key environmental receptors are summarised in table 1 below and linked via pathways (where potential exists) to site emissions.

Table 1 – Key receptors and associated BWTC emissions

Key receptors	Distance from BWTC	Potential pathway	Relevant site emission	Potential environmental effect
Groundwater within source protection zone	On site	Soil following breach of secondary containment	Liquid waste or process chemicals	Contamination of groundwater / aquifer and secondary impacts associated with the spread of contamination
Local residential properties especially Cwrt Gwilym Farm	Approx. 100 metres to Cwrt Gwilym Farm	Air	Noise, odour	Nuisance
Ewenny river (GQA Grade B watercourse) or unclassified Nant Heol y Geifr stream	Approx 250 metres	Water (breach of secondary containment then directly or via groundwater)	Liquid waste or process chemicals	Toxic and biochemical impacts on aquatic ecosystem.
Merthy Mawr Warrens CSAC	Approx 9km	Water – via Ewenny or via sewer and Pen y Bont discharge	Liquid waste or process chemicals	Minimal impact to terrestrial ecosystem
Moor Farm SINC	Approx 1.5 km	Water (breach of secondary containment then directly or via groundwater to Ewenny or Nant Heol y Geifr stream and hence to the vicinity of Moor Farm SINC.	Liquid waste or process chemicals	Minimal impact to terrestrial ecosystem
Coed y Mwstwr SSSI	Approx 750 metres	Air	No relevant emissions	None
Tan y Lan SINC	Approx 500 metres	Air	No relevant emissions	None
Land or groundwater in the vicinity of landfill site used for solid waste disposal	On site	Land / groundwater	Solid waste – general and special (sludges)	Land and groundwater contamination

2. Impact assessment using a risk based model

The relatively simple nature of the proposed operation and the small number and local nature of the key receptors, means that a simplified approach to impact assessment is appropriate. The following approach based on a risk assessment style methodology assesses the likelihood of impact occurrence (based on frequency of source activity and adequacy of control measures) and potential environmental consequences and provides a combined significance rating. The following scoring system forms the basis of the assessment and is applied to each of the key receptor groups with regard to the potential effects listed in table 1 above :

1. **Frequency** – scores allocated as follows – 3 = the emission giving rise to the potential effect described is an everyday occurrence, 2 = event or circumstances giving rise to the event described is routine but only occurs infrequently, 1 = event or circumstances giving rise to the event described could only occur in emergency scenario
2. **Control** – scores allocated as follows – 3 = controls are weak or absent, 2 = controls are in place but are informal or inconsistent, 1 = controls are formal (structural and /or procedural)
3. **Consequence** – scores allocated as follows – 3 = off site environmental / human impact that would be considered of high significance and constitute a legal breach, 2 = off site or localised environmental / human impact that would be considered of medium significance and/or constitute a legal breach, 1 = an on site environmental / human impact of low significance but which may if unchecked constitute a more significant impact and/or a legal breach
4. **Risk** – total score achieved by multiplication of previous 3 columns. An assurance rating is generated in relation to these scores with scores of 9 or more constituting significant environmental issues for the site, demanding a tightening of control arrangements.

Table 2 summaries the assessments – it may be seen that none of the potential environmental effects are considered to represent 'significant' outstanding risks. Application of generic BAT principles to the site design and operational procedures have achieved a high level of control that provides assurance that no significant environmental impact will arise from the site operations.

Table 2 – risk assessment of BWTC effects on key receptors

Relevant site emission	Key receptors	Potential environmental effect	Relevant control measures	Frequency of emission	Control assessment	Consequence assessment	Risk rating
Noise	Local residential properties especially Cwrt Gwilym Farm	Nuisance	- Daily inspection and maintenance checks - Equipment design, specification and layout	3	1	2	6
Odour	Local residential properties especially Cwrt Gwilym Farm	Nuisance	- Incoming waste selection / assessment - Daily inspection and maintenance checks - Tank covers / waste containment	3	1	2	6
Liquid waste or process chemicals	Merthyr Mawr Warrens CSAC	Minimal impact to terrestrial ecosystem	Process controls relating to effluent discharge checks ensuring compliance with trade effluent consent discharge conditions	3	1	2	6
Solid waste – general and special (sludges)	Land or groundwater in the vicinity of landfill site used for solid waste disposal	Land and groundwater contamination arising from inappropriate segregation or inappropriate disposal	- Waste management procedures - Secondary containment on site	2	1	2	4
Liquid waste or process chemicals	Ewenny river (GQA Grade B watercourse) or unclassified Nant Heol y Gelfr stream	Toxic and biochemical impacts on aquatic ecosystem.		1	1	3	3
Liquid waste or process chemicals	Moor Farm SINC	Minimal impact to terrestrial ecosystem	- Secondary containment on site - Daily inspection and maintenance checks	1	1	3	3
Liquid waste or process chemicals	Groundwater within source protection zone	Contamination of groundwater / aquifer and secondary impacts associated with the spread of contamination	Groundwater monitoring regime	1	1	2	2

No relevant emissions	Coed y Mwstwr SSSI & Tan y Lan SINC	None	N/A	0	0	0	0	0
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B4.2 Waste Management Licensing Regulations

This section describes how the proposal addresses the objectives contained within paragraph 4, schedule 4 of the Waste Management Licensing Regulations 1994, namely :

1. 'ensuring the waste is recovered or disposed of without endangering human health and without using process or methods which could harm the environment and in particular without :
 - ◆ Risk to water, air, soil, plants and animals; or
 - ◆ Causing nuisance through noise or odours; or
 - ◆ Adversely affecting the countryside or places of special interest'
2. implementing, as far as material, any plan made under the plan-making provisions

The issues have been largely considered in other parts of the application but will be summarised and cross referenced here.

1. Safeguards relating to human health and the environment

The two key groups of safeguards relevant to the first group of objectives relating to the protection of human health and the environment :

Plant design and Infrastructure (for detail refer to sections B2.1 & B2.3) –

- ◆ The plant has been designed as a completely contained system which allows for the isolation and recovery of any materials (wastes or process chemicals) spilt on site
- ◆ Careful consideration of the potential for odour and noise nuisance has resulted in enclosure of the majority of treatment tanks and the noisier pieces of plant

Plant operational procedures (for detail refer to sections B2.1, B2.3, B2.8 & B4) –

- ◆ The risk assessment approach taken in relation to the sources of potential harm to human health and the environment provides a robust check that adequate operational controls are in place with regards all key receptors including the local areas of designated conservation interest.
- ◆ The site operational plan and United Utilities Business Management procedures constitute a comprehensive system of operational control relating to the key risks associated with site activities. Of particular interest are those standards relating to the containment of spillage / leakage, the management of solid wastes and the regulation of discharges to the sewer within the trade effluent consent conditions.
- ◆ The site inspection, maintenance and monitoring regimes have been developed as an assurance mechanism to ensure the early detection of any failures within the management system controls

2 Implementing any plans made under plan making provisions

Any statutory improvement plans will be broken down into key tasks that will be assigned to 'responsible persons' for completion. A review of the completion of such tasks and their achievement of the overall plan requirements will be monitored through the United Utilities Internal audit and review process.



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B4.3 THE HABITATS REGULATIONS

This section assesses the potential for the proposed operation to impact upon a European site. There are no approved Special Areas of Conservation (SAC's) or Special Protection Areas [as defined in the Conservation (Natural Habitats etc) Regulations 1994] within the area of influence of the proposed site.

The Methyr Mawr Warrens sand dune area (situated approximately 9 km west south west of the site – GR 8677) is however a candidate SAC awaiting review / approval. The possibility of site activities affecting this area are extremely remote and would have to involve a significant transfer route for pollution. The transfer possibilities are limited to :

- ◆ Some kind of major release into the Ewenny river which feeds into the Ogmor river which borders the CSAC area
- ◆ A complete failure of the effluent treatment systems leading to a release of untreated waste into the trunk sewer. For a discharge into the Ogmor river a failure of the Welsh Water Peny Bont sewage treatment plant's control systems would also be required.

In both instances, consideration of the risks and controls in place within the impact assessment (section B4) and emergency planning (section B2.8) parts of this application suggests that such occurrences are outside a level of likelihood requiring further consideration. Indeed, even if they were to occur it is dubious as to whether any significant impact to the cSAC (which is essentially a terrestrial ecosystem) would actually occur from the type of water pollution event described.



B7.2 PLANNING STATUS

The BWTC has been granted a permit for the proposed development by the Local Planning Authority (Bridgend County Borough Council). The planning permit code number is P/97/921/FUL and a copy of the permit is attached.



Bridgend County Borough Council
Cyngor Bwrdeistref Sirol Pen-y-bont ar Ogwr

Code No: P/97/921/FUL

TOWN AND COUNTRY PLANNING ACT 1990

TOWN AND COUNTRY PLANNING GENERAL DEVELOPMENT (PROCEDURE) ORDER 1995

PERMISSION FOR DEVELOPMENT

To: HYDER INDUSTRIAL LTD
P O BOX 295
ALEXANDRA GATE
ROVER WAY
CARDIFF CF2 2UE

HYDER INDUSTRIAL				
DATE RECEIVED:	30/1/98			
SENT BY:	12			
ACTIONED BY:	12			

Whereas you did on the 20th October 1997 make application in writing for permission to develop, short particulars of the development being as follows:

Applicant Name : HYDER INDUSTRIAL LTD
Development : INSTALL TANKS AND PIPEWORK FOR THE TREATMENT OF WASTE
Location : BRIDGEND WASTE MANAGEMENT CENTRE FACTORY LANE
PENCOED BRIDGEND

BRIDGEND COUNTY BOROUGH COUNCIL as the Local Planning Authority, hereby PERMIT the proposed development to be carried out in accordance with the plans (if any) submitted with the said application, subject to the development being begun on a date which is not later than five years from the date of this permission and subject also to compliance with the condition(s) specified below:

CONDITIONS

1. No works or development shall take place until full details of all proposed tree planting, and the proposed times of planting, have been approved in writing by the Local Planning Authority, and all tree planting shall be carried out in accordance with those details and at those times.

Reason: To maintain and improve the appearance of the area in the interests of visual amenity.

2. If within a period of three years from the date of the planting of any tree, that tree or any tree planted in replacement for it, is removed, uprooted or destroyed or dies, or becomes, in the opinion of the Local Planning Authority, seriously damaged or defective another tree of the same species and size as that originally planted shall be planted at the same place, unless the Local Planning Authority gives its written consent to any variation.

Reason: To maintain and improve the appearance of the area in the interests of visual amenity.

3. The exterior of the approved tanks shall be dark green in colour and so maintained in perpetuity unless otherwise agreed in writing by the Local Planning Authority.

Reason: In the interests of the visual amenities of the area.

Page 1 of 3

Maurice Edwards



Bridgend County Borough Council
Cyngor Bwrdeistref Sirol Pen-y-bont ar Ogwr

Code No: P/97/921/FUL

- 4 Prior to the approved development being brought into beneficial use a de-odourising system shall be installed in accordance with a scheme to be submitted to and agreed in writing by the Local Planning Authority. 

Reason: In the interests of the general amenities of the area.

- 5 No work whatsoever shall commence on site until such time as the existing right hand holding lane on Route A473 has been widened in accordance with the Welsh Office Technical Directive TD 42/95.

Reason: In the interests of highway safety.

- 6 Notwithstanding the submitted plans, no works whatsoever shall commence on site until full engineering details of the amended right hand holding lane on Route A473 have been submitted and approved by the Local Planning Authority. Such details shall include an advance warning signing scheme for motorists travelling on the dual carriageway.

Reason : In the interests of highway safety.

- 7 The existing means of access to the site should be laid out and constructed with an enhanced south easterly vision splay of 24 x 33m.

Reason : In the interests of highway safety.

- 8 The first 30m of the access road shall be widened to 7.3m and completed in permanent materials as approved by the Local Planning Authority. Such improvement shall include an adjustment of the existing eastern radius to 15 metres, all to be completed before the beneficial use commences.

Reason : In the interests of highway safety.

Notes:

- a) The applicant should enter into a Section 278 Agreement with the Highway Authority.
- b) The developer will require either a Waste Management Licence, or a modification to the existing licence and therefore all necessary pollution prevention measures can be incorporated within the licence conditions.
- c) As a minimum, the Environment Agency will require full details of the sites foul and surface water drainage systems to ensure no discharge to groundwater occurs, and that any tanks, wash bays, etc. are suitably bunded. Appropriate drainage systems will also need to be carefully considered.
- d) In addition to protect groundwater, a monitoring programme will be required which will necessitate the provision of monitoring boreholes around the site. The exact number and location of these boreholes, together with monitoring frequency, will need to be agreed with the Environment Agency.

Page 2 of 3

Maurice Thomas



Bridgend County Borough Council
Cyngor Bwrdeistref Sirol Pen-y-bont ar Ogwr

Code No: P/97/921/FUL

Dated : 27th January 1998

Maurice Thomas
Signed :

DIRECTOR OF ENVIRONMENTAL AND
PLANNING SERVICES

- (A) YOUR ATTENTION IS DRAWN TO THE ENCLOSED NOTES WHICH SET OUT THE RIGHTS OF APPLICANTS WHO ARE AGGRIEVED BY THE COUNCIL'S DECISION.
(B) THIS CONSENT DOES NOT CONVEY ANY APPROVAL OR CONSENT REQUIRED BY BUILDING REGULATIONS OR ANY ACTS OTHER THAN THE TOWN AND COUNTRY PLANNING ACT 1990
(C) PRIOR TO COMMENCING THE DEVELOPMENT YOU ARE ADVISED TO INVESTIGATE WITH STATUTORY UNDERTAKERS AS TO WHETHER ANY OF THEIR APPARATUS WOULD BE AFFECTED BY THE WORKS

YOUR ATTENTION IS DRAWN TO THE PROVISIONS OF THE PARTY WALL ETC ACT 1996

TOWN AND COUNTRY PLANNING ACT 1990

Notice to be sent to an applicant when a local planning authority refuses planning permission or grant it subject to conditions

APPEALS TO THE SECRETARY OF STATE

If you are aggrieved by the decision of your local planning authority to refuse permission for the proposed development or to grant it subject to conditions, then you can appeal to the Secretary of State for Wales under section 78(1) of the Town and Country Planning Act 1990.

If you want to appeal, then you must do so within six months of the date of this notice, using a form which you can get from the Planning Inspectorate, Welsh Office, Cathays Park, Cardiff CF1 3NQ.

The Secretary of State can allow a longer period for giving notice of an appeal, but he will not normally be prepared to use this power unless there are special circumstances which excuse the delay in giving notice of appeal.

The Secretary of State need not consider an appeal if it seems to him that the local planning authority could not have granted planning permission for the proposed development or could not have granted without the conditions imposed, having regard to the statutory requirements, to the provisions of the Development Order and to any directions given under the Order.

In practice, the Secretary of State does not refuse to consider appeals solely because the Local Planning Authority based its decision on a direction given by him.

PURCHASE NOTICE

If either the Local Planning Authority or the Secretary of State for Wales refuses permission to develop land or grants it subject to conditions, the owner may claim that he can neither put the land to a reasonably beneficial use in its existing state nor can he render the land to a reasonably beneficial use in its existing state nor can he render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted.

In these circumstances, the owner may serve a purchase notice on the Council in whose area the land is situated. This notice will require the Council to purchase his interest in the land in accordance with the provisions of Part VI of the Town and Country Planning Act 1990.

COMPENSATION

In certain circumstances compensation may be claimed from the Local Planning Authority if permission is refused or granted subject to conditions by the Secretary of State on appeal or on reference of the application to him.

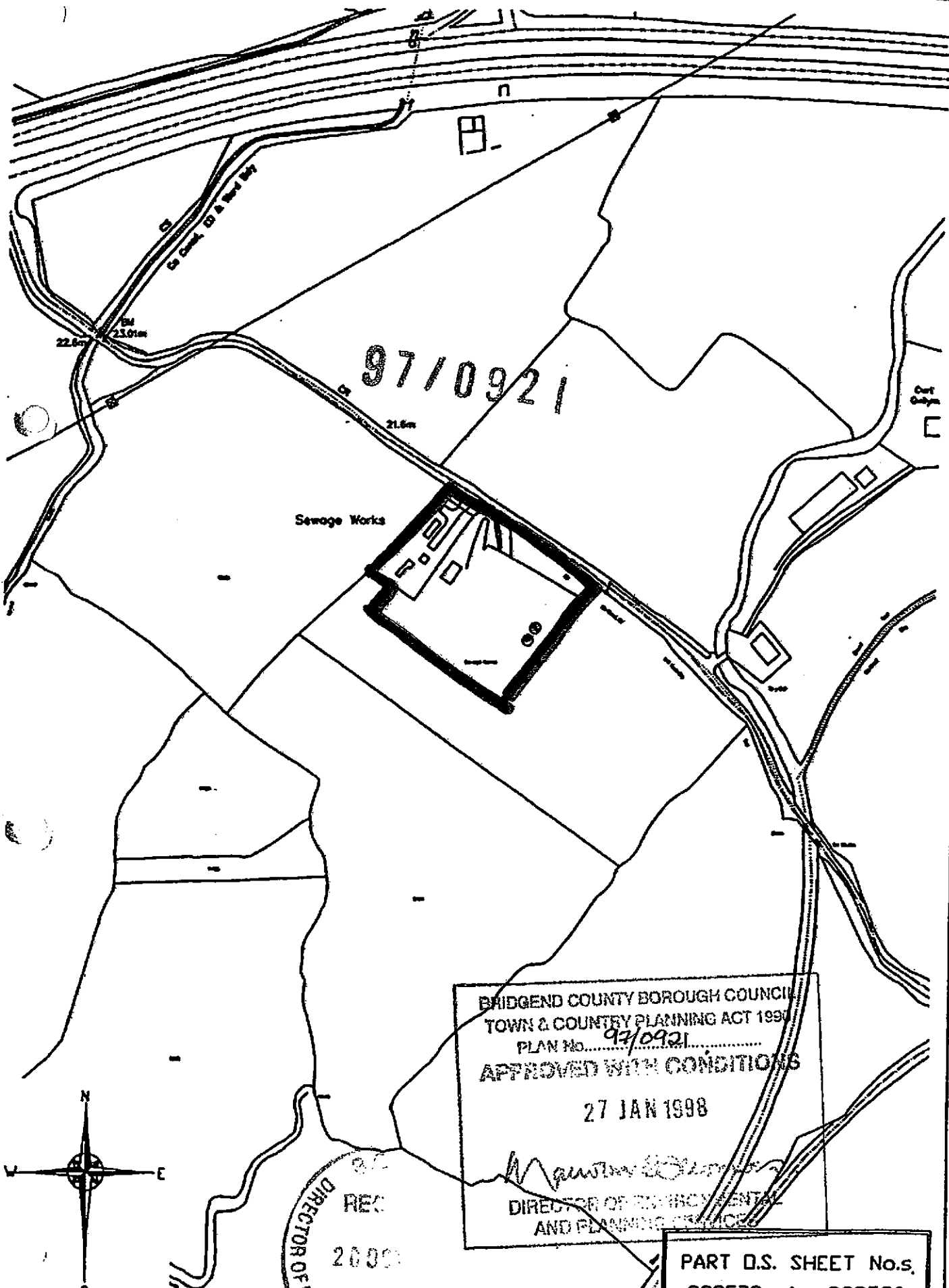
These circumstances are set out in Section 114 and related provisions of the Town and Country Planning Act 1990.

Please note that if an Appeal is lodged with the Welsh Office, one of the three appeal forms should be forwarded to:-

Directorate of Environmental and Planning Services, Planning Services Department, Bridgend County Borough Council, Civic Offices, Angel Street, Bridgend CF31 1LX



WELSH WATER INDUSTRIAL SERVICES.
PENCOED WASTE WATER RECEPTION POINT.



PART D.S. SHEET No.s.
SS9579 & SS9580

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B7.5 WAMITAB CERTIFICATES

Attached are the WAMITAB Certificates of Technical Competence for :

- ♦ Javad Farooq
- ♦ Matthew Jones

[For roles and responsibilities in relation to the operation please refer to the site operational plan section 2.2.].

In addition to these two individuals, a pool of UUI staff act as technically competent support staff for waste management facilities throughout the South Wales region (including the Bridgend Waste Management Centre). The UUI contacts list for this pool of competent staff is as follows :

Name	Job Title	Site Number	Mobile	COTC
Javad Farooq	Regional Operations Manager	02920 316300	07767 410112	TMS Level 4
Nick Carter	Operations Manager	02920 316300		TMS Level 4
Dave Taylor	Team Leader	01446 730374	07775 951703	TMS Level 4
Matthew Jones	Technical Sales	02920 316300	07788 916016	TMS Level 4
Simon Mclean	Site Supervisor	01432 360129	07721 919089	TMS Level 4
Hugh Ratsey	Process Scientist		07748 336901	TMS Level 4
Siobhan O'Leary Johns	Process Scientist		07748 336909	TMS Level 4

The sites for which this COTC pool provide technically competent management are as follows :

Site name	Address	Licence number
Bridgend	Bridgend Waste Management Centre Factory Lane Pencoed Bridgend SA2 7PQ 01656 862136	31
Cilfynydd	Cilfynydd Waste Management Centre Cilfynydd Sewage Treatment Works Cilfynydd Pontypridd 01443 402298	TP/01/94
Hereford	Hereford Waste Management Centre Eign Sewage Treatment Works Eign Road Hereford 01432 360129	1.052.07
Nash	Nash Waste Management Centre Nash Sewage Treatment Works Newport Gwent 01633 275016	WML/076/95

WAMITAB

WASTE MANAGEMENT INDUSTRY TRAINING AND ADVISORY BOARD

CERTIFICATE No: 3534

CERTIFICATE OF TECHNICAL COMPETENCE

This Certificate confirms that

Matthew Timothy James Jones

has demonstrated the standard of technical competence required for the management of
a facility of the type set out below

Facility Type:

Managing Treatment Operations :

Clinical or Special Waste (Level 4) - TMS4



Authorising Signatures:

Director General

Director

Date of issue:

12 March 2001

WAMITAB

WASTE MANAGEMENT INDUSTRY TRAINING AND ADVISORY BOARD

CERTIFICATE No: 2998

CERTIFICATE OF TECHNICAL COMPETENCE

This Certificate confirms that

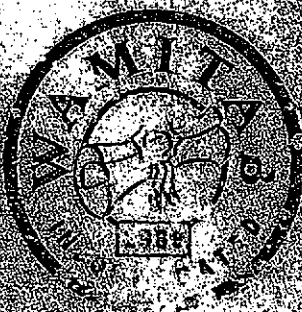
Javad Farooq

has demonstrated the standard of technical competence required for the management of
a facility of the type set out below

Facility Type:

Managing Treatment Operations

Clinical or Special Waste (Level 4) - TMS4



Authorising Signatures

Director General

Director

Date of Issue: 25 August 2000



B7.9 Expenditure plan

The operational costs associated with the Bridgend WTC site have been reviewed as part of the project planning process and the following estimates have been made in relation to pollution control measures :

Pre-commissioning costs

	Budget (£)
Site condition report	12,000
Environmental assessment and constraints – consultancy support	15,000

Operational costs

	Budget (£ / annum)
Groundwater surveys	1,426
Effluent monitoring (including input and output analysis)	15,500
Maintenance of site containment systems	13,300

Decommissioning costs

It is impractical to allocate costs for unspecified works at an undefined date in the future, however, the following items are likely to require budget allocation as part of any decommissioning plan :

	Budget (£)
Site condition report	Unspecified
Decontamination of plant and equipment (including drainage systems)	Unspecified

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Certified to be a true and
correct copy of the original

CERTIFICATE OF INCORPORATION ON CHANGE OF NAME

Company No. 4204293

The Registrar of Companies for England and Wales hereby certifies that

INHOCO 2329 LIMITED

having by special resolution changed its name, is now incorporated
under the name of

UNITED UTILITIES INDUSTRIAL LIMITED

Given at Manchester, the 29th May 2001

P. AKHTER

For The Registrar Of Companies



C O M P A N I E S H O U S E



Certified to be a true and
correct copy of the original.

CERTIFICATE OF INCORPORATION OF A PRIVATE LIMITED COMPANY

Company No. 4204293

**The Registrar of Companies for England and Wales hereby certifies that
INHOCO 2329 LIMITED**

**is this day incorporated under the Companies Act 1985 as a private
company and that the company is limited.**

Given at Companies House, Cardiff, the 24th April 2001



**THE OFFICIAL SEAL OF THE
REGISTRAR OF COMPANIES**



Companies House
— for the record —

HC007A



United Utilities PLC.
Registered in England & Wales
No. 2366616. Registered office:
Dawson House, Great Sankey
Warrington WA5 3LW

fax

To Simon Longley
Company UU Industrial
Fax no 01962 879740
From Jane Gilmore
Date 12 June 2002
Total pages 9.

Direct line 01925 237025
Direct fax 01925 237073
Jane.gilmore@uuwplc.co.uk

Copies to

Dear Simon

Certificates of incorporation, change of name etc for the following:

United Utilities PLC

↓
United Utilities Contract Solutions Holdings Ltd

↓
United Utilities Contract Solutions Ltd

↓
UU Industrial

} This is the
structure above
UU Industrial.

Jane.

If you have any problems receiving this fax please contact us.

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**CERTIFICATE OF INCORPORATION
ON CHANGE OF NAME**

Company No. 2381766

The Registrar of Companies for England and Wales hereby certifies that

UNITED UTILITIES SERVICE DELIVERY LIMITED

having by special resolution changed its name, is now incorporated
under the name of

UNITED UTILITIES CONTRACT SOLUTIONS HOLDINGS LIMITED

Given at Manchester, the 23rd January 2001

J Humphreys

J. HUMPHREYS
For The Registrar Of Companies



C O M P A N I E S H O U S E



**CERTIFICATE OF INCORPORATION
ON CHANGE OF NAME**

Company No. 2381766

The Registrar of Companies for England and Wales hereby certifies that

NORWEB DISTRIBUTION LIMITED

having by special resolution changed its name, is now incorporated
under the name of

UNITED UTILITIES SERVICE DELIVERY LIMITED

Given at Manchester, the 27th October 2000

J. YANG

For The Registrar Of Companies



C O M P A N I E S H O U S E



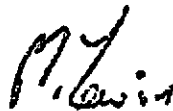
**CERTIFICATE OF INCORPORATION
ON CHANGE OF NAME**

Company No. 2366616

**The Registrar of Companies for England and Wales hereby certifies that
NORTH WEST WATER GROUP PLC**

**having by special resolution changed its name, is now incorporated
under the name of
UNITED UTILITIES PLC**

Given at Companies House, Cardiff, the 1st January 1996


M.LEWIS

For the Registrar of Companies



C O M P A N I E S H O U S E

HC008A



**CERTIFICATE OF INCORPORATION
OF A PRIVATE LIMITED COMPANY**

No. 2381766

I hereby certify that

NORWEB DISTRIBUTION LIMITED

**is this day incorporated under the Companies Act 1985
as a private company and that the Company is limited.**

**Given under my hand at the Companies Registration Office,
Cardiff the 9 MAY 1989**

F. A. Joseph.

**F. A. JOSEPH
an authorised officer**



**CERTIFICATE OF INCORPORATION
ON CHANGE OF NAME**

Company No. 2268728

The Registrar of Companies for England and Wales hereby certifies that

NORTH WEST ELECTRICITY LIMITED

having by special resolution changed its name, is now incorporated
under the name of

UNITED UTILITIES CONTRACT SOLUTIONS LIMITED

Given at Manchester, the 27th October 2000

J. YANG

For The Registrar Of Companies



C O M P A N I E S H O U S E



CERTIFICATE OF INCORPORATION
ON RE-REGISTRATION OF A PUBLIC COMPANY
AS A PRIVATE COMPANY

No. 2268728

I hereby certify that

NORTH WEST ELECTRICITY LIMITED

formerly registered as a public company has this day
been re-registered under the Companies Act 1985 as a
private company, and that the Company is limited.

Given under my hand at Cardiff the 28TH JUNE 1989

J.R. Spears
An Authorised Officer



**CERTIFICATE OF INCORPORATION
ON CHANGE OF NAME**

No. 2268728

I hereby certify that

PRICESURE PUBLIC LIMITED COMPANY

having by special resolution changed its name,

is now incorporated under the name of

NORTH WEST ELECTRICITY PLC

Given under my hand at the Companies Registration Office,

Cardiff the 6 SEPTEMBER 1988

P. A. Rowley

MRS P.A. ROWLEY

an authorised officer



**CERTIFICATE OF INCORPORATION
OF A PUBLIC LIMITED COMPANY**

No. 2268728

I hereby certify that

PRICESURE PUBLIC LIMITED COMPANY

**is this day incorporated under the Companies Act 1985
as a public company and that the Company is limited.**

**Given under my hand at the Companies Registration Office,
Cardiff the 17 JUNE 1988**

F. A. Joseph.

F. A. JOSEPH

an authorised officer



**CERTIFICATE OF INCORPORATION
OF A PUBLIC LIMITED COMPANY**

No. 2366616

I hereby certify that

NORTH WEST WATER GROUP PLC

**is this day incorporated under the Companies Act 1985
as a public company and that the Company is limited.**

**Given under my hand at the Companies Registration Office,
Cardiff the 1 APRIL 1989**

A handwritten signature in dark ink, appearing to read 'J. D. Cawley'.

**MR. J. D. CAWLEY
an authorised officer**