Phosphorus Assessment Statement

Site: Cae Coch, Golly, Burton, Rossett, LL12 0AL
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Date: 23/09/25

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1. Purpose of Assessment

This statement has been prepared to assess the impact of the proposed replacement of the existing septic tank with a Marsh Industries Ensign sewage treatment plant incorporating a Phos-Lite tertiary treatment unit. The objective is to demonstrate that the proposed system will significantly reduce phosphorus loading in the final effluent prior to discharge to the receiving watercourse. The receiving watercourse ultimately drains to a designated **Special Area of Conservation (SAC)**, where phosphorus reduction is a key objective for the protection of sensitive habitats.

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2. Existing Wastewater Treatment System

The site is currently served by an **old septic tank** providing primary treatment only. Effluent from a septic tank typically achieves limited removal of biochemical oxygen demand (BOD) and suspended solids, but provides negligible removal of nutrients such as phosphorus.

- **Typical Phosphorus Removal:** <10%
- **Environmental Risk:** Elevated phosphorus discharge, contributing to eutrophication risk in downstream waterbodies.
- **Compliance:** Unlikely to meet the latest Environment Agency guidance for discharges in nutrient-sensitive catchments.

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3. Proposed Wastewater Treatment System

It is proposed to install a **Marsh Industries Ensign Sewage Treatment Plant (STP)** with an integral **Phos-Lite tertiary treatment unit**.

Key Features:

- **Secondary Treatment:** Biological treatment using aeration and final settlement, achieving typical effluent standards of BOD <20 mg/L and Suspended Solids <30 mg/L.
- **Tertiary Treatment (Phos-Lite):** Phosphorus removal media providing adsorption of soluble phosphorus, reducing total phosphorus in the final effluent by up to 90% see Marsh industries data sheets provided

- **Outcome:** Considerable reduction of nutrient load discharged to the watercourse.

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4. Comparative Assessment

Parameter	Existing Septic Tank	Proposed Ensign STP + Phos-Lite
Treatment Process	Primary only	Secondary + tertiary
Typical Total Phosphorus Removal	<10%	>90%
Risk of Nutrient Pollution	High	Very Low
Compliance with EA Guidance	Likely non-compliant	Expected to achieve compliance

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5. Conclusion

The proposed upgrade from a septic tank to a Marsh Ensign STP with Phos-Lite tertiary treatment will result in a **step-change improvement in effluent quality**. The system will achieve a significant reduction in phosphorus discharge — expected to exceed 90% compared with the existing septic tank — thereby minimising the risk of eutrophication in the receiving watercourse and supporting the conservation objectives of the downstream SAC.

This upgrade represents **Best Available Technology (BAT)** for small-scale sites in sensitive catchments and aligns with the Environment Agency's objectives for nutrient neutrality and water quality protection.