ENVIRONMENT AGENCY

WATER RESOURCES ACT 1991 (schedule 10)

(as amended by the Environment Act 1995)

Application for new consent/variation to an existing consent* to discharge

(* delete as appropriate)

Regional/Area Address:	*Official Use Only*
ENVIRONMENT AGENCY 154 St Helen's Road Swansea West Glamorgan SA1 4DF	*Dist/Area Ref:* *Application No.* BP0301401 *Date Received:* 2/8/02. *Fee Received:* €688.

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 the relevant sections and provision 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.

1 SITE ADDRESS

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

CRAIG-Y-NOS CASTLE
CRAIG-Y-NOS.
BRECON BEACONS

Post Code: * SA9 1GL *

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 50 m³/day

Briefly state how this figure was calculated (see note ii).

Based on future maximum occupancy.

100 Residents	25 m³/day	7.5 kg BOD/day.
150 Day Visitors	15	4.5
50 Staff	3	1.0.
Safety factor	7	2.0.

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	☑	4. Borehole	☐	7. Sub-Irrigation System	☐
2. Channel	☐	5. Well	☐	8. Combination of 6. & 7.	☐
3. Culvert	☐	6. Soakaway	☐	9. Other *(please specify below)*	☐

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

✱ ☐☐/☐☐☐☐/☐☐☐☐ *(please indicate on accompanying plans)* ✱

PLS SEE ATTACHED MAP

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)

✱ ☐☐/☐☐☐☐/☐☐☐☐ *(please indicate on accompanying plans)* ✱

PLS SEE ATTACHED MAP

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

V-Notch weir in Sample chamber.

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 ☐

36m³ PRIMARY TANK.
CLEARWATER AEROCLERE ABF 250

b) Will the treatment process involve the use of any chemicals (eg ferric salts, polyeletrolytes) ~~Y~~/N
If yes please give details.

2.6 a) On what date do you anticipate the discharge will commence? * 01/01/02

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.

—

2.7 a) Are there any existing consents for discharge from the premises (see note vi)? YES ~~Y~~/N
If yes, please give the reference numbers *(Any further information should be given in section 5.3).*

— PLS SEE ATTACHED

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

—

3 SITE DETAILS

3.1 Please give the name of the relevant Planning Authority.

* NOT KNOWN *

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)*	☐

HOTEL

3.3 Please indicate source of the water supply - tick as appropriate:-

1. Well ☐
2. Borehole ☐
3. Precipitation (eg. rain or snow) ☐
4. Mains *(please state water supply company)* ☑

* WELSH WATER *

5. River *(please give name below)* ☐
6. Estuary *(please give name below)* ☐
7. Coastal Water *(please give name below)* ☐

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) ☐
2. River or Stream (non-tidal) ☑
3. Canal ☐
4. Lake, Loch or Pond ☐
5. Into Land ☐
6. Onto Land ☐
7. Directly into Groundwater ☐
8. Coastal Water (see note vii) ☐

State name of receiving water if known:

* River Tawe *

4.2 In the case of sub-irrigation systems, soakaways or boreholes:-

(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)? N/A
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.

* MR MARTIN GOVER
*
* CRAIG-Y-NOS CASTLE
* PEN-Y-CAE
*
*

Post Code: SA9 1GL

Daytime Telephone Number: 01639 731167

Company Registration Number (if appropriate):

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

* DAMAR ENG.
* UNIT 16-19 MILL Rd.
* RADSTOCK
* BATH
*

Post Code: BA3 5TX

Contact Name and Daytime Telephone Number: 01761 439111 DAVID MATTHEWS

5.2

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

*
*
*
* AS A
*
*

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.

NO

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 Environment 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 by completing section 5.2 above (see note xiv).

PLS ADVISE OF THE CORRECT COSTS & WE WILL SIGN CHK.

(* Delete as appropriate)

SIGNED: ..... PRINT NAME: DAVID MATTHEWS

ON BEHALF OF: DYNMAR ENG DATED: 1/8/02

---o O o---

CONFIDENTIALITY

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

SIGNED: ..... DATED: 1/8/02

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

ENVIRONMENT AGENCY

ANNEXE 1
SEWAGE EFFLUENT GREATER THAN 5 CUBIC METRES PER DAY

Please complete this annexe if you are proposing to discharge more than 5 cubic metres per day of sewage effluent (if the effluent is to contain a trade component Annexe 3 should also be completed).

Official Use Only
Application No.

1. Site Name.

CRAIG-Y NOS CASTLE
CRAIG-Y-NOS
BRECON BEACONS

2. Please detail the type and number of treatment units you are proposing to use.

CLEARWATER PACKAGE PLANT COMPRISING.
36m³ PRIMARY SETTLEMENT TANK.
AEROCLEAR ABF 250 UNIT.

3. Volume, rates and overflow settings. (Please give volumes in cubic metres per day or litres per second as indicated below)

a) Maximum flow to full treatment. (see note (ii) in main guidance notes for population equivalents) — 50 m³/d

b) Dry weather flow of discharge(s). — 50 m³/d

c) Average daily flow. — 50 m³/d

d) Maximum rate of discharge(s) — 3.5 l/s

4. Will there be provisions for storm/emergency discharges? — ~~Y~~/N
If yes, please complete Annexe 2.

5. a) Will any self monitoring take place? — ~~Y~~/N
If yes, please give details.

b) Will automatic sampling equipment be provided? — ~~Y~~/N
If yes, please give details of type and location *(please indicate on plan).*

6. a) Please state the maximum population served by the treatment works.

250 POPULATION EQUIVALENT.

b) Please give reasons for any variations in population eg. holiday resort, training area, seasonal industry etc. and detail the periods/times involved.

HOTEL

c) Please state type of catchment/site being served eg. residential, resort, industrial etc.

HOTEL.

7. Will a maintenance agreement be set up to manage the sewage works? (see note b) Y/N
If yes, please give details.

8. Does the effluent contain a trade component? Y/N
If yes, please complete appropriate section on Annexe 3 for authorised discharges of trade effluent to the sewerage system.

Notes (see also the notes attached to the main form):

a) For significant sewage treatment plants full details of the plant design, dry weather flow and Biochemical Oxygen Demand load, along with information on all discharges from the works must be included in order for the application to be processed. Flow monitoring will normally be required for such discharges and details of siting and type of flow recorders should be provided.

b) The Agency require a single body or company to be responsible for the discharge and any bills raised under the Charges for Discharges Scheme. Where multiple dwellings under different ownership are connected to the same system a management company should be set up.

ASIANTAETH YR AMGYLCHEDD
ENVIRONMENT AGENCY

ANNEXE 4
WELSH REGION SUPPLEMENTARY INFORMATION ANNEXE

Please complete this annexe for <u>every</u> proposed discharge.

<u>Official Use Only</u>
Application No.

<u>For all proposed discharges:</u>

1. Site Name.

CRAIG-Y-NOS CASTLE

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

~~Y~~/N

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 in the main application form), please state the <u>diameter</u> (including units):

150 mm.

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

* 60K *

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

~~Y~~/N

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

ASIANTAETH YR AMGYLCHEDD
ENVIRONMENT AGENCY

6. Will the proposed discharge be pumped or made under gravity? (please circle):

Pumped / Gravity

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

	l/s

For proposed discharges of sewage 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)	
Consumption (l/head/day) default = 180	
Infiltration (m^3/day)	
Industrial effluent flow (m^3/day)	
Dry Weather Flow (m^3/day)	
SOCA (l/sec)	
Predicted spill frequency (per annum)	

IMPORTANT NOTES FOR ALL CONSENT APPLICATIONS:

1. **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' (e.g. 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.**

2. **Agents making an application on behalf of a client, must attach their clients written authority.**

3. **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.**

CONSENT NO.	BP0301401

ASIANTAETH YR AMGYLCHEDD CYMRU
ENVIRONMENT AGENCY WALES

WATER RESOURCES ACT 1991

SECTION 88 – SCHEDULE 10

(AS AMENDED BY THE ENVIRONMENT ACT 1995)

CONSENT TO DISCHARGE

TO: **Mr. Martin Gover**
Craig-Y-Nos Castle,
Craig-Y-Nos,
Pen-Y-Cae,
Brecon Beacons.
SA9 1GL.

The **ENVIRONMENT AGENCY** ("The Agency") in pursuance of its powers under the Water Resources Act 1991 **HEREBY CONSENTS** to the making of a discharge **OF SEWAGE EFFLUENT**, as follows:

Biologically Treated Sewage Effluent

FROM:	**PACKAGE PLANT AT CRAIG-Y-NOS CASTLE,**
AT:	**CRAIG-Y-NOS, PEN-Y-CAE, BRECON BEACONS**
TO:	**RIVER TAWE.**

SUBJECT TO the conditions set out in the following schedule:

Biologically Treated Sewage Effluent **Schedule No. BP0301401 01**

Subject to the provisions of Paragraphs 7 and 8 of Schedule 10 of the Water Resources Act 1991, no notice shall be served by the Agency, altering this consent without the agreement in writing of the consent holder, during a period of 4 years from the date this consent takes effect.

This consent is issued and takes effect on the 31 day of March 2003.

Signed .....

Daron Herbert
Team Leader Environment Management

Asiantaeth yr Amgylchedd Cymru
Glan Tawe, 154 Ffordd Sant Helen, Abertawe. SA1 4DF. Ffon 01792 645300. Ffacs 01792 648452

Environment Agency Wales
Glan Tawe, 154 ST Helens Road, Swansea. SA1 4DF. Tel 01792 645300 Fax 01792 648452

CONSENT NO.	**BP0301401**
SCHEDULE NO.	**BP0301401 01**
DATE ISSUED	**31 March, 2003**

ASIANTAETH YR AMGYLCHEDD CYMRU
ENVIRONMENT AGENCY WALES

CONDITIONS OF CONSENT TO DISCHARGE

Biologically Treated Sewage Effluent ("the Discharge")

FROM: PACKAGE PLANT AT CRAIG-Y-NOS CASTLE, CRAIG-Y-NOS, PEN-Y-CAE, BRECON BEACONS.

1. (a) The Discharge shall not contain any poisonous, noxious or polluting matter or solid waste matter.

(b) Provided that the Discharge hereby consented is made in accordance with the following conditions of this consent, such discharge shall not be taken to be in breach of condition (a) above by reason of containing substances or having properties identified in and controlled by these conditions.

NATURE

2. The Discharge shall consist solely of biologically treated sewage effluent, containing no trade effluent, arising from a castle / hotel.

LOCATION

3. The Discharge shall be made in the manner and at the place specified as:

(a) discharging into a seasonal soakaway system at National Grid Reference SN 84161 15321 shown marked 'Discharge point to soakaway' on Plan BP0301401 attached as Annex 1.

(b) discharging into the River Tawe

(c) at National Grid Reference at SN 84210 15348;

(d) shown marked 'Discharge point to river' on Plan BP0301401 attached as Annex 1.

SAMPLE POINT

4. The outlet to the soakaway shall be constructed, maintained and appropriately labelled so that a representative sample of the Discharge may be obtained at National Grid Reference SN 84161 15321 as shown marked 'Sampling Point' on Annex 1 BP0301401

CONSENT NO.	BP0301401
SCHEDULE NO.	BP0301401 01

ASIANTAETH YR AMGYLCHEDD CYMRU
ENVIRONMENT AGENCY WALES

VOLUME

5. (a) The volume of the Discharge shall not exceed 50 cubic metres per day.

(b) The rate of discharge shall not exceed 0.58 litres/second.

COMPOSITION

6. As far as is reasonably practicable, the package plant shall be operated so as to prevent:

(i) any matter being present in the Discharge to such an extent as to cause the receiving waters, or any waters of which the receiving waters are a tributary, to be poisonous or injurious to fish in those waters, or to the spawning grounds, spawn or food of fish in those waters, or otherwise cause damage to the ecology of those waters; and

(ii) the Discharge from having any other adverse environmental impact.

MAINTENANCE

7. The package plant shall be operated and maintained in accordance with good operational practice such that:

(a) It remains fully operational except at times of unavoidable mechanical or electrical breakdown which shall be attended to, and the Agency informed of the failure, as soon as practicable after the failure;

(b) Following a failure all equipment shall be returned to normal operation as soon as practicable;

(c) Tanks shall be desludged at sufficient frequency and in such a manner to prevent excessive carryover of suspended solids.

ASIANTAETH YR AMGYLCHEDD CYMRU
ENVIRONMENT AGENCY WALES

Eich cyf/Your ref.

Ein cyf/Our ref. 2/CS/LL/BP0301401

Dyddiad/Date: 1 April 2003

Mr. Martin Gover
Craig-Y-Nos Castle
Craig -Y-Nos
Pen - Y – Cae
Brecon Beacons
SA9 1GL

Dear Sir,

RE: WATER RESOURCES ACT 1991, SCHEDULE 10 (AS AMENDED BY THE ENVIRONMENT ACT 1995) APPLICATION FOR CONSENT TO DISCHARGE BIOLOGICALLY TREATED SEWAGE EFFLUENT AT CRAIG-Y-NOS, PEN-Y-CAE, BRECON BEACONS BY MR. MARTIN GOVER
APPLICATION NO.BP0301401.

Further to your application the Agency has decided that consent should be given subject to conditions. I enclose the Agency's formal consent to discharge biologically treated sewage effluent from Craig-Y-Nos, Pen-Y-Cae, Brecon Beacons.

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

If you consider that the conditions imposed by the consent are unreasonable you have a right of appeal to the National Assembly for Wales at Cathays Park, Cardiff CF10 3NQ.

Notice of an appeal must be given in writing within three months of this notification and must be accompanied by a statement of the grounds of appeal.

If granted, a consent under Schedule 10 of the Act, covers water quality considerations only. It does not alter the need to obtain any other consents or approvals which might be required in connection with your proposal under other legislation. For example it does not give any right or permission to discharge where land is not owned by the applicant.

Asiantaeth yr Amgylchedd Cymru
Glan Tawe, 154 Ffordd Sant Helen, Abertawe. SA1 4DF
Ffon: 01792 645300, Ffacs: 01792 648652

Environment Agency Wales
Glan Tawe, 154 St Helens Road, Swansea, SA1 4DF
Tel: 01792 645300, Fax: 01792 648652

Please take careful note that if the holder of the consent changes, you must inform the Agency IN WRITING as soon as possible of the name of the new holder. This is to ensure that the rights and charges associated with the Consent are transferred to the new holder. A Certificate of Holder notice will be sent to you shortly which is designed for this purpose, and should be kept safely with the Consent until required.

If you have any queries regarding the enforcement of this consent, please do not hesitate to contact Daron Herbert, Team Leader Environment Management, Environment Agency Wales, Glan Tawe, 154 St. Helens Road, Swansea SA1 4DF.

Yours faithfully,

GH Davies

GARETH DAVIES
Customer Contact Officer

Please ask for Mr. Barry Williams, ext. 3512

Enc.

Asiantaeth yr Amgylchedd Cymru
Glan Tawe, 154 Ffordd Sant Helen, Abertawe. SA1 4DF
Ffon: 01792 645300, Ffacs: 01792 648652

Environment Agency Wales
Glan Tawe, 154 St Helens Road, Swansea, SA1 4DF
Tel: 01792 645300, Fax: 01792 648652

CONSENT NO.	**BP0301401**
SCHEDULE NO.	**BP0301401 01**
DATE ISSUED	**31st March, 2003**

CONDITIONS OF CONSENT TO DISCHARGE

Biologically Treated Sewage Effluent ("the Discharge")

FROM: PACKAGE PLANT AT CRAIG-Y-NOS CASTLE, CRAIG-Y-NOS, PEN-Y-CAE, BRECON BEACONS.

1. (a) The Discharge shall not contain any poisonous, noxious or polluting matter or solid waste matter.

(b) Provided that the Discharge hereby consented is made in accordance with the following conditions of this consent, such discharge shall not be taken to be in breach of condition (a) above by reason of containing substances or having properties identified in and controlled by these conditions.

NATURE

2. The Discharge shall consist solely of biologically treated sewage effluent, containing no trade effluent, arising from a castle / hotel.

LOCATION

3. The Discharge shall be made in the manner and at the place specified as:

(a) discharging into a seasonal soakaway system at National Grid Reference SN 84161 15321 shown marked 'Discharge point to soakaway' on Plan BP0301401 attached as Annex 1.

(b) discharging into the River Tawe

(c) at National Grid Reference at SN 8416 1535;

(d) shown marked 'Discharge point to river' on Plan BP0301401 attached as Annex 1.

SAMPLE POINT

4. The outlet to the soakaway shall be constructed, maintained and appropriately labelled so that a representative sample of the Discharge may be obtained at National Grid Reference SN 84161 15321 as shown marked 'Sampling Point' on Annex 1 BP0301401

Clearwater
PoLCoN

Damar Civil Engineering
Units 16-19
Mill Road
Radstock
BA3 5TZ

For the attention of Mr Dave Mathews

Tender No. JD/WC/12805
Date 28 May 2002

Dear Sirs

Craig-Y-Nos Castle, Brecon Beacons
Sewage Treatment Plant

We thank you for your enquiry concerning the above-mentioned subject, and we are pleased to enclose our quotation for your consideration.

Basis of design and treatment process

Basis of design is presented in Appendix 1. Please check the data carefully and notify Clearwater if any items are incorrect and require modification.

The final effluent quality specified will be maintained provided that: (1) the plant is adequately operated and maintained according to instructions, (2) loading parameters are not exceeded, and (3) influent does not contain biotoxins.

Process description

All waste water flows will enter the new raw sewage packaged pumping station and the effluent will be pumped via an inlet manhole to the primary settlement tank. Here gross solids settle and are stored for a period of up to 4 – 6 months.

Settled sewage enters the Aeroclere ABF unit where carbonaceous BOD is removed. (Operation of the ABF unit is described in the attached data sheet.) Biological solids produced and settled in the ABF units are automatically removed and returned to the inlet of the works where they co-settle in the primary tank with the raw solids.

Treated effluent from the ABF unit can then be discharged by gravity.

Grease Removal

It is important that grease is removed from flows from the kitchen before the flow joins up with other domestic sewage. We recommend the installation of a 4000 litre grease trap. The cost of this unit is £ 1,350 delivered to site excluding VAT, off loading and installation.

If it is not practical to install this type of grease trap then under the sink units should be used.

Clearwater Polcon Ltd
Clearwater Industrial Park Bristol Road
Bridgwater Somerset TA6 4AW
Telephone 01278 425804
Facsimile 01278 453653
REGISTERED IN ENGLAND No. 2247094

Systems for a Cleaner World

APPENDIX 1: DESIGN INFORMATION

The plant has been designed for the following load:

Flow(Q) m^3/d	50
Peak flow $m^3/hr.$	7.0
BOD kg/d	15

The final effluent quality will be as follows:

Biological oxygen demand	20 mg BOD_5 / l
Suspended solids	30 mg SS / l

The plant will operate most efficiently if attention is paid to the following points:

- ensure that the influent does not exceed the maximum design load
- avoid admitting strong acids, alkalines, oils and chemicals into the sewage systems
- prevent any explosive materials or slowly decomposing material from entering the plant.

APPENDIX 2: General description and function

PACKAGED RAW SEWAGE PUMPING STATION

The raw sewage package pumping station comprises a GRP sump with pedestrian manhole cover and frame which houses duty standby sewage pumps mounted on guide rails. The package includes internal pipework and valves and float switches. An electrical control panel and GRP kiosk are provided for installation adjacent to the sump.
The pumps will alternate when the float switches call for operation. The float switches should be close together to ensure the pumps pump little and often.

PRIMARY TANK

A primary tank includes principally the process of grit separation and primary settlement. Raw sewage is passed directly into a water-tight structure which has sufficient capacity to permit a long period of settlement. A significant proportion of the suspended solids settle to the floor of the tank and the settled effluent can be discharged for further treatment. Primary tanks are designed to include sufficient capacity to permit the storage of the sludge for several months. During this long period of storage, some anerobic digestion occurs in the settled sludge. The remaining sludge is removed regularly at specified intervals.(see equipment schedule)

BIOLOGICAL STAGE (Aeroclere ABF)

The Aeroclere ABF unit utilizes a submerged aerated biofilter concept for wastewater treatment. The filter consists of a submerged bed of highly permeable structured media to which micro-organisms are attached and through which wastewater is circulated. Air is introduced by recycling liquors through air venturi located within the unit. (There are no air blowers and diffusers).
The air venturi dissolves atmospheric oxygen into the liquor under pressure producing an oxygen saturated liquid. This is an efficient use of air, that means less air needs to be introduced compared to a system using air blowers and diffusers.

Settled sewage enters the Aerated Biofilter and is directed by a baffle to the bottom of the tank. It then rises up through the media where treatment takes place. Another baffle directs the flow downwards again before it rises through the second stage of treatment. Flow then enters the final settlement tank where biological solids settle before the effluent is discharged from the plant. The settlement tank is fitted with a tubular lamella pack to enhance the settlement efficiency of the process. The inclusion of the lamella pack generates a five fold increase in the surface area of the clarifier available for settlement, and dramatically reduces the effective particle settling depth. Settled biological solids are return pumped to the septic tank to be co - settled with the primary sludges. Two recycle pumps located in the final settlement tank, recycle liquors through two air venturi. These aerated liquors are pumped via distribution pipes to the underside of the media and rise through the media combining with the incoming flow. This ensures a high velocity through the media regardless of incoming flow and ensures a constant air supply to the bacteria.

APPENDIX 3: EQUIPMENT SCHEDULE

PACKAGED PUMP STATION

Sump diameter, m	1.5
Sump depth, m	2.5
Pumps (duty/standby)	Amerex S50 – 148
Rating	4l/sec @ 10m head
Power, kW	2.1
Supply	450/3/50
Internal pipes and valves	65mm
Guide rails	Steel
Float switches	Pendant type
Panel	Duty/standby operation
Kiosk	GRP

PRIMARY TANK

Number	1
Total volume, m^3	36
Diameter, mm	2600 (2800 over the ribs)
Length, mm	7230
Weight, kg	1400
Material	GRP
Influent pipe	
- diameter, mm	150
- material	PVC
Effluent pipe	
- diameter, mm	150
- material	PVC
Emptying pipe/shaft	
- diameter, mm	600
- material	GRP
- lid	Pedestrian duty
Desludging frequency	4 months

BIOSTAGE (ABF)

Filter	Aeroclere ABF
Model	ABF 250
Number,	1
Length, mm	5000 (5200 over the ribs
Width, mm	2700 (2900 over the ribs)
Height	3200
Weight(empty)	4000kg
Materials	grp/pur/pvc/ss
Biozone Volume	16 m^3
Circulation pump type	Lowara DL125
Motor rating	1.5kw
Sludge return pump type	Flygt
Motor rating	0.22kw
Recycle setting	1minute every hour
Liquid jet compressor type	LJC080UP2PO
Control panel	Standard (3 phase)

ELECTRICAL CONTROL PANEL

The electrical control cabinet will be constructed from steel and house a starter for each pump. Continuously running pumps will have on/off switches and pumps controlled by timer or float switches will have on/off/auto switches. In auto mode they will be controlled by the timer or the floats while in the on mode they will operate continuously.
Each pump will have a on/off/tripped light. The panel will allow for remote visual or audio warning

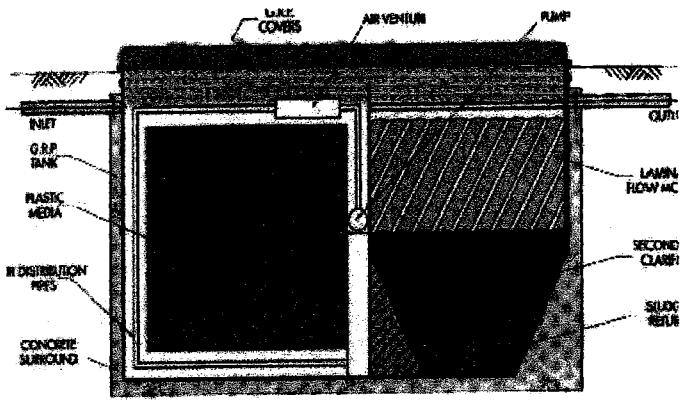
- **Clearwater Data Sheet**
- SUBMERGED AERATED MEDIA
- SEWAGE TREATMENT PLANTS

- **Aerated BioFilter (ABF)**

Clearwater PoLCon Limited

ABF Sewage Treatment Plant:

The ABF Submerged Aerated Filter Package Unit has been developed to operate unobtrusively below ground to give a high level of treatment. Minimum visual impact is achieved whilst still allowing full access for service and maintenance work.



ABF PACKAGE SEWAGE TREATMENT PLANT

Description:

The Clearwater ABF unit comprises a rectangular GRP tank with high structural integrity. The tank has been designed for a long and durable life. The unit can be installed in the ground to cover level thus providing an installation which is visually very acceptable. No day to day operation is required and the low mechanical / electrical content means a very low maintenance requirement. The system does not use blowers and noise is, therefore, not a problem.
The ABF unit is a perfect solution to the problem of effluent treatment for small communities.

The ABF range is available for population equivalents up to 600 and multiple units can be used for larger populations.

Effluent Standard:

The ABF units are designed to treat domestic sewage to achieve an effluent standard of 20mg/l BOD_5, 30mg/l Suspended Solids and 20mg/l Ammonia Nitrogen. If a different standard is required, then the design can be modified to achieve this.

The units require a separate primary settlement / sludge storage tank and this can be provided in the form of a fully enclosed horizontal cylindrical GRP tank.

Authority:

All Clearwater ABF units are designed in accordance with the Recommendations of BS6297 : 1983. This means that the units are designed to meet both the installation requirements and the holding capacity standards specified by the British Standard.
The tanks are manufactured under a strict quality control system to BS EN ISO 9002 1994, and in compliance with the Company Quality Manual.

Safety:

ABF units are provided with security covers in accordance with the Building Regulations.

ABF PACKAGE SEWAGE TREATMENT PLANTS

Model	*Pop Served*	*Length**	*Width**	*Height*	*Weight Kg*	*Motor Size Kw*	PT ♦ Size m^3
ABF150	150	4000	2700	3200	2500	1.5	18
ABF175	175	4250	2700	3200	2750	1.5	24
ABF200	200	4600	2700	3200	3000	1.5	24
ABF225	225	4750	2700	3200	3250	2.0	27
ABF250	250	5000	2700	3200	3500	2.5	32
ABF275	275	5300	2700	3200	3750	3.0	36
ABF300	300	5600	2700	3200	4000	3.0	36
ABF350	350	5900	2700	3200	4500	3.5	45

* For overall length and width including reinforcing ribs, add 200mm
♦ See Septic Tank data sheet for dimensions
Clearwater Polcon Ltd. reserves the right to change data without notification.

THE AEROCLERE PROCESS

Raw sewage flowing to the plant is received in the separate primary settlement tank. Here, gross solids settle to the bottom of the tank where they remain, until the tank requires desludging. The primary tank is supplied as a separate GRP horizontal cylindrical tank.

Settled sewage, (supernatant liquor) is displaced from the primary tank into the submerged media zone. An integral submersible pump, located in a baffle box, pumps settled sewage through an internal air Venturi. This introduces air for the process and highly aerated liquors are distributed beneath the media bed. As the aerated liquors pass through the media bed, they are purified by micro-organisms (biomass) growing on the surface of the media. Growth of biomass results in a natural excess, which is shed as solid particles (humus solids). Treated effluent and humus solids are displaced forward to the final settlement zone, where the solids settle to the bottom of the tank. Effluent discharged from the humus tank has now been fully treated and is suitable for discharge to a watercourse or soakaway. The final settlement tank incorporates lamella plates to keep the unit compact and to ensure an excellent effluent quality is produced at all times. The units have an integral sludge pump which recirculates humus solids back to the primary tank. This reduces the humus solid build up in the final settlement tank, also prevents any stagnation of the system during low flow periods. This also ensures a good quality of effluent is achieved at all times.

Clearwater PoLCon Limited

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