FOUL DRAINAGE ASSESSMENT AND PERCOLATION TEST REPORT

Planning Application Reference: P/2025/0951

Development: Conversion of Existing Barn to Self-Contained Holiday Let

Site Address:
Greenways
Tarts Hill
Hanmer
Whitchurch
SY13 3DR

Date: May 2026

Prepared by: Mr and Mrs P Armitage

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1. Introduction

This report has been prepared in support of Planning Application Ref. P/2025/0951 relating to the conversion of an existing barn/outbuilding at Greenways, Hanmer, into a self-contained holiday let.

The report responds to comments received from Natural Resources Wales requesting additional information regarding foul drainage arrangements, including infiltration testing and drainage field calculations to demonstrate that the proposed foul drainage system is suitable for the development.

The proposed foul drainage system comprises a Marsh Gemini 6PE Combined SBR and Phosphate Removal Treatment Plant discharging to a subsurface drainage field located within the application site.

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2. Development Details

Development Type: Conversion of existing barn to holiday accommodation.

Accommodation: One-bedroom holiday let.

Maximum Occupancy: Two persons.

Foul Drainage Treatment: Marsh Gemini 6PE Combined SBR and Phosphate Removal Plant.

Final Effluent Disposal: Subsurface drainage field.

Site Area:
Approximately 321 m^2 application site with additional land available within the ownership boundary for foul drainage infrastructure.

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3. Design Population and Daily Flow

The holiday let is restricted to a maximum occupancy of two persons.

In accordance with Approved Document H and BS6297, a design flow of 150 litres per person per day has been adopted.

Design Population: 2 persons

Daily Flow: 2 × 150 litres/day

Design Flow = 300 litres/day

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4. Site Conditions

The proposed drainage field is located within land under the ownership and control of the applicant.

Observed site conditions are as follows:

- Soil Type: Predominantly clay.
- Groundwater: No groundwater encountered during testing.
- Bedrock: Approximately 30 metres below ground level.
- Distance to nearest ditch or watercourse: Approximately 180 yards.
- Available land for drainage field: Approximately one acre available.

The site provides ample space for the installation of a suitably sized drainage field.

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5. Percolation Testing

Test Method

Percolation testing was undertaken in accordance with the methodology set out in BS6297 and Approved Document H.

Three test pits were excavated within the proposed drainage field area.

Test Pit Dimensions:
300 mm × 300 mm.

Test Pit Depth:
1.0 metre.

The test pits were pre-soaked overnight to ensure saturation of the surrounding ground.

Following saturation, each pit was filled with water to a depth of 300 mm and the time taken for the water level to fall from 300 mm to 75 mm was recorded.

Three measurements were undertaken within each test pit.

Test Results

Test Pit 1

Test 1: 4 hours 15 minutes = 15,300 seconds

Test 2: 4 hours 30 minutes = 16,200 seconds

Test 3: 4 hours 35 minutes = 16,500 seconds

Average = 16,000 seconds

Test Pit 2

Test 1: 3 hours 50 minutes = 13,800 seconds

Test 2: 3 hours 55 minutes = 14,100 seconds

Test 3: 4 hours 15 minutes = 15,300 seconds

Average = 14,400 seconds

Test Pit 3

Test 1: 3 hours 20 minutes = 12,000 seconds

Test 2: 3 hours 30 minutes = 12,600 seconds

Test 3: 3 hours 45 minutes = 13,500 seconds

Average = 12,700 seconds

Percolation Value (Vp)

Overall Average Time

(16,000 + 14,400 + 12,700) ÷ 3

= 14,367 seconds

Vp = 14,367 ÷ 150

Vp = 95.8

Rounded Vp = 96

The recorded Vp value indicates slow-draining clay soils suitable for a properly designed drainage field.

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6. Drainage Field Design

The drainage field has been assessed using:

Design Flow (P) = 300 litres/day

Vp = 96

Required Drainage Field Area:

Area = Vp × P ÷ 250

Area = 96 × 300 ÷ 250

Area = 115.2 m^2

Required Drainage Field Area = 116 m^2

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7. Proposed Drainage Field Layout

The drainage field will be constructed using perforated distribution pipework laid within clean washed granular material in accordance with BS6297.

An indicative layout may comprise:

- Four trenches.
- Approximately 48 metres trench length per trench.
- 600 mm trench width.
- Minimum 2 metres spacing between trenches.
- Geotextile membrane cover.
- Topsoil reinstatement above trench system.

Alternative arrangements providing a minimum infiltration area of 116 m^2 may be adopted during installation.

The final arrangement will be located within land available under the applicant's ownership and control.

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8. Treatment Plant

Foul sewage generated by the holiday accommodation will be treated using a Marsh Gemini 6PE Combined SBR and Phosphate Removal Plant.

The treatment plant:

- Is designed to serve up to six persons.
- Exceeds the requirements of the proposed two-person occupancy.
- Provides secondary biological treatment.
- Incorporates phosphate reduction technology.
- Produces treated effluent suitable for discharge to a drainage field.

The treatment plant therefore provides substantial treatment capacity in excess of the requirements of the proposed development.

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9. Environmental Considerations

The development lies within the River Dee Special Area of Conservation catchment.

The proposed foul drainage arrangement incorporates:

- Advanced package treatment plant.
- Phosphate removal technology.
- Subsurface discharge to a drainage field.
- No direct discharge to any watercourse.
- Significant separation distance from the nearest ditch or watercourse.

The proposed system is considered capable of managing foul effluent arising from the development without adverse effects upon surrounding water quality.

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10. Conclusion

Percolation testing has been undertaken in accordance with BS6297 and Approved Document H.

The average percolation value recorded was Vp 96.

Based upon a design flow of 300 litres per day associated with a one-bedroom holiday let with a maximum occupancy of two persons, the required drainage field area has been calculated as approximately 116 m^2.

Sufficient land is available within the site ownership to accommodate the drainage field.

Foul drainage from the development will be treated by a Marsh Gemini 6PE Combined SBR and Phosphate Removal Plant before discharge to the drainage field.

The proposed foul drainage system is considered suitable for the proposed development and capable of being installed in accordance with BS6297 and Building Regulations requirements.

Signed:

Name: Mrs F Armitage

Date: 01/06/2026

Evidence: Fig 1 and Fig 2



Fig 1



Fig 2