

Foul and Surface Water Disposal Scheme for the Proposed Barn Conversion at Nant y Gaseg Uchaf Farm, Rhydyfro, Swansea (P2016/0878)

31/01/2020

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1. Purpose of submission

1. To adhere to planning conditions as outlined in P2016/0878 -

Pre-Commencement Conditions

(4) Notwithstanding the submitted plans, no development shall commence until details of a scheme for the disposal of foul (including septic tank design and location) and surface water has been submitted to and agreed in writing by the local planning authority. The scheme shall be implemented in accordance with the approved details prior to the first use of the development and retained in perpetuity.

Action Conditions

(7) Adequate provision shall be made for the drainage of the site, to ensure that the drainage of any adjoining land is not interrupted or otherwise adversely affected by the development.

Regulatory Conditions

(10) No surface water and land drainage run-off shall be allowed to connect/discharge (either directly or indirectly) to the public sewerage system. Reason To ensure adequate drainage of the site and.

(11) Foul water and surface water discharges must be drained separately from the site. Reason In the interests of the adequate drainage of the site and the development

(12) There must be no interference, alteration or diversion of any ditch, watercourse, stream or culvert crossing or bordering the site, without prior consultation and agreement with the Local Authority. Reason To ensure adequate drainage of the site and development

2. To comply with the National Planning Policy Framework and Planning Practice Guidance on foul drainage matters to ensure that foul drainage can be provided without adverse impact on the environment.
3. To meet building control and environmental regulations

2. Details of submission – foul waste

a. Background and site assessment

Existing farmhouse discharge (existing discharge).

The existing farmhouse is connected to a domestic septic tank and “soakaway”. This was installed at least forty years ago by previous occupants and does not fulfil the 2020 regulations on sewage drainage. This is because of a poorly sited and designed system i.e. a large soakaway hole rather than a drainage field was used, plus a poorly sited system.

The proposed barn conversion (new discharge)

Initially an appropriately designed and installed **septic tank and drainage field** were thought to be suitable.

Note: Soakaway drainfield design needs to conform with Section H2 of the Building Regulations (Sewage and Drainage issues) and BS 6297 : 2007 + Amendment 1 2008. There are 3 tests that must be undertaken to determine whether or not occupiers/developers are allowed to construct a sewage soakaway drainfield. These tests are all mandatory under Building Regulations and are performed in the following order -

1st Test – Is the site in a Groundwater Protection Zone 1?

The proposed site of the septic tank and drainage field **is not** an area designated by the Environment Agency as a Groundwater Source Protection Zone 1 (See Maps 1 and 2)

2nd Test – Determination of water table and bedrock. (Building regs. BS 6297 2007 and H2)

A Trial Site Assessment Hole (TSAH) has determined that both the water table and bedrock does not reach to within 1m of the bottom of the proposed soakaway drainfield pipe.

3rd Test – Is the porosity of the soil suitable?

Percolation Tests. The Percolation Test, tests the porosity of the soil immediately below and surrounding the 300mm of drainage stone in the trench below the proposed pipe.

This test was failed, as the proposed drainage field is made up of clay based soil. (Please see Appendix a for test results and photographs plus Map 3 showing the position of the percolation test holes). This means that the water soaks away too slowly and a soakaway drainage field is not possible and would not be permitted as septic tanks can only discharge to ground via a drainage field if all 3 of these tests are passed.

In conclusion, whilst the first two tests were met, the third test – the percolation test was failed. This effectively rules out the use of a drainage field for either a septic tank or sewage treatment plant.

An alternative solution is proposed to solve the two problems mentioned above i.e.

1. The non compliant historical existing farmhouse system (existing discharge).
2. The issue of poor porosity of land for the barn conversion (new discharge).

b. Proposal

The proposal is to combine foul discharge from the existing farmhouse and proposed barn conversion by using a new, appropriately sited, sized and commissioned **sewage treatment plant** which **will discharge to surface water**. (Please see Map 4).

A drainage field soakaway for this proposal is not possible at this proposed site, as the new system would be within 10metres of a watercourse, hence the proposal for a sewage treatment plant.

This would have to comply with regulatory and environmental standards as set out by Natural Resource Wales. The existing septic tank to the farmhouse would also be decommissioned.

An application for registering an exemption from the requirement for a permit from Natural Resource Wales will be made (Environmental Permitting (England and Wales) (Amendment) Regulations 2015).

The General Binding Rules for small sewage discharges will be followed and met.

Reason for non mains sewage connection.

A connection to the public sewer is not feasible because both the existing farmhouse and proposed barn conversion are significantly further than 60m away from the main sewage system public sewer. (Please see Map 5).

c. General binding rules

The General binding rules will be fulfilled as follows-

1. The discharge will be less than 5 cubic metres/5000litres per day in volume. (See Appendix b for calculations).
2. The sewage is from a domestic source only
3. The discharge will not cause pollution of surface water or groundwater.
4. The sewage will receive treatment from a from a **sewage treatment plant**.
5. All works and equipment used for the treatment of sewage effluent and its discharge will comply with the relevant design and manufacturing standards i.e. the British Standard that are in force at the time of the installation, and guidance issued by the appropriate authority on the capacity and installation of the equipment.
6. The system will be installed and operated in accordance with the manufacturer's specification.
7. Maintenance will be undertaken by competent persons.
8. Waste sludge from the system will be safely disposed of by an authorised person.
9. If the property is sold, the operator (Mr and Mrs Temblett) will give the new operator a written notice stating that a small sewage discharge is being carried out, and giving a description of the waste water system and its maintenance requirements.
10. The operator (Mr and Mrs Temblett) will ensure the system is appropriately decommissioned where it ceases to be in operation so that there is no risk of pollutants or polluting matter entering groundwater, inland fresh waters or coastal waters.
11. Both new and existing discharges are not within 60m of a public foul sewer.
12. The operator (Mr and Mrs Temblett), will ensure that the necessary planning and building control approvals for the treatment system are in place.
13. The discharge will not be in or within: 500m of a Special Area of Conservation (SAC), Special Protection Area (SPA), Ramsar site, biological Site of Special Scientific Interest (SSSI), freshwater pearl mussel population, designated bathing water, or protected shellfish water; 200 metres of an aquatic local nature reserve; 50 metres of a chalk river or aquatic local wildlife site.
14. The discharge will be made to a watercourse that normally has flow throughout the year.
15. The discharge will not be made to an enclosed lake or pond.

d. Non Mains Foul Drainage Assessment Form (FDA1)

APPLICANT DETAILS
Name Helen Temblett
Address Nant y Gaseg Uchaf Farm, Rhydyfro, Swansea. SA8 4SY
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We will use the information you provide on this form to establish whether non-mains drainage, either a new system or connection to an existing system, would be acceptable. It is important that you provide full and accurate information. Failure to do this will delay the processing of your application.

You must provide evidence that a connection to the public sewer is not feasible. Other than in very exceptional circumstances, we will not allow the use of non-mains drainage as part of your Planning or Building Regulation application unless you can prove that a connection to the public sewer is not feasible. We do not consider non-mains drainage systems to be environmentally acceptable in locations where it is feasible to connect to a public sewer. Please note that a lack of capacity in, or other operating problems with, the public sewer are not valid reasons to use a non-mains drainage system where it is otherwise feasible to connect to a public sewer.

Where connection to the public sewer is feasible, you may need to get the agreement of either the owners of any land through which the drainage will run or, if you intend to connect via an existing private drain, the owner of that private drain.

The National Planning Practice Guidance and Building Regulations Approved Document H give a hierarchy of drainage options that must be considered and discounted in the following order:

- 1 Connection to the public sewer
- 2 Package sewage treatment plant (which can be offered to the Sewerage Undertaker for adoption)
- 3 Septic Tank
- 4 If none of the above are feasible a cesspool

You must respond to all the following questions. If you wish to submit additional information please do so, marked clearly "Additional Information". **In some cases you will be required to provide further information in order to demonstrate that any non-mains foul drainage system proposed is acceptable.**

<i>Feasibility of mains foul sewer connection</i>	YES	NO
Have you provided a written explanation of why it is not feasible to connect to the public foul sewer with this form? <i>This must include a scaled map showing the nearest public foul sewer connection point - check with your local sewerage undertaker.</i>	✓	
Is the distance from your site to the closest connection point to the public foul sewer less than the number of properties to be built on the site multiplied by 30m? (see Guidance Note 2)		✓
Does your proposal form part of a phased development or planned development of a wider area? <i>If YES, please provide further details including references of any planning permissions already granted.</i>		✓

Non-mains connection

Please provide a plan with dimensions that clearly shows the location of the whole system in relation to the proposed development and the position of the key elements e.g. septic tank, drainage fields and points of discharge.

<i>Existing system</i>	YES	NO
Do you intend to use an existing non-mains foul drainage system		✓
If YES, does the system already have an Environmental Permit issued by the Environment Agency? (In the case of a cesspool write N/A)		
If YES, please provide Environmental Permit reference number.....		

<i>Discharge</i>	YES	NO
Do you propose to use a package treatment plant?	✓	
Do you propose to use a septic tank?		✓
Do you propose to use a cesspool? If YES go to Q4		✓
Have you considered having your system adopted by the sewerage undertaker? (see Guidance Note 7).		✓
Will all, or any part of, the discharge go to a drainage field or soakaway? (see Guidance Note 3) - this includes systems that combine a drainage field with a high level overflow to watercourse If YES go to Q3.		✓
Do you intend to use a system that discharges solely to watercourse? (see Guidance Note 3) If YES go to Q9.	✓	

<i>Water abstraction</i>	YES	NO
Do you receive your water from the public mains supply?		
If not, where do you get your water supply from?		

<i>Cesspools (For methods other than cesspools write N/A)</i>	YES	NO
Have you provided written justification for the use of a cesspool in preference to more sustainable methods of foul drainage disposal? (see Guidance Note 4)		

<i>Drainage field design (For cesspools write N/A)</i>	YES	NO
Will the system discharge to a drainage field designed and constructed in accordance with British Standard BS6297:2007? If not, why not?		
Will the discharge from the system be located in a <u>Source Protection Zone 1 (SPZ1)</u> ?		

<i>Ground Conditions (For cesspools write N/A)</i>	YES	NO
6a. Have you submitted a copy of the percolation test results with this form (see <i>Guidance Note 6</i>)?		
6b. If NO please explain the justification for not undertaking or submitting these tests.		
6c. Is any part of the system in land which is marshy, water logged or subject to flooding?		
6d. Will the soakaway be located on artificially raised, made-up ground or ground likely to be contaminated? <i>If YES please provide details as additional information.</i>		
6e. Have you submitted the results of a trial hole at the site to establish that the proposed drainage field will be above any standing groundwater (see <i>Guidance Note 6</i>)?		

<i>Available Land</i>	YES	NO
Is the application site plus any available area for a soakaway less than 0.025 hectares (250m ²)?		

<i>Siting of drainage field/soakaway discharge from a septic tank or package treatment plant or other secondary treatment.</i> <i>You may need to make local enquiries to get a full answer to these questions.</i>	YES	NO
Will it be at least 10m from a watercourse, permeable drain or land drain?		
Will it be at least 50m from any point of abstraction from the ground for a drinking water supply (e.g. well, borehole or spring)? <i>This includes your own or a neighbour's supply.</i>		
Will the discharge be within a groundwater <u>Source Protection Zone 1</u> ? <i>If yes, you will need to apply for an environmental permit</i>		
Are there any drainage fields/soakaways within 50m ? <i>This includes any foul drainage discharge system (other than the subject of this application) or surface water soakaway on either your own or a neighbour's property.</i>		
Will it be at least 15m from any building?		
Will there be any water supply pipes or underground services within the disposal system, other than those required by the system? <i>(For cesspools write N/A)</i>		
Will there be any access roads, driveways or paved areas within the disposal area? <i>(For cesspools write N/A)</i>		

<i>9. Siting of treatment plant, septic tank or cesspool</i>	YES	NO
<i>Is it at least 7m from the habitable part of a building?</i>	V	
<i>Will there be vehicular access for emptying within 30m?</i>	V	
<i>Can the plant, tank or cesspool be maintained or emptied without the contents being taken through a dwelling or place of work?</i>	V	

10. Expected flow

Please estimate the total flow in litres per day (see <i>Guidance Note 5</i>).	1,900l
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11. General Binding Rules for Small Sewage Discharges

YES	NO
V	

Does the system meet the requirements of the General Binding Rules for small sewage discharges?

12. Maintenance

How do you propose to maintain the system?

1. The system will be installed and operated in accordance with the manufacturer's specification.
2. All works and equipment used for the treatment of sewage effluent and its discharge will comply with the relevant design and manufacturing standards i.e. the British Standard that are in force at the time of the installation, and guidance issued by NPTCBC planning authority and Building Regulations on the capacity and installation of the equipment.
3. The system will be monitored and maintained regularly with any faults or problems fixed immediately.
4. Maintenance will be undertaken by someone who is competent and as per manufacturers instructions.
5. Waste sludge from the system will be safely disposed of by an authorised/registered waste carrier at least once per year.
6. The operator (Mr and Mrs Temblett) will ensure the system is appropriately decommissioned where it ceases to be in operation so that there is no risk of pollutants or polluting matter entering groundwater, inland fresh waters or coastal waters.
7. The outlet of the works will be inspected regularly. The effluent will be free flowing and clear at all times.

13. Declaration

I declare that the above information is factually correct.

Name	Signature	Date
Helen Temblett		3.2.2020

3. Details of submission – surface water

In order to ensure that effective rainwater disposal is achieved in a safe and consistent manner Approved Document H will be followed.

The proposed scheme will –

- (1) Allow adequate provision for rainwater to be carried from the roof of the building.
- (2) Paved areas around the building will be so constructed as to adequately drained.
- (3) Rainwater from a system provided pursuant to subparagraphs (1) or (2) shall discharge to an existing watercourse (Map 6).

The reasons for proposing an existing watercourse for surface water drainage are as follows –

1. Percolation tests have revealed that the surrounding land is made up of clay, thus rendering the siting and construction of a soakaway impracticable. (See Appendix a for test results).
2. The discharge will mimic the existing Greenfield run off rate as the current surface water already discharges in to existing ditches and drainage systems. These same ditches and drains will be used to discharge the surface water with no interference, alteration or diversion of any ditch, watercourse, stream or culvert crossing or bordering the site.
3. There will be no increase in flow of water to the ditches that currently allow drainage from the site.
4. There is no flood risk to the development and the site is not within a Flood zone or a Critical Drainage Area (CDA).
5. The site slope / gradient is less than 1:10, i.e. 1m rise / fall over 10m
6. There is no historical flooding at the site.

4. Appendix

Appendix a. Percolation test results

These tests were carried out in the proposed sewage drainage field site between 21/01/2020 and 29/01/2020. (See Map 3). During this period, the weather conditions were stable i.e. the tests were not carried out during abnormal weather conditions such as heavy rain, severe frost or drought. The test methodology followed building regulation guidance and used the following equation as recommended, to determine the porosity of the soil at the trial site.

V_p = time (s) for the water to seep away from 75% full to 25% full level
(i.e., a depth of 150mm) divided by 150mm.

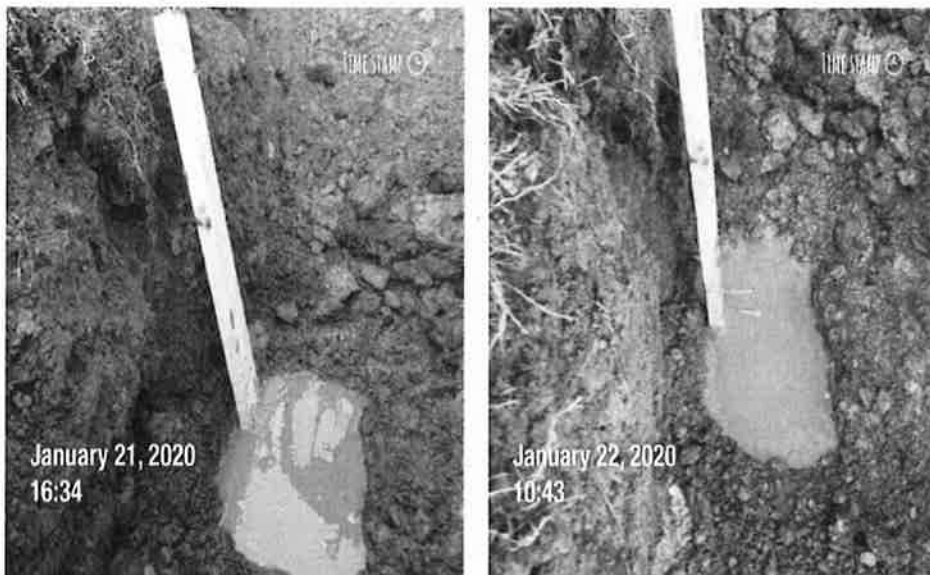
V_p = The average time in seconds required for the water to drop 1mm.

Notes –

1. Drainage field soakaway disposal should only be used when percolation tests show average values of V_p of between 15 and 100 and the preliminary site assessment report and trial hole tests have been favourable. This minimum value ensures that untreated effluent cannot percolate too rapidly into ground water. Where V_p is outside these limits effective disposal is unlikely to take place in a soakaway drainage field
2. If the pit has not emptied completely after 24 hours, a soakaway is not suitable.
3. Industry/sewage guidance states that percolation tests are invariably not worth performing in soils containing clay, as the tests invariably fail due to the poor porosity of the soil.

Percolation test hole 1

Result – Test hole 1 did not empty at all after 18 hours and 9 minutes making the test invalid for calculation of V_p .



Percolation test hole 2

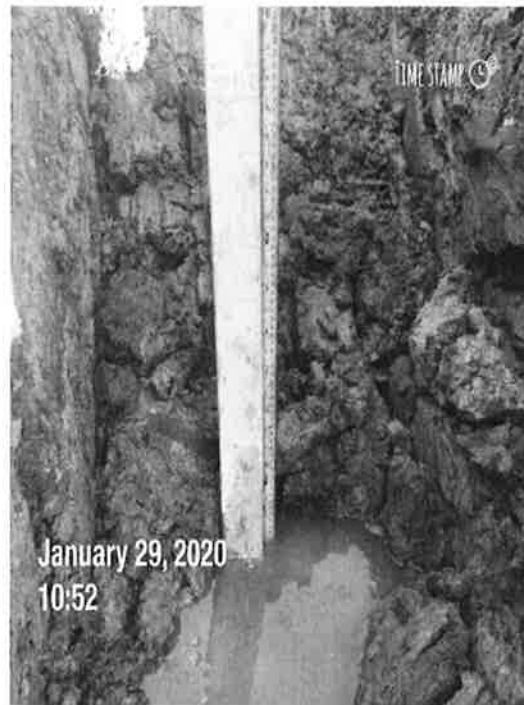
Result – Test hole 2 did not empty at all after 17 hours and 57 minutes again rendering use of the calculation for soil porosity invalid.



Percolation test hole 3

Result – Test hole 3 did not empty at all after almost 24 hours again rendering use of the calculation for soil porosity invalid.





Appendix b.

Daily discharge calculation.

Using the GOV.UK daily discharge volume calculator for small sewage discharges from septic tanks - (<https://www.gov.uk/government/publications/sewage-discharges-calculator-for-domestic-properties> - updated July 2019) and based on a 2 properties (the existing farmhouse and the proposed barn conversion) with a total of 9 bedrooms, the volume of treated sewage per day that will be treated is **1.9 cubic metres**.

Appendix c. Maps

Map 1,2 - the location and extent of Source Protection Zone 1's (SPZ1) and other groundwater constraint areas

Map 3 – position of percolation test holes.

Map 4 - the siting of the proposed foul water drainage system

Map 5 - the location of the mains sewer supply.

Map 6 - the location of the surface water disposal scheme together with existing ditches and watercourses

