Title: Wern Farm, Porthaethwy

Subject: Foul Water Drainage Options

Reference: ECL.9290.R05.003 Rev - **Date:** 19.12.2022

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1. Introduction

1.1 This Technical Note has been prepared in support of the development proposals at Wern Farm for 55 static holiday caravans and chalets.

1.2 A pre-application consultation exercise has been undertaken by ERW Consulting. Comments have been received from Natural Resources Wales (NRW) (letter reference CAS-199150-L7Q6) expressing concern that the private treatment plant proposed for foul drainage has not been considered against the theoretical alternative of requisitioning a public sewer.

1.3 This Note presents a comparison of technical and cost factors which have been considered in the development of the preferred solution.

2. Foul Water Drainage Options

2.1 It is noted that the typical preferred hierarchy of discharge solutions would be:

1. Connection to public sewer
2. Treatment system discharging to soakaway
3. Treatment system discharging to watercourse

Each of the above options are considered below.

Connection to a Public Sewer

2.2 The closest public sewer is approximately 1.25km in a straight line. However, this route crosses third party land and also cuts through areas of woodland. A more feasible route which reduces impact on third party land and avoids sensitive areas is approximately 1.5km.

2.3 A high level costing exercise has been undertaken and it is estimated that the works value would be in the order of £450,000-£500,000 (excluding legal costs, design fees and any third party compensation which may be required). The basic assumptions used in formulating this cost estimate are:

- 1.5km of pipework or rising main (likely to be a mixture to suit topography)
- Provision of a pumping station on site
- Allowance of 25% prelims and 10% risk

Treatment System Discharging to Soakaway

2.4 A series of soakaway tests were undertaken on site in summer 2022. All of the trial holes that were dug showed that the ground composition is topsoil overlying variable deposits of till comprising a clayey gravelly sand or a gravelly sandy clay. The soakaway tests failed to achieve sufficient soakage to allow calculation of an infiltration rate. Based on the results obtained, the superficial deposits encountered beneath the site are not suitable for infiltration via soakaways.

Treatment System Discharging to Watercourse

2.5 A watercourse is located approximately 50m north of the northern boundary of the site, and approximately 80m from a suitable location for an on-site treatment plant. A high level cost estimate has been prepared for the treatment system and pipe connection, via a headwall, into the watercourse of £100,000 (excluding legal and discharge consent costs, and design fees). It is noted that the outfall into the watercourse would be shared with the surface water discharging from the site.

3. Watercourse Characteristics

3.1 No flow data is available for the watercourse, but it is understood that it has a constant flow through the summer months, regardless of weather conditions.

4. Conclusion

4.1 Three options for dealing with the foul water produced by the proposed development site have been considered.

4.2 The option of connecting to a public foul water sewer is considered to be unviable at an anticipated cost of approximately £0.5m.

4.3 The option of discharging to soakaway, via a private treatment plant, is considered to be unviable due to extremely low infiltration rates in the underlying soils.

4.4 It is proposed to discharge, via a private treatment plant, to the nearby watercourse as the sole viable solution.