

FOUL DRAINAGE STRATEGY REPORT

Development @ Seend Road

1 No. 4-Bedroom Dwellings

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Proposed treatment plant	Klargester/Clearwater BIO Air CW2 (Daily Flow: 0.9m ³ /d Daily Load: 0.36kg BOD ₅ /d)
Proposed discharge arrangement	Infiltration Field
Plant / pump station location	51.324623, -2.061010

This report has been prepared to support the planning submission for the proposed development at Seend Road. It sets out the foul drainage strategy, confirms the proposed treatment plant selection, and provides a planning-stage assessment for the infiltration field.

The hydraulic sizing in this report is appropriate for planning and coordination purposes. Final working drawings, manufacturer submittals, and pump selection should be checked against the final topographical survey, confirmed inlet/outlet levels, and supplier data prior to construction.

1. Development summary and drainage strategy

The development comprises No1 four-bedroom dwelling. Foul flows are to discharge to a package sewage treatment plant and discharged periodically to an infiltration field.

The selected arrangement is a gravity-fed treatment plant with pumped outfall to a newly designed infiltration field.

- Nominal domestic loading: 1 dwelling × 6 persons per 4-bedroom dwelling = 6 PE
- Regulatory discharge volume for GBR check: 6 persons × 150 litres/person/day = 0.9m³/day
- Discharge route: treated effluent to integral pump chamber, then via rising main to infiltration field distribution point.

2. Formal drainage hierarchy justification

In accordance with Building Regulations Approved Document H and national planning policy, the foul drainage hierarchy has been assessed in sequence.

A connection to a reasonably available public foul sewer has been considered and discounted. It is confirmed, for planning purposes, that there is no reasonably available public foul sewer within 30 metres of the proposed development.

Furthermore, connection would require disproportionate off-site infrastructure and third-party land access, and is therefore not considered to represent a practical or sustainable solution.

A septic tank solution has also been discounted, as discharge to a watercourse is not practical and a discharge to an infiltration field as the only viable option would require a larger drainage field for the given P value.

The proposed packaged sewage treatment plant therefore represents the most appropriate and highest feasible option within the foul drainage hierarchy for this site.

3. Selected treatment plant

The preferred plant for the scheme is the Klargester Bio Air CW2 pumped outlet model, installed with gravity inlet.

Parameter	Selected value / note
Manufacturer / model	Klargester/Clearwater Bio Air CW2 IPS (Pumped)
Plant type	Gravity sewage treatment plant with integral pump chamber
Population range	6 persons
Certified standard	EN 12566-3
Process	Activated Sludge/Submerged Aeration
Overall dimensions	Approx. 2.5m length × 1.54m width × 1.54m height
Nominal treatment volume	Approx. 4,650 litres total capacity
Inlet / outlet diameter	110 mm
Inlet invert to base	Approx. 1.350m
Outlet invert to base	Approx. 1.250m

Inlet invert below ground level	Approx. 0.455 – 0.755m
Outlet invert below ground level	Approx. 0.555 – 0.855m
Empty weight	Approx. 210kg
Blower power	Approx. 1.2kWh/day

COD	93.2%	57 mg/l
BOD5	97.5%	9 mg/l
TN_b	60.1%	25.4 mg/l
NH₄-N	67.6%	15.6 mg/l
P_{tot}	46.9%	4.3 mg/l
SS	95.9%	16 mg/l
Electrical Consumption	1.2 kWh/d	

4. Site-specific GBR risk statement

The maximum daily discharge from the development is calculated as 0.9m³/day, which is below the 2.0 m³/day threshold applicable to a small sewage discharge to ground under the General Binding Rules. The proposed receiving discharge is domestic sewage only and the selected system is a sewage treatment plant rather than a septic tank, providing a higher threshold of treatment standard..

The proposed location of the treatment plant and pump station is 51.324623, -2.061010 sited within 30m of suitable maintenance access and 7m from dwellings (new and existing) to comply with Building Regulation Part H guidance on siting for plants treating waste from multiple properties. At planning stage, the principal environmental risks associated with this proposal are considered to be low, subject to detailed confirmation of outfall siting and normal construction controls, for the following reasons:

- The discharge volume is modest and comfortably below the relevant ground-water threshold.
- The selected Klargest Bio Air CW2 plant is certified to EN 12566-3 and is published with treated effluent performance substantially better than the standard 20:30 benchmark commonly used for small plants.
- The final discharge is to an infiltration field following treatment, rather than untreated or partially treated effluent discharge.

A review of DEFRA MAGIC mapping has been undertaken to identify any environmental constraints relevant to the proposed discharge.

The site is not located within a Source Protection Zone, and there are therefore no identified groundwater protection constraints that would preclude the use of a package sewage treatment plant under the General Binding Rules.

The site is not located within (or adjacent to) an Area of Outstanding Natural Beauty (AONB). This designation relates to landscape character and visual amenity rather than water quality protection.

The proposed foul drainage system comprises a small-scale package sewage treatment plant serving one dwelling, with a maximum discharge of 0.9m³/day. The discharge will be treated to a high standard prior to discharge to the infiltration field.

The proposal is therefore considered to be compatible and compliant with the General Binding Rules, subject to standard installation and maintenance practices.

Proposed discharge location of the packaged sewage plant 51.324623, -2.061010 via pumped discharge chamber to be designed and constructed to allow even distribution to the infiltration field.

5. Statement on public sewer availability

For planning purposes, it is stated that a connection to the public foul sewer is not considered to be a reasonably practicable solution for this development. The foul drainage strategy has therefore been developed on the basis of a private package treatment system in accordance with the foul drainage hierarchy. The final submission should be read together with any sewer records / undertaker search obtained for the site.

6. Infiltration Field Design & Specification

A separate packaged pump chamber is proposed downstream of the Clearwater Bioair CW2 IPS pumped outlet treatment plant. The preliminary hydraulic design below is based on the information presently available and is suitable for planning submission and plant / chamber coordination.

- **Infiltration Testing and Drainage Field Design**

Percolation testing was undertaken in accordance with the requirements of Approved Document H of the Building Regulations 2010 and BS 6297:2007+A1:2008 "Code of Practice for Drainage Fields for Use in Wastewater Treatment". The tests were carried out within representative trial excavations positioned in the proposed drainage field area.

Four individual test locations were excavated and tested, producing the following average infiltration times:

Test Excavation	Average Time (seconds)
Ex1	4020
Ex2	10140
Ex3	4260
Ex4	6900

The average recorded result across all excavations was 6,330 seconds, giving a calculated Vp value of 43 s/mm. The recorded Vp result falls within the acceptable range specified within Approved Document H for the use of a subsurface drainage field. The results indicate slowly permeable clay soils, however the infiltration characteristics are considered suitable for a shallow gravity-fed drainage field arrangement subject to appropriate construction methodology.

Excavations were carried out to a depth of 2m to determine ground water depth levels. The excavations were completed at the end of March 2026 and excavations were left open for several days. No groundwater was identified in these trial excavations.

Based on the calculated Vp value and anticipated design loading, a minimum trench infiltration area of approximately 52 m² is required.

- **Proposed Drainage Field Construction**

Due to the clay subsoil conditions identified during testing, the drainage field shall be installed as a shallow system to maximise aeration within the upper soil horizons and improve long-term performance.

The drainage field shall be constructed generally as follows:

- Minimum total infiltration area: **52 m²**
- Distribution pipework: perforated 110 mm diameter pipe laid level
- Pipe bedding and surround: **40 mm clean washed angular stone**
- Minimum stone depth below pipe invert: 300 mm
- Minimum stone cover above pipe crown: 50 mm
- Geotextile separation membrane installed above stone layer
- Minimum soil cover above geotextile: **200 mm**
- Trenches to be installed parallel and level throughout

- Maximum trench length: 30 m
- Minimum trench spacing: 1m centre-to-centre
- Drainage field invert depth to remain shallow to maintain operation within the more permeable upper soil layer

- **Recommended Layout**

A suitable arrangement would comprise multiple shallow trenches to provide the required 52 m² infiltration area.

The proposed configuration shall comprise:

- **3 no. shallow infiltration trenches**
- Trench width: **900 mm effective infiltration width**

Final trench arrangement should be confirmed on site to suit topography, available land area, and statutory separation distances.

- **Installation Requirements**

The drainage field shall be installed in accordance with:

- Approved Document H of the Building Regulations
- BS 6297:2007+A1:2008
- Manufacturer's recommendations for the treatment plant

The following minimum separation distances shall be maintained:

- 10 m from watercourses
- 15 m from buildings
- 50 m from potable water sources
- Outside vehicle trafficking areas
- Away from trees and deep-rooting vegetation

No surface water or land drainage shall discharge into the foul drainage field system.

The drainage field shall only be installed during suitable dry ground conditions to prevent smearing and compaction of trench sidewalls and bases.

7. Management and Maintenance

It is proposed that the owner of the property will take responsibility for the operation, maintenance and ongoing performance of the foul drainage infrastructure, including the sewage treatment plant, discharge pump and infiltration field.

Routine maintenance will be undertaken in accordance with the manufacturer's recommendations for both the sewage treatment plant and associated pumping equipment. This will include:

- Regular inspection of the treatment plant and blower operation
- Scheduled desludging at appropriate intervals
- Periodic servicing of pumps, floats and control systems
- Inspection and maintenance of the rising main and outfall structure

The sewage treatment plant will be located within 30 metres of an accessible route to allow tanker access for desludging and maintenance operations.

The electrical control panel, telemetry (if provided), and high-level alarm system will be installed in an accessible location within the development. This will allow safe isolation, routine inspection, and rapid response in the event of alarm conditions.

The proposed arrangement ensures that the foul drainage system can be safely operated, maintained and managed over the long term, minimising environmental risk and ensuring continued compliance with the General Binding Rules.

8. Drawing notes to match the report

- Provide Clearwater Bioair CW2 pumped sewage treatment plant, installed in accordance with manufacturer's instructions and EN 12566-3 certification.
- Treatment plant to receive gravity foul drainage from 1 No. 4-bedroom dwellings; design basis 6 PE nominal,
- Plant location / pump station location: 51.324623, -2.061010

- All treated effluent to discharge to ground via formal infiltration field designed in accordance with above standards.
- Final levels, pump selection, valve arrangement and outfall detail to be confirmed at detailed design stage prior to installation.

9. Conclusion

The foul drainage strategy for Development @ Seend Farm remains suitable for planning submission and is strengthened by the confirmation of the preferred plant and pumping arrangement. The Clearwater BioAir CW2 IPS pumped plant is appropriately sized for the development, offers compliant treatment performance for a small watercourse discharge, and can be paired with a separate packaged pump chamber for a simpler and more maintainable overall system.

This report should be read as a planning-stage drainage strategy. Final construction design should confirm finished levels, chamber geometry, valve losses, outfall level, and the selected pump curve prior to installation.

Source note

Manufacturer data and published performance for the Clearwater BioAir CW2 IPS have informed the plant selection and dimensional references used in this report. Final installed dimensions and ancillary details should be confirmed against the supplier's current issue drawings before construction

