GWP Property Services

Phone 07737 172483
Email: roger.francis3@btinternet.com

Drainfield Discharge Calculations

Property Details:

The Brynderwen Residents
Care of: Lee Evans
Carriage Cottage
Bettws Newydd
Usk
NP15 1JP

Contents:

Instruction

GWP Property services have been instructed to design a Foul Water drainfield to serve a residential complex at: Brynderwen, Bettws Newydd, Usk, NP15 1JP.
The drainfield is required to replace an existing substandard drainfield.
The drainfield will be designed in accordance with BS6297:2007+A1:20008.

Design Inputs

Soil infiltration testing has been undertaken out on site at the location of the new drainfield.
Soil infiltration rate (Vp) and design volume inputs have been provided by the residents association representative and have been used in the drainfield design calculations.

Site Location Plan
Drainfield Location Plan

Brynderwen Drainfield Location

Drainfield Location
The Drainfield is located at:
Brynderwen
Bettws Newydd
Usk
NP15 1JP

SO 35174 06880
X (Easting) 335174
Y (Northing) 206880

Soil Infiltration Rate-Design Inputs

Part B6.5 – Discharging treated domestic sewage effluent up to 15m3 a day into ground

What is the maximum volume of effluent you will discharge in a day (in cubic metres)?

Number of bedrooms in your house	Daily Volume (cubic metres per day)
1 to 3	1
4 to 6	1.5
7 to 8	2

House name	**Daily volume**	**P**
1 New Cottages – 3 bed semi detached house	$1m^3$	5
2 New Cottages - 3 bed semi detached house	$1m^3$	5
Lattice Cottage - 3 bed semi detached house	$1m^3$	5
Stable Cottage - 3 bed semi detached house	$1m^3$	5
Carriage Cottage – 4 bed terraced house	$1.5m^3$	6
Bridle Cottage – 2 bed terraced house	$1m^3$	5
Clockbarn Cottage – 4 bed terraced house	$1.5m^3$	6
Willow Cottage – 3 bed detached house	$1m^3$	5
Total	**$9m^3$**	**42**
Adjusted		**42x0.8 =34**

The maximum daily discharge volume in cubic metres a day
= P × 150/1000
= 34x150/1000
= $5.1m^3$

Discharges into land (drainage field/infiltration system) – Percolation tests

30th August 2024
Percolation test hole 1 - 7950 seconds to drop 150mm = 53s/mm
1st September 2024
Percolation test hole 2 - 7350 seconds to drop 150mm = 49s/mm
Average Vp = 53s + 49s ÷2 = 51s/mm

Drainfield size calculations

MasterDrain
Foul 11.5

GWP Property Services
www.gwpropertyservices.com

Pantanas House
Pantanas, Treharris
S. Wales, CF46 5BN
Tel: 01443 411942 Mob: 07737172483
email: enquiries@gwpropertyservices.com

Job No.	Brynderwen
Sheet no.	1
Date	20/03/25
Project	Brynderwen
Title	Foul Drainfield calculations

By	Checked	Reviewed
RAF		

Percolation Test Data

Trial holes excavated 300mm square as stipulated in Approved Documents Part H
Holes filled to top, and allowed to drain.
Holes refilled and water allowed to drain. Time taken to drain between 75%
and 25% full noted as per Regulation requirements

Trial hole		No.1	No.2	No.3
Initial depth (mm)	75%	225	225	225
Final depth (mm)	25%	75	75	75
Initial time (sec)		0	0	0
Final time (sec)		7920	7380	7380
Ave. time (sec)for 1mm fall		53	49	49
Percolation value		53	49	49

Average Percolation value (Vp) = 50.4

Occupancy of building based on 34 persons for 12 months of the year.

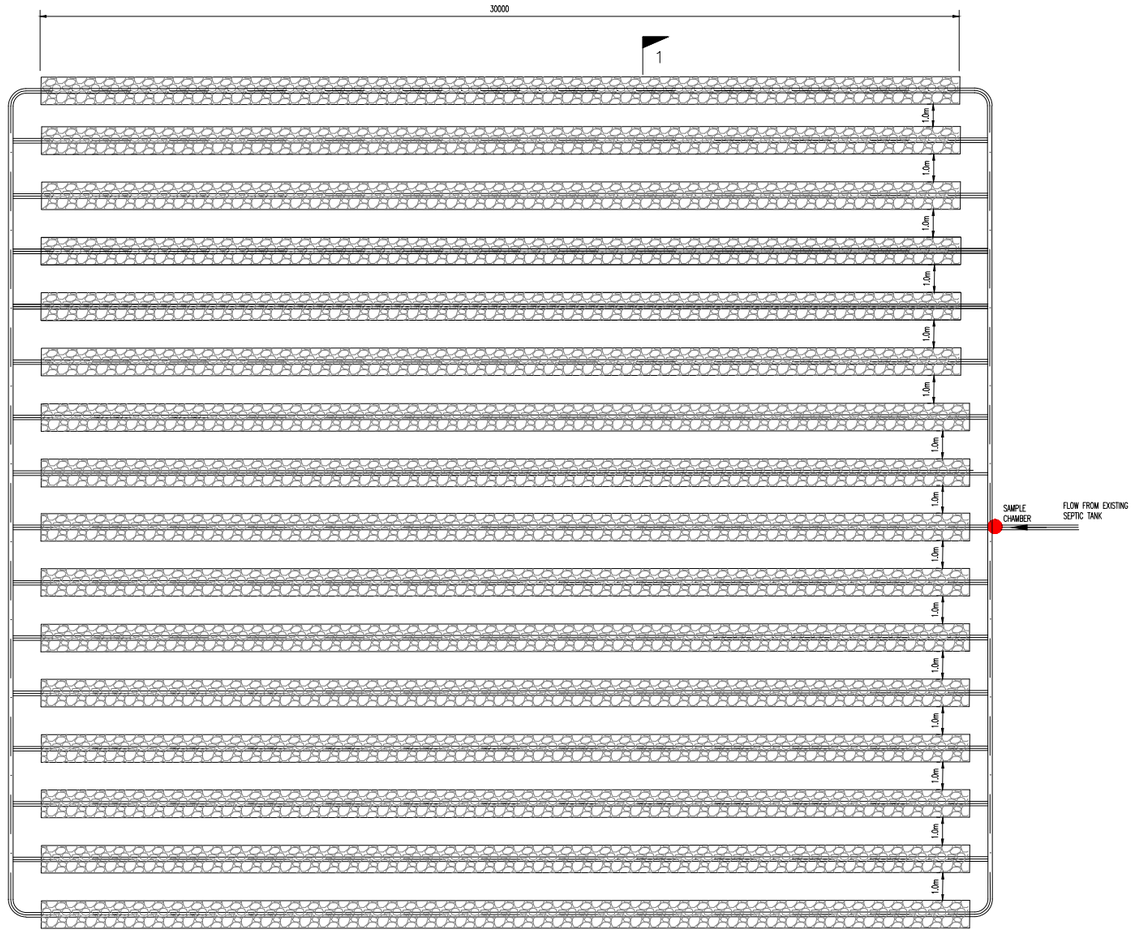
Area of drainage required:-
Area = Occupancy x Vp x 0.25
Area = 34 x 50.4 x 0.25
Area =428.4m2

Septic tank size = (180 x occupancy) + 2000
= 180 x 34 +2000
= 8120 litres

Linear soakaway dimensions = 476.0 (width=0.90)

Comments/Departures from Specified Procedures:
Approved Document H (2001) states that the percolation value should be between 12 and 100

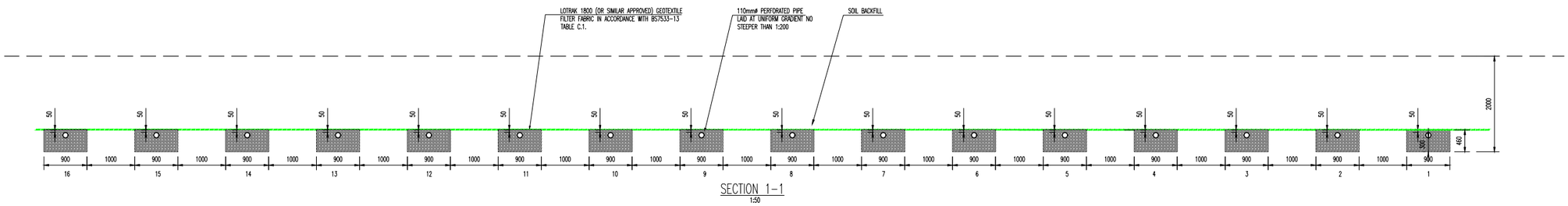
Drainfield Plan



DRAINAGE FIELD TYPICAL ARRANGEMENT

SCALE:1:100

FIELD TO COMPRISE OF 16 NUMBER INFILTRATION TRENCHES 30.0m LONG x 900mm WIDE. TOTAL LINEA TRENCH LENGTH = 480.0m



SECTION 1-1

1:50

NOTE

THE DRAINAGE/SUB-SURFACE IRRIGATION SYSTEM SHOULD BE VERY CAREFULLY CONSTRUCTED USING 110mm DOWNWARD FACING SLOTTED/PERFORATED PIPES LAID IN TRENCHES WITH A UNIFORM GRADIENT NOT STEEPER THAN 1:200. THE TRENCHES TO BE 900mm WIDE AND MINIMUM 1.0m WIDE STRIPS OF UNDISTURBED GROUND SHOULD BE MAINTAINED BETWEEN PARALLEL TRENCHES. THE PIPES SHOULD BE LAID ON A 200-300mm LAYER OF CLEAN GRAVEL GRANULAR FILL MATERIAL GRADED EITHER 16-32mm OR 20-50mm. THE TRENCHES SHOULD BE FILLED WITH THE SAME MATERIAL TO A LEVEL 50mm ABOVE THE PIPE AND COVERED WITH GEOTEXTILE MATERIAL TO PREVENT THE ENTRY OF SILT. THE REMAINDER OF THE TRENCH CAN BE FILLED WITH NORMAL SOIL. PIPES SHOULD BE LAID AT A MINIMUM DEPTH OF 200mm BELOW THE SURFACE. CORRUGATED PIPES DESIGNED SPECIFICALLY FOR LAND DRAINAGE SHOULD NOT BE USED

	-	-

PROJECT:

BRYNDERWEN

DRAWING TITLE:

PROPOSED DRAINAGE FIELD

CLIENT:

STATUS:

DATE: MARCH 2025

DRG No: 01

SCALE: AS SHOWN @A1

Drainfield Construction Method

The Drainage/sub surface irrigation system should be carefully constructed using 110mm downward facing perforated pipes laid with a uniform gradient not steeper than 1:200

Note: corrugated pipes designed specifically for land drainage should not be used.

The trenches should be 900mm wide and a minimum 1m wide strip of undisturbed ground should be maintained between parallel trenches.

The pipes should be laid on a 300mm layer of clean gravel granular fill material graded either 13-32mm or 20-25mm.

The trenches should be filled with the same graded granular fill to a level 50mm above the pipe and covered with geotextile material to prevent the entry of silt.

The remainder of the trench can be filled with normal soil.

General Design Information

- No part of the infiltration system constructed shall be more than 2m below ground.
- No part of the infiltration system shall be less than 1.2m above the highest predicted annual groundwater level.
- The infiltration system shall not connect to any land drainage system.
- The infiltration system shall not be situated within 10m of any watercourse (including any ditch that runs dry for any part of the year) or any other surface water.
- The infiltration system shall not be situated within 50m of a well or borehole used for water supply.
- The infiltration system shall not be situated within 15m of any building.
- The infiltration system shall not be situated within 2 metres of a boundary.
- No access roads, driveways or paved areas should be located within the soakaway drainfield area.
- No rainwater must be allowed to enter the system.
- The drain from the septic tank must enter a distribution box, prior to the soakaway drainfield. This box must be able to feed every connecting leg/drain individually.
- No leg of the drainfield can be more than 30 metres in length and the finished soakaway drainfield should resemble an oven shelf, from a bird's eye view.

Summary

Based on the site specific information provided by the client a linear trench soakaway of some 480m x 0.9m x 0.460m (L x W x D) will be sufficient to meet the site requirements.