

SETTLED STORM

E. A. WALES  
Rec. No 5480  
- 2 AUG 2005  
Part 2 of 2  
PAID

St. David's  
WWTW APP



ASiantaeth Yr  
AMGYLCHEDD  
ENVIRONMENT  
AGENCY

## WATER RESOURCES ACT 1991 (schedule 10)

(as amended by the Environment Act 1995)

### Application for variation to an existing consent\* to discharge

(\* delete as appropriate)

<b>Regional/Area Address:</b>	<i>Official Use Only</i>
The Regional Finance Manager Environment Agency Welsh Region PO Box 425 St Mellons Business Park CARDIFF CF3 0LT	Dist/Area Ref: 1303  Application No. BPO062702 Date Received: 2/8/05 Fee Received: £ 772 (2/8/05)

Each applicant must complete the main form and may need to complete a separate annexe if appropriate. Please look through the form and read the notes carefully before you complete it. Processing of your application will be aided by full and accurate completion of all relevant sections and provisions of the necessary plans. If you have any queries regarding the form please contact the person given in the notes.

#### NOTE:

All information contained within this application will be made available on the public register unless there is a request to withhold any of it. Any such request should provide a full justification stating why the information needs to be withheld (see note xiii).

### 1 SITE ADDRESS

1.1 Address or other sufficient description of land or premises to which this application applies.

St David's WwTW

Post Code:

N/a

## 2 DETAILS OF DISCHARGE(S)

2.1 State the nature of the discharge(s) (see note i and ii) - tick one or more boxes as appropriate:

- Sewage Effluent - volume of 5 cubic metres per day or less
- Sewage Effluent - volume greater than 5 cubic metres per day (complete annexe 1)
- Sewage Effluent discharged under storm or emergency conditions (complete annexe 2)
- Cooling Water (complete annexe 3)
- Trade Effluent (including site drainage) (complete annexe 3)
- Others (please specify)

2.2 Please state the maximum quantity it is proposed to discharge in any one day m<sup>3</sup>/day N/A  
Briefly state how this figure was calculated (see note ii).

See supporting documentation inc' spill frequency analysis

2.3 a) Indicate proposed means of discharge - tick as appropriate and show on plan: (for 1, 2 & 3 please state dimensions below)

- |            |                                     |             |                          |                                 |                          |
|------------|-------------------------------------|-------------|--------------------------|---------------------------------|--------------------------|
| 1. Pipe    | <input checked="" type="checkbox"/> | 4. Borehole | <input type="checkbox"/> | 7. Sub-Irrigation System        | <input type="checkbox"/> |
| 2. Channel | <input type="checkbox"/>            | 5. Well     | <input type="checkbox"/> | 8. Combination of 6 & 7         | <input type="checkbox"/> |
| 3. Culvert | <input type="checkbox"/>            | 6. Soakaway | <input type="checkbox"/> | 9. Other (please specify below) | <input type="checkbox"/> |

9 inch NB

b) National Grid Reference(s) of point(s) of discharge (see note iii).

S	M	7	4	3	0	3	2	3	8	4	9
---	---	---	---	---	---	---	---	---	---	---	---

(please indicate on accompanying plans)

2.4 a) The Agency will normally require adequate provision for the taking of samples of the discharge in a safe and convenient manner at any time. Please indicate the means proposed (see note iv) - tick as appropriate and show on plan:

- At the outlet  At a manhole or sampling chamber

Other (please specify)

b) National Grid Reference(s) of sampling point(s) (if different from 2.3 b) above).

S	M	7	4	0	1	8	2	4	4	8	8
---	---	---	---	---	---	---	---	---	---	---	---

(please indicate on accompanying plans)

c) What flow measurement facilities will be provided (see note v)?  
Please give details.

none

2.5 a) Type of Treatment Plant(s) to be used (please specify make and model) - tick as appropriate:

- Septic Tank  Package Sewage Treatment Works  Other

Inlet screening, 2 off storm retention tanks, 192 m3

b) Will the treatment process involve the use of any chemicals (eg ferric salts, polyelectrolytes). If yes please give details.

no

2.6 a) On what date do you anticipate the discharge will commence?

31/12/05

b) If you require the consent for a limited time period please give dates;

from:

/ /

to:

/ /

c) If the discharge is not continuous please detail the period/circumstances when it will occur.

During prolonged storm events when storm tanks are full

2.7 a) Are there any existing consents for discharges from the premises (see note vi)?  
If yes, please give the reference numbers (Any further information should be given in Section 5.3).

yes

Final effluent BP0062701  
Storm BP0062702

b) Has any person had a Prohibition Notice serviced on them in respect of this site?  
If yes, please give the reference number.

no

### 3 SITE DETAILS

3.1 Please give the name of the relevant Planning Authority.

Pembrokeshire County Council

3.2 Please give details of the premises - tick as appropriate:

1. Single Dwelling

6. Fish Farm

2. Multiple Dwellings

7. Mineral Workings

3. Industrial Premises

8. Water Services plc STW

4. Vehicle Parking Area

9. Water Supply

5. Commercial Premises (please specify)

10. Other (please specify)

- 3.3 Please indicate source of the water supply - tick as appropriate: not applicable
- |  |                          |   |                          |
|--|--------------------------|---|--------------------------|
| 1. Well                                      | <input type="checkbox"/> | 5. River (please give name below)         | <input type="checkbox"/> |
| 2. Borehole                                  | <input type="checkbox"/> | 6. Estuary (please give name below)       | <input type="checkbox"/> |
| 3. Precipitation (eg rain or snow)           | <input type="checkbox"/> | 7. Coastal Water (please give name below) | <input type="checkbox"/> |
| 4. Mains (please state water supply company) | <input type="checkbox"/> |   |                          |

**4 DETAILS OF RECEIVING ENVIRONMENT**

- 4.1 Receiving Medium - tick the category(s) to which the proposed discharge(s) is(are) to be made:
- |  |                                     |                                 |                          |
|--|-------------------------------------|---------------------------------|--------------------------|
| 1. Estuarial Water (tidal river or stream) | <input checked="" type="checkbox"/> | 5. Into Land                    | <input type="checkbox"/> |
| 2. River or Stream (non-tidal)             | <input type="checkbox"/>            | 6. Onto Land                    | <input type="checkbox"/> |
| 3. Canal                                   | <input type="checkbox"/>            | 7. Directly into Groundwater    | <input type="checkbox"/> |
| 4. Lake, Lock or Pond                      | <input type="checkbox"/>            | 8. Coastal Water (see note vii) | <input type="checkbox"/> |

State name of receiving water if known:

Coastal Waters at Porth Clais

- 4.2 In the case of sub-irrigation systems, soakaways or boreholes: not applicable
- (a) Is any part of the system within 5 metres of the boundary of the premises? Y/N
- (b) Is any part of the system within 10 metres of a watercourse? Y/N
- (c) Is any part of the system within 50 metres of a borehole or spring? Y/N
- (d) For wells and boreholes state dimension(s) in metres. m
- (e) For sub-irrigation systems, soakaway pits, wells and boreholes, state maximum depth in metres. m
- (f) For boreholes, state details of lining in metres:
- |                                    |   |
|------------------------------------|---|
| (i) Depth of lining                | m |
| (ii) Depth of perforated lining    | m |
| (iii) Depth of unperforated lining | m |
- (g) A percolation test must be carried out in accordance with British Standard BS6297:1983.  
Have the results been provided? Y/N
- 4.3 Is there a foul sewer available to which the discharge(s) could be made (see note viii)? Y/N
- If yes, please give the reasons it is not practical to connect to it (eg distance, flow etc).
-

## 5 DETAILS OF APPLICANT AND OTHER INFORMATION

### 5.1 (See general notes and note ix)

- (a) Full name and postal address of applicant. This should be the person who will become the consent holder should consent be issued.

Dwr Cymru Cyf  
Pentwyn Road  
Nelson  
Treharris  
Mid Glam

Post Code: CF46 6LY

Daytime Telephone Number:

Company Registration Number (if appropriate): 236677

- (b) Agent (if any) - Full name and postal address.

\*  
\*  
\*  
\*  
\* —  
\*

Post Code:

Contact Name and Daytime Telephone Number:

### 5.2

Please give full name and address to which bills should be sent if different to that given above:

\*  
\*  
\*  
\*  
\*  
\*

Post Code:

Daytime Telephone Number:

5.3 Are there any other factors to be taken into account? Please continue on a separate sheet if necessary.

# DECLARATION

I/We:

1. apply under the Water Resources Act 1991 (as amended by the Environment Act 1995) for consent to discharge, as described in this Application. "This Application" means this page, all the other pages of this form and any attached annexes, the attached plan(s), any other sheets attached, and any other written information supplied to support the application.
2. enclose the required application fee, payable to the Environmental Agency (see note x).
3. enclose 3 copies of the plan(s) and location maps with all relevant information clearly marked (see note xi).
4. will pay required advertising costs (see note xii).
5. confirm that I/we\* will notify the Environment Agency of any changes in the information in this application which might be material to the continuation of the consent.
6. confirm that the information given in this application and any questions which the Environment Agency may have about it is/will\* be true to the best of my/our\* knowledge, information and belief and am/are\* not aware of any other facts or information which might affect the granting of a consent, or conditions which might be put on it (see note xiii).
7. confirm that I/we\* will pay any annual charges due should a consent be granted YES/NO\*. If no please indicate who will be completing section 5.2 above (see note xiv).

(\* Delete as appropriate)

SIGNED: .....	<i>Lewis Keil</i>	PRINT NAME: .....	<i>LEWIS KEIL</i>
ON BEHALF OF: .....	<i>DWR CYMRU CYF</i>	DATED: .....	<i>1/8/05</i>

# CONFIDENTIALITY

I/we apply for commercial confidentiality and enclose a full written justification (see note xv).

SIGNED: .....	DATED: .....
---------------	--------------

PLEASE RETURN THIS FORM TO THE ADDRESS GIVEN ON THE FRONT PAGE

SETTLED STORM



ASIANTAETH YR  
AMGYLCHEDD  
ENVIRONMENT  
AGENCY

### ANNEXE 2 SEWAGE EFFLUENT DISCHARGED IN STORM OR EMERGENCY CONDITIONS

Please complete this annexe if you are proposing to make a discharge of sewage in emergency or storm conditions (if the effluent is to contain a trade component Annexe 3 should also be completed).

Official Use Only  
Application No.

1. Site Name.  
St David's WwTW

2. State the type of discharge - tick as appropriate:

- Storm tanks
- Combined Sewer Overflow from sewerage system
- Combined Sewer Overflow from pumping station
- Emergency overflow from sewerage system
- Emergency overflow from pumping station
- Other (please specify)

3. For effluents discharging from sewage treatment works, is the storm/emergency effluent discharged via the same outlet as the treated effluent?

If no please give: a) the National Grid Reference of the treated effluent outlet.

b) the consent or application number covering the treated effluent discharge  
BP0062701

If yes please give the National Grid Reference of the storm/emergency sampling point (see notes)  
S M 7 4 0 1 8 2 4 4 8 8

4. For effluents discharging from combined sewer overflows, is the discharge via a dedicated pipe?

If no please give the National Grid Reference of the overflow into the sewer.

5. Overflow settings

- a) Overflow setting to storm tanks
- b) Maximum flow to storm tanks
- c) Overflow setting to storm sewage overflow
- d) Maximum flow to storm sewage overflow

6. Storage capacity

- a) Volume of Storm tanks
- b) Retention time of storm tanks at maximum flow
- c) Storage capacity of sewer/wet well

7. Please provide full details of the design criteria that have been used to support this application.

Existing storm tanks 192 m<sup>3</sup>. 2 hrs at 3DWF = 189 m<sup>3</sup>, 2hrs at SocA-FFT = 160 m<sup>3</sup> therefore guideline compliant.  
See enclosed spill frequency analysis.

8. Will facilities be provided to raise alarms (eg telemetry)?   
If yes, please give details.

Spill frequency and duration logged.

9. Will facilities be provided to prevent the discharge of gross solids?   
If yes, please give details (for screens give bar spacing or aperture).

All storm flows screened 5mm x 5mm

10. What provisions will be made to deal with:

- a) power failure (eg standby generators)?
- b) mechanical breakdown (eg standby pumps)?
- c) rising main failure?
- d) tanker access?

Notes (see also the notes on the main form):

Full details of the design criteria must be provided in order for the application to be determined. If you have any queries about what information is required please contact the person given in notes attached to the main form.



ANNEXE 4  
WELSH REGION SUPPLEMENTARY INFORMATION ANNEXE

Please complete this annexe for every proposed discharge.

*Official Use Only*  
*Application No.*

**For all proposed discharges:**

1. Site Name.

St David's WwTW

2. Is this application being made to reinstate a lapsed Consent?

No

If so, please state the Number of the lapsed Consent:

**IMPORTANT: If you are in need of advice on either part of Question 2, please contact the Agency Regional Consents Section on 01222 770088.**

3. If the proposed discharge is to be made down a pipe, channel or culvert (as given in Section 2.3 of the main application form), please state the diameter (including units):

9 inch NB

4. Please indicate the anticipated cost of the proposed scheme, including any alternatives which may have been considered:

£133,000

5. Is there any trade effluent component in the proposed discharge?

No

If yes, please confirm here that you have completed and enclosed Annexe 3:

Tick

6. Will the proposed discharge be pumped or made under gravity? (please circle)  Gravity  pumped  
 Pumped when outfall is tide locked, otherwise gravity.

If pumped, please state the maximum pump rate in l/sec:

**For proposed discharges of sewer in storm or emergency conditions:**

7. Please confirm here that you have completed and enclosed both Annexes 1 and 2:  Tick

8. Please state:

Population served (head)	3465
Consumption (l/head/day) default = 180	180
Infiltration (m <sup>3</sup> /day)	345
Industrial effluent flow (m <sup>3</sup> /day)	0
Dry Weather Flow (m <sup>3</sup> /day)	987
Soc A (l/sec)	48.5
Predicted spill frequency (per annum)	<1% 7 per annum

**IMPORTANT NOTES FOR ALL CONSENT APPLICATIONS:**

- Whoever signs the declaration on the main application form takes responsibility for the discharge, and will become the registered consent holder, if consent is given. In the case of a 'body corporate' (eg a public limited company ('plc'), limited, company, local authority), the 'body corporate' will be the registered consent holder, and the person with the delegated authority to sign on behalf of the 'body corporate' should give their job title.
- Agents making an application on behalf of a client, must attach their clients written authority.
- If the name and/or address of the applicant changes after submission of this application to the Environment Agency, the applicant must inform the Agency in writing.

Meica Processes  
 Parc Y Splott WwTW  
 Llansteffan Road  
 Johnstown  
 Carmarthen SA31 3QU  
 Tel 01267 221131  
 Fax 01267 221167

Welsh Water  
 ALLIANCE



CYNGHRAIR  
 Dŵr Cymru

## Document Cover Sheet

<b>Project Title</b>	St Davids WwTW
<b>Project Number</b>	P1025
<b>Client</b>	DWR CYMRU/WELSH WATER
<b>Document Reference Number</b>	P1025/6.1/01

## St Davids WwTW

### Consent application support documents

Rev.	Date	Description/Purpose	Prepared	Checked <sup>1</sup>			Approved for Issue <sup>2</sup>	
				Mech	Proc	Elect	EM	PM
0	25.07.05	First issue	MR		MR		AJW	SW
A								
B								
C								
D								

#### Contents

Scheme justification  
 Drg P1025-2000  
 Drg P1025-2001  
 Formula A determination

#### Notes

1. Relevant Disciplines to initial
2. EM – Engineering Manager, PM – Project Manager

## St DAVIDS SCHEME JUSTIFICATION – P1025

### Introduction

St Davids WwTW treats wastewater from the domestic dwellings in the town of St Davids, where there are a number of local hotels and guest houses as well as primary and a secondary school.

There are no trade consents in the catchment.

All gravity sewers connect in the lower part of the town from where the sewage gravitates to the works which is situated out of the town and towards the harbour.

Treated effluent is discharged via a sea outfall to a point below mean low water.

Current consent limits for the works are as follows

Biological Oxygen Demand (BOD) :	50 mg/l
Suspended Solids (SS) :	60 mg/l
Dry Weather Flow (DWF)	1480 m <sup>3</sup> /d
Maximum flow rate	28.8 l/sec

The EA spread sheet for AMP4 investment applies the driver U1a from the Urban Waste Water Directive.

The indicative consent limits are as follows

Biological Oxygen Demand (BOD) :	40 mg/l
Suspended Solids (SS) :	60 mg/l

### Existing Works

The existing works comprises storm overflow weir, 5mm perforated plate storm screen, and 2 storm storage retention tanks prior to discharge via the outfall.

Foul flows are separately screened prior to entering the oxidation ditch where they are treated by the activated sludge process, aeration is provided by 2 off brush type surface aerators.

Overflow from the ditch is to a 10m dia radial flow final settlement tank from where the returned activated sludge is pumped back to the oxidation ditch.

Surplus sludge is wasted from the RAS pumping station.

Settled effluent is pumped to converted sludge drying beds one of which has been converted to a reed bed, a further 4 are used as final settlement tanks and are fitted with bottle brush clarifiers.

There is an outfall pumping station used to overcome high tides.

## WwTW proposed

Storm flow split to be improved to operate reliably at the revised FFT.

On-site sludge thickening should be considered as a means of resolving the sludge disposal issues.

Supply of supplementary aeration for the oxidation ditch to cope with summer visitor loads.

## Design basis flows and loads

A flow survey has been carried out and a model of the catchment developed, some of the flow data is considered to be suspect and the model has serious flaws.

Because of the unreliability of this work the process design on which this report is based has been calculated from house counts, occupancy densities, projected UDP expansions, and information from the tourist office.

Due to the variation between seasons separate process designs have been developed for summer and winter conditions

	BASIS	SUMMER	WINTER
Population Equivalent (PE)	Flow	3465	2102
Dry Weather Flow (DWF)	m <sup>3</sup> /day	987	1173
	l/s	11.4	13.6
Average Flow	m <sup>3</sup> /day	1234	1467
	l/sec	14.3	17
3DWF	m <sup>3</sup> /d	2269	1965
	l/sec	26.3	22.7
Design flow FFT	m <sup>3</sup> /d	2269	2269
	l/s	26.3	26.3
SOC A	m <sup>3</sup> /d		
	l/sec	48.5	36.5
BOD Load	kg/day	233	143
SS Load	kg/day	291	173
NH <sub>3</sub> – N Load	kg/day	40	20.7

The existing storm tanks have a volume of 192m which is equivalent to a little more than 2 hours at 3DWF and are thus Amp 2 guideline compliant.

### **Consent applications**

It will be necessary to apply for the following consent variations

Variation to final treated effluent consent, BP0062701, comprising

Schedule 10

Annex 1

Annex 4

Variation to storm discharge consent, BP0062702, comprising

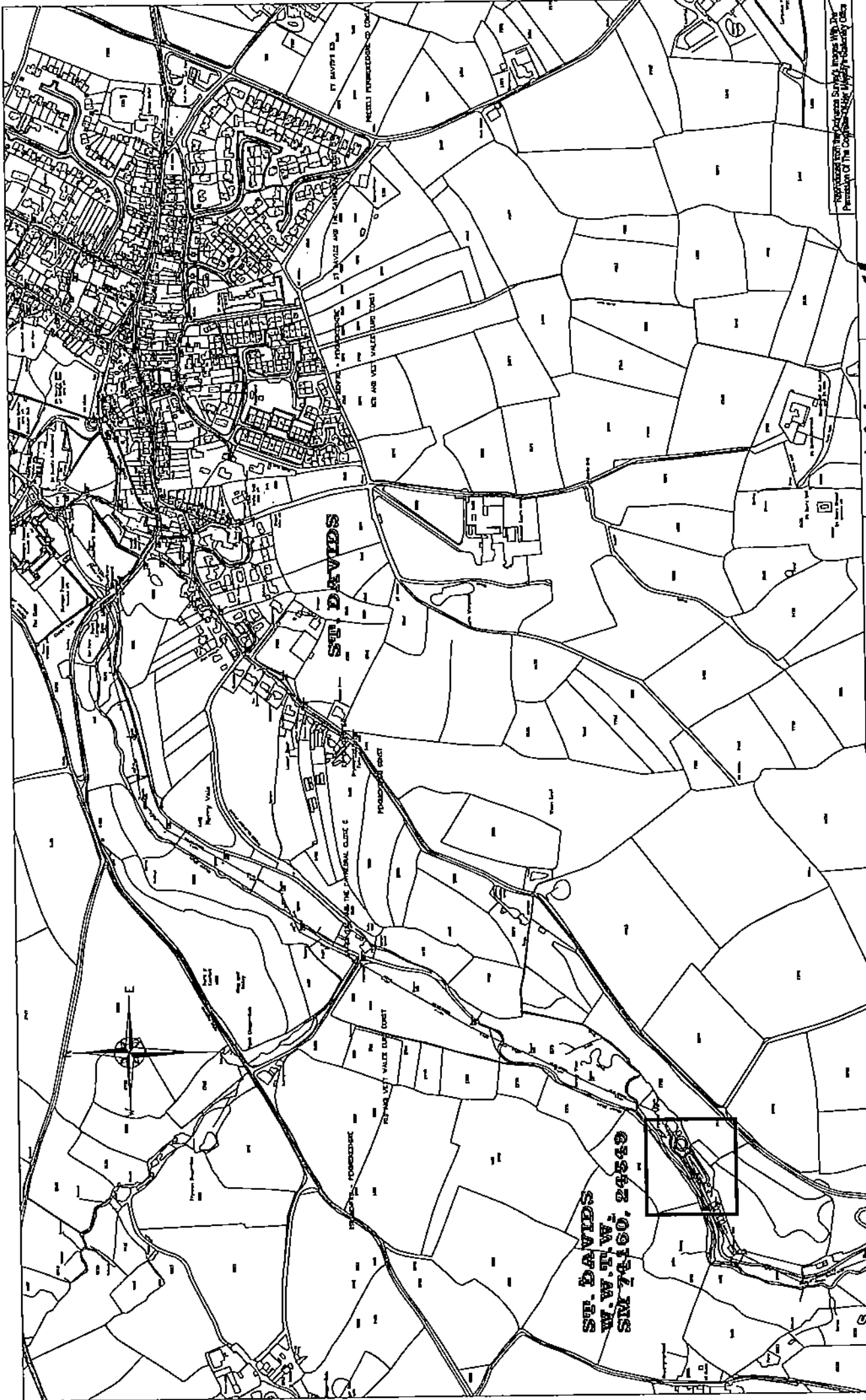
Schedule 10

Annex 1


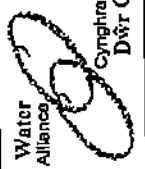

Annex 2

Annex 4

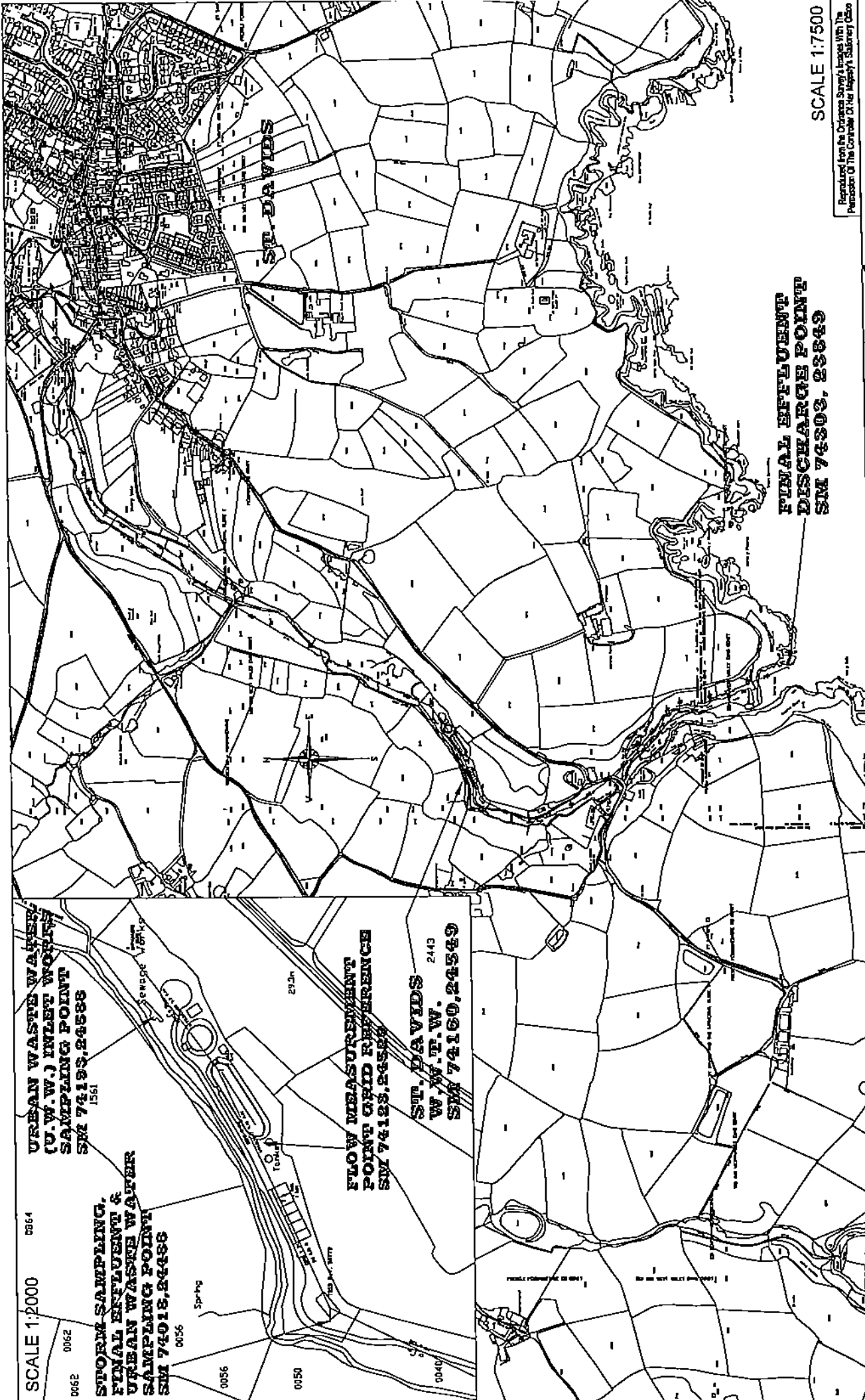




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<b>ST. DAVIDS</b> <b>W.W.T.W.</b> <b>SNI 74160, 24849</b>	<b>WELSH WATER</b> <b>WELSH WATER</b>	Scale A3 Datum LOCAL	Date 18.07.02	App'd MR	Auth. MR	Description A FOR APPROVAL	Project <b>ST. DAVIDS</b> <b>W.W.T.W.</b>	Title <b>LOCATION</b> <b>PLAN</b>	 Welsh Water Capital Alliance	 Cynghrair Cymru Dŵr Cymru	 <b>MEICA</b> PROCESS LTD	Project Code P1025	Drawing No. P1025-2000	Issue A
												Dŵr Cymru CYMRU Dŵr Cymru CYMRU		

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**SCALE 1:2000**

**URBAN WASTE WATER (U.W.W.) INLET WORKS SAMPLING POINT**  
SM 74133, 24588

**STORM SAMPLING, FINAL EFFLUENT & URBAN WASTE WATER SAMPLING POINT**  
SM 74018, 24488

**FLOW MEASUREMENT POINT GRID REFERENCE**  
SM 74128, 24524

**ST. DAVIDS** 2443  
**W.W.T.W.**  
SM 74160, 24549

**SCALE 1:7500**

**FINAL EFFLUENT DISCHARGE POINT**  
SM 74303, 23849

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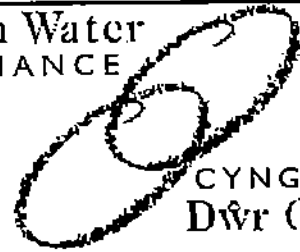
A. FOR APPROVAL	Appr	18.07.05	Scale A3	1:7500, 1:3000	LOCAL	DWR CYMRU WELSH WATER	ST. DAVIDS W.W.T.W.	 Cynghair Cylfaif Dŵr Cymru	 MEICA PROCESS LTD	 DVR CYMRU	 P1025	 P1025-2001	 A
	Aut	18.07.05	Scale A3	1:7500, 1:3000	LOCAL								

Part 1 Special, Llanelli, Road  
Department of the Environment, 547, 300  
Telephone: 01292 223343  
Fax: 01292 221117

THE WATER & SEWERAGE BOARD USE THE LOGO OF WELSH WATER IN CONNECTION WITH ANY PROJECTS WHICH ARE THE PROPERTY OF WELSH WATER. THE WATER & SEWERAGE BOARD WILL NOT BE USED OR ASSOCIATED WITHOUT THE WRITTEN PERMISSION AND THAT IT SHALL BE USED ONLY IN CONNECTION WITH THE WATER & SEWERAGE BOARD.

Meica Processes  
 Parc Y Splott WwTW  
 Llansteffan Road  
 Johnstown  
 Carmarthen SA31 3QU  
 Tel 01267 221131  
 Fax 01267 221167

Welsh Water  
 ALLIANCE



CYNGHRAIR  
 Dŵr Cymru

### Document Cover Sheet

<b>Project Title</b>	St Davids WwTW
<b>Project Number</b>	P1025
<b>Client</b>	DWR CYMRU/WELSH WATER
<b>Document Reference Number</b>	P1025/6.1/01/002

## St Davids WwTW

### Spill frequency analysis

Rev.	Date	Description/Purpose	Prepared	Checked <sup>1</sup>			Approved for Issue <sup>2</sup>	
				Mech	Proc	Elect	EM	PM
0	25.07.05	First issue	MR		MR		AJW	SW
A								
B								
C								
D								

**Notes**

1. Relevant Disciplines to initial
2. EM – Engineering Manager, PM – Project Manager

SPILL FREQUENCY ANALYSIS TALGARREG WwTW  
Results of Annual Time Series Rainfall Assessment

Event No	Date	Total intensity (mm)	Rainfall duration (hr)	Average intensity (mm/hr)	Maximum intensity (mm/hr)	peak storm flow Q = 2.78.C <sub>v</sub> C <sub>R</sub> (A) (l/s)	Total storm inflow (m <sup>3</sup> )	DWF (l/s) 11.40	Total four flow (m <sup>3</sup> )	Total inflow (m <sup>3</sup> )	Peak sewer flow (l/s)	FFT (l/s) 26.30	Spill to Storm Tank (m <sup>3</sup> )	Storm tank volume (m <sup>3</sup> )	Overflow to watercourse (m <sup>3</sup> )	spill time (hrs)
1	08/10/1964	1287.4	8.15	2.63	34.2	31.0	910.5	11.4	334.5	1245.0	42.4	771.6	473.3	192.0	281.3	2.52
2	20/07/1973	903.0	5.65	2.66	23.4	31.4	638.6	11.4	231.9	870.5	42.8	534.9	335.6	192.0	143.6	1.27
3	25/09/1963	876.4	5.32	2.75	28.8	32.4	619.8	11.4	218.3	838.2	43.8	503.7	334.5	192.0	142.5	1.22
4	20/01/1960	864.6	10.32	1.40	16.2	16.5	611.5	11.4	423.5	1035.0	27.9	977.1	57.9	192.0	0.0	0.00
5	09/12/1961	879.6	9.32	1.57	28.2	18.5	622.1	11.4	382.5	1004.6	29.9	882.4	122.2	192.0	0.0	0.00
6	20/11/1974	937.2	7.15	2.18	22.8	25.8	662.8	11.4	293.4	956.3	37.2	677.0	279.3	192.0	87.3	0.94
7	23/09/1963	969.0	8.15	1.98	34.8	23.4	685.3	11.4	334.5	1019.6	34.8	771.6	248.2	192.0	56.2	0.67
8	25/07/1973	632.4	1.65	6.39	51.0	75.3	447.3	11.4	67.7	515.0	86.7	156.2	358.8	192.0	166.8	0.62
9	23/01/1960	1074.0	8.32	2.15	15.0	25.4	759.6	11.4	341.5	1101.0	36.8	187.7	313.3	192.0	121.3	1.33
10	11/12/1961	1098.6	14.48	1.26	32.4	14.9	777.0	11.4	594.3	1371.2	26.3	1371.0	0.3	192.0	0.0	0.00
11	10/11/1974	902.4	10.48	1.44	42.6	16.9	638.2	11.4	430.1	1068.3	28.3	992.2	76.1	192.0	0.0	0.00
12	05/06/1964	875.4	10.15	1.44	36.0	11.7	619.1	11.4	416.6	1035.7	28.3	961.0	74.7	192.0	0.0	0.00
13	26/08/1956	783.6	13.15	0.99	39.0	10.5	554.2	11.4	539.7	1093.9	23.1	1245.0	0.0	192.0	0.0	0.00
14	10/09/1963	460.2	8.65	0.89	73.2	20.0	325.5	11.4	355.0	680.5	21.9	819.0	0.0	192.0	0.0	0.00
15	22/03/1970	747.0	7.32	1.70	49.8	16.3	528.3	11.4	300.4	828.7	31.4	693.1	135.7	192.0	0.0	0.00
16	11/02/1973	1232.4	14.82	1.39	36.0	17.2	871.6	11.4	608.2	1479.8	27.7	1403.2	76.7	192.0	0.0	0.00
17	06/06/1964	675.0	10.50	1.07	9.6	12.6	477.4	11.4	430.9	908.3	24.0	994.1	0.0	192.0	0.0	0.00
18	08/09/1963	416.8	4.32	1.60	38.4	18.9	293.3	11.4	177.3	470.6	30.3	409.0	61.6	192.0	0.0	0.00
19	07/10/1964	481.2	11.32	0.71	45.0	8.4	341.1	11.4	464.6	805.6	19.8	1071.8	0.0	192.0	0.0	0.00
20	24/09/1963	423.6	4.65	1.52	23.4	17.9	299.6	11.4	190.8	490.4	29.3	440.3	50.2	192.0	0.0	0.00
21	13/12/1961	285.6	4.00	1.19	53.4	14.0	202.0	11.4	184.2	386.1	25.4	378.7	0.0	192.0	0.0	0.00
22	12/06/1964	567.6	6.32	1.46	19.2	17.2	391.6	11.4	259.4	650.9	28.6	598.4	52.5	192.0	0.0	0.00
23	01/12/1961	728.4	13.32	0.91	18.6	23.6	451.5	11.4	546.7	1061.8	22.1	1261.1	0.0	192.0	0.0	0.00
24	06/10/1964	640.8	5.32	2.00	15.0	17.4	560.8	11.4	218.3	699.8	35.0	503.7	166.1	192.0	0.0	0.00
25	04/05/1962	798.6	8.93	1.48	8.4	12.5	681.5	11.4	621.8	1303.2	28.8	845.5	81.8	192.0	0.0	0.00
26	03/09/1963	964.2	15.15	1.06	19.8	15.2	610.4	11.4	457.6	1068.0	26.6	1055.7	12.3	192.0	0.0	0.00
27	30/04/1963	866.4	11.15	1.29	10.8	9.3	547.1	11.4	669.8	1216.9	20.7	1545.2	0.0	192.0	0.0	0.00
28	07/12/1961	771.0	16.32	0.79	10.2	15.3	426.0	11.4	205.2	480.2	26.7	473.4	6.8	192.0	0.0	0.00
29	12/12/1961	388.8	5.00	1.30	18.6	9.5	222.7	11.4	265.9	488.7	20.9	613.5	0.0	192.0	0.0	0.00
30	11/11/1974	316.8	6.48	0.81	39.0	9.6	426.0	11.4	506.0	932.1	21.0	1167.4	0.0	192.0	0.0	0.00
31	23/01/1960	602.4	12.33	0.81	10.8	9.6	224.0	11.4	136.3	360.3	30.1	314.3	45.9	192.0	0.0	0.00
32	25/08/1956	319.8	3.32	1.59	23.4	18.7	268.8	11.4	108.8	377.5	39.6	250.9	126.6	192.0	0.0	0.00
33	15/07/1973	382.2	2.65	2.39	11.4	28.2	203.7	11.4	246.2	449.9	20.8	568.1	0.0	192.0	0.0	0.00
34	20/04/1963	387.4	6.00	0.80	18.0	9.4	343.7	11.4	205.2	548.9	30.5	473.4	75.5	192.0	0.0	0.00
35	01/08/1956	486.0	5.00	1.62	7.2	19.1	437.4	11.4	601.2	1142.1	23.8	473.4	0.0	192.0	0.0	0.00
36	30/03/1970	315.6	5.00	1.05	11.4	12.4	222.8	11.4	205.2	428.0	21.7	1387.1	0.0	192.0	0.0	0.00
37	14/07/1973	769.2	14.65	0.87	16.2	10.3	540.9	11.4	601.2	1142.1	21.7	1387.1	0.0	192.0	0.0	0.00
38	18/07/1973	547.2	6.15	1.48	11.4	17.4	386.2	11.4	252.4	638.6	28.8	582.3	56.4	192.0	0.0	0.00
39	03/03/1970	442.8	6.65	1.11	9.0	13.1	313.2	11.4	272.9	586.1	24.5	629.6	0.0	192.0	0.0	0.00
40	21/01/1960	382.2	6.15	1.03	9.0	12.1	288.8	11.4	142.8	323.0	25.8	329.5	0.0	192.0	0.0	0.00
41	19/03/1970	256.8	3.48	1.22	8.4	14.1	155.1	11.4	129.3	284.3	25.1	298.2	0.0	192.0	0.0	0.00
42	08/05/1962	220.2	3.15	1.16	8.4	13.7	151.1	11.4	25.7	141.1	60.3	61.5	79.6	192.0	0.0	0.00
43	10/05/1962	166.2	0.65	4.15	12.0	48.9	114.5	11.4	464.6	1031.4	25.3	1071.8	0.0	192.0	0.0	0.00
44	19/11/1974	803.4	11.32	1.18	10.8	13.9	566.8	11.4	464.6	1031.4	25.3	1071.8	0.0	192.0	0.0	0.00

**SPILL FREQUENCY ANALYSIS TALGARREG WWTW**  
**Results of Annual Time Series Rainfall Assessment**

Event No	Date	Total intensity (mm)	Rainfall duration (hr)	Average intensity (mm/hr)	Maximum intensity (mm/hr)	peak storm flow Q = 2.78.C <sub>v</sub> .C <sub>d</sub> .A (l/s)	Total storm inflow (m <sup>3</sup> )	DWF (l/s)	Total foul flow (m <sup>3</sup> )	Total inflow (m <sup>3</sup> )	Peak sewer flow (l/s)	FFT (l/s)		Spill to Storm Tank volume (m <sup>3</sup> )	Storm tank volume (m <sup>3</sup> )	Overflow to watercourse (m <sup>3</sup> )	spill time (hrs)
												26.30	693.1				
45	05/10/1964	467.4	7.32	1.06	25.8	12.5	329.3	11.4	300.4	629.7	23.9	693.1	0.0	192.0	0.0	0.00	
46	02/01/1960	357.6	8.82	0.70	11.4	6.3	262.0	11.4	362.0	624.0	19.7	835.1	0.0	192.0	0.0	0.00	
47	05/06/1964	327.0	3.65	1.50	5.4	17.7	232.3	11.4	149.8	382.1	29.1	345.6	36.5	192.0	0.0	0.00	
48	13/07/1973	328.8	6.00	0.90	17.4	10.6	229.1	11.4	246.2	475.4	22.0	568.1	0.0	192.0	0.0	0.00	
49	29/08/1956	352.8	6.15	0.95	15.0	11.2	247.9	11.4	252.4	500.3	22.6	582.3	0.0	192.0	0.0	0.00	
50	10/12/1961	394.2	5.50	1.19	10.8	14.1	278.8	11.4	225.7	504.5	25.5	520.7	0.0	192.0	0.0	0.00	
51	01/01/1960	250.2	11.32	0.37	8.4	4.3	177.0	11.4	464.6	641.5	15.7	1071.8	0.0	192.0	0.0	0.00	
52	11/03/1970	211.8	3.48	1.01	10.2	12.0	149.8	11.4	142.8	292.6	23.4	329.5	0.0	192.0	0.0	0.00	
53	04/12/1961	180.0	2.15	1.40	9.6	16.4	127.3	11.4	88.2	215.5	27.8	203.6	12.0	192.0	0.0	0.00	
54	09/10/1964	305.4	7.48	0.68	13.2	8.0	216.0	11.4	307.0	523.0	19.4	708.2	0.0	192.0	0.0	0.00	
55	02/11/1974	201.6	2.15	1.56	11.4	18.4	142.6	11.4	88.2	230.8	29.8	203.6	27.3	192.0	0.0	0.00	
56	03/12/1961	288.6	11.82	0.41	9.6	4.8	204.1	11.4	485.1	689.2	16.2	1119.1	0.0	192.0	0.0	0.00	
57	11/11/1974	285.0	6.65	0.71	18.6	8.4	201.6	11.4	272.9	474.5	19.8	629.6	0.0	192.0	0.0	0.00	
58	19/07/1973	252.0	3.32	1.27	8.4	14.9	178.2	11.4	136.3	314.5	26.3	314.3	0.1	192.0	0.0	0.00	
59	10/03/1970	157.8	2.15	1.22	9.0	14.4	111.6	11.4	88.2	199.8	25.8	203.6	0.0	192.0	0.0	0.00	
60	30/03/1970	171.0	1.98	1.44	11.4	17.0	120.9	11.4	81.3	202.2	28.4	187.5	14.7	192.0	0.0	0.00	

**Summary**

number of spills from works le. < 1%  
number of spills (>50m<sup>3</sup>) from works

8.56 total hours

**Notes**

1. Rainfall events are the Annual Time Series Rainfall for the South-West region.
2. Due to the low number of spills, only the first 60 storms have been assessed.
3. Peak storm flow has been calculated using the Wallingford Procedure, Modified Rational Method, with impermeable area of 45 m<sup>2</sup>/house
4. Total storm inflow = peak storm flow x storm duration
5. DWF = dry weather flow from calculations
6. Total foul flow = DWF x storm duration
7. Total inflow = total storm inflow + total foul flow
8. FFT = flow to treatment, maximum rate x storm duration
9. When inflow > FFT spill to watercourse will only occur 906
10. Total number of properties in catchment = 906



DŴR CYMRU  
WELSH WATER

Gwath Tŷn Dŵr Gwasstref Trugŵr  
Heol Victoria  
Tre Gŵyr  
Abertawe SA4 3AB

Ffôn +44 (0)1792 872 604  
Salle gwe: www.dwrcymru.com

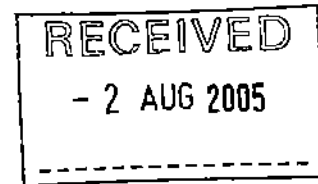
Gowerton Waste Water Treatment Works  
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Environment Agency Wales  
'Maes Newydd'  
Llandarcy  
Neath and Port Talbot  
SA10 6JQ

1<sup>st</sup> August 2005

Tel 01792 511828



Dear Mrs Lewis,

**St Davids WwTW**

Please find enclosed applications for variation of the final effluent (BP0062701) and settled storm (BP0062702) consents for St Davids WwTW

I enclose cheque no. 406059 for £1544.

Yours sincerely,

Dr Lewis Keil  
Scientist - Wastewater