Nutrient Neutrality Assessment and Mitigation Strategy (NNAMS)

Land at Park Lane Court, Parkside Rossett

Reference: 2500117-ENV-S1-OT-TR-E-0001

Date: 19/11/2025

Enviren

DOCUMENT PRODUCTION RECORD	
AUTHOR:	Noah Ferrison MEng
REVIEWED BY:	Barney Townsend BEng
COMPANY DETAILS:	Enviren Ltd, Programme, The Pithay, Bristol, BS1 2NB
ISSUED TO:	DAG FURBS TRUST
REPORT REFENCE:	2500117-ENV-S1-OT-TR-E-0001
DOCUMENT STATUS:	First Issue

DOCUMENT REVISION RECORD			
Issue	**Date**	**Author**	**Revision Details**
1.1	19/11/2024	Noah Ferrison MEng	First Issue

Confidentiality and Reproduction Restrictions

This report is not issued to and cannot be relied upon by any other business, person or entity for any other grounds without the prior permission of Enviren Ltd. Enviren Ltd will not accept liability or responsibility for the use of this report or its findings (permitted or not) except for the aforementioned project, being the reason it was initially drafted and compiled. In the production of this report, Enviren Ltd relied upon information obtained and provided by others. The accuracy and completeness of this information cannot be guaranteed by Enviren Ltd; however all reasonable measures have been implemented to ensure that the data/information is accurate and that the observations made regarding the information are precise. This being said, Enviren Ltd cannot be made liable for any omissions or errors or for any losses/consequential losses following decisions made based on this report's findings.

Executive Summary

This report has been compiled for the support of the development of three glamping pods off land at Park Lane Court, Parkside Rossett (Grid reference: SJ 38005 55347). The proposals are for three glamping pods along with associated ancillaries.

This report demonstrates that the development will achieve Nutrient Neutrality through the introduction of a Package Treatment Plant (PTP) built in accordance with Natural Resources Wales (NRW) guidance.

Contents

Executive Summary 3
1. Introduction 5
Table 1.1 – Site Specific Information 5
2. Local Context to Nutrient Neutrality 6
3. Background Information 7
Site Location 7
Figure 3.1 – Site Location 7
Outline Site Hydrology 7
Figure 3.2 – SCALGO Topographic Data – Site Hydrology 8
Figure 3.3 – Hydrological Catchment Plan 9
Existing Site Description 9
Figure 3.4 – Aerial Reconnaissance Photography 10
4. Development Proposals 11
Proposed Controls 11
Figure 4.1: Protected Site Proximity 12
Table 4.1 – Compliance with the NRW Guidance 13
Figure 4.2 – Drainage Mound Arrangement. 14
5. Conclusion 15
Appendix 1 Site Plan 16
Appendix 2 Review of Welsh Government Circular 008/2018- Assessment of Private Drainage Proposals 17
Table A3.1 – Assessment of Private Drainage Proposals 17
Appendix 3 Indicative Drainage Layout 19
Appendix 4 GRAF One2Clean Performance Certificate 20
Appendix 5 GRAF One2Clean Logbook 21
ISO 19650 Filing Notation 22

1. Introduction

1.1. This report has been compiled for the support of the development of three glamping pods off land at Park Lane Court, Parkside Rossett (Grid reference: SJ 38005 55347). The proposals are for three glamping pods along with associated ancillaries.

1.2. The existing site currently consists of grazing land. The creation of the new glamping pods would result in an increase in nitrogen and phosphorus discharging into the surrounding water network due to foul water and surface water discharge from the proposed glamping pods; however, through the introduction of a Package Treatment Plant (PTP) and drainage mound, built in accordance with Natural Resources Wales (NRW) guidance, the development will achieve nutrient neutrality.

Table 1.1 – Site Specific Information

Category	Site Specific Information
Site Name	Land at Park Lane Court, Parkside Rossett
Site Location	Parkside Rosset, Wrexham
Local Authority	wrexham COUNTY BOROUGH COUNCIL CYNGOR BWRDEISTREF SIROL wrecsam
Overall Site Area	0.151 hectares
Nutrient(s) Considered	Phosphorus and Nitrogen
Catchment (Surface Water)	River Dee
Catchment (Foul Water)	River Dee

2. Local Context to Nutrient Neutrality

2.1. Following the Court of Justice of the European Union (CJEU) ruling known as the 'Dutch Case', mitigation to achieve nutrient neutrality is required for new developments that would otherwise contribute significant additional nutrient loads to a European designated site (hereafter, European site) that is close to, or in, an unfavourable condition due to nutrient pollution.

2.2. Within Wrexham County Borough, the River Dee and Bala Lake Special Area of Conservation (SAC) is the key European site affected by excessive nutrient loading, specifically elevated concentrations of phosphates. Natural Resources Wales (NRW) has identified new, tighter phosphate targets for the River Dee SAC. Monitoring data has confirmed that parts of the River Dee catchment, including those within Wrexham County Borough, are currently failing to meet these revised targets.

2.3. The additional nutrient load from an increase in wastewater, or changes in land use associated with new development, can create an impact pathway leading to potential adverse effects on the River Dee and its tributaries. The main pathway arises where wastewater or surface water generated by a development ultimately discharges to a watercourse within the River Dee SAC catchment, thereby contributing to increased phosphate concentrations.

2.4. Habitats Regulations Assessments (HRAs) of new development proposals within the River Dee catchment must therefore consider whether the increase in nutrient loading will result in Likely Significant Effects (LSE) on the SAC. Where LSE cannot be ruled out, an Appropriate Assessment will be required to determine whether the proposal would have an adverse effect on the integrity of the SAC and, if so, whether mitigation is needed to achieve nutrient neutrality.

2.5. The first step in this process is to understand whether the proposed development will generate additional nutrient loading and, if so, the scale of that loading on an annual basis, using the nutrient calculator being developed by Wrexham Borough Council.

2.6. The River Dee and Bala Lake SAC covers a substantial proportion of Wrexham County Borough, and many areas proposed for development in the Local Development Plan (LDP) fall within its catchment. Consequently, residential and other forms of development that increase wastewater generation or contribute to diffuse nutrient pollution (for example, from agricultural or tourism uses) will need to demonstrate that they do not lead to further phosphate loading within the SAC.

2.7. Until appropriate mitigation solutions and guidance are fully established, Wrexham County Borough Council may be unable to determine certain planning applications where potential adverse effects from phosphate loading cannot be ruled out. The Council continues to liaise with Natural Resources Wales and the Welsh Government to develop a consistent approach and deliver practical solutions for achieving nutrient neutrality within the River Dee catchment.

3. Background Information

Site Location

3.1. The site is located on the east of Park Lane Court. The application site is located 2.410 kilometres southeast of Marford and 3.220 kilometres northwest of Holt. The exact location can be found in **Figure 3.1**:

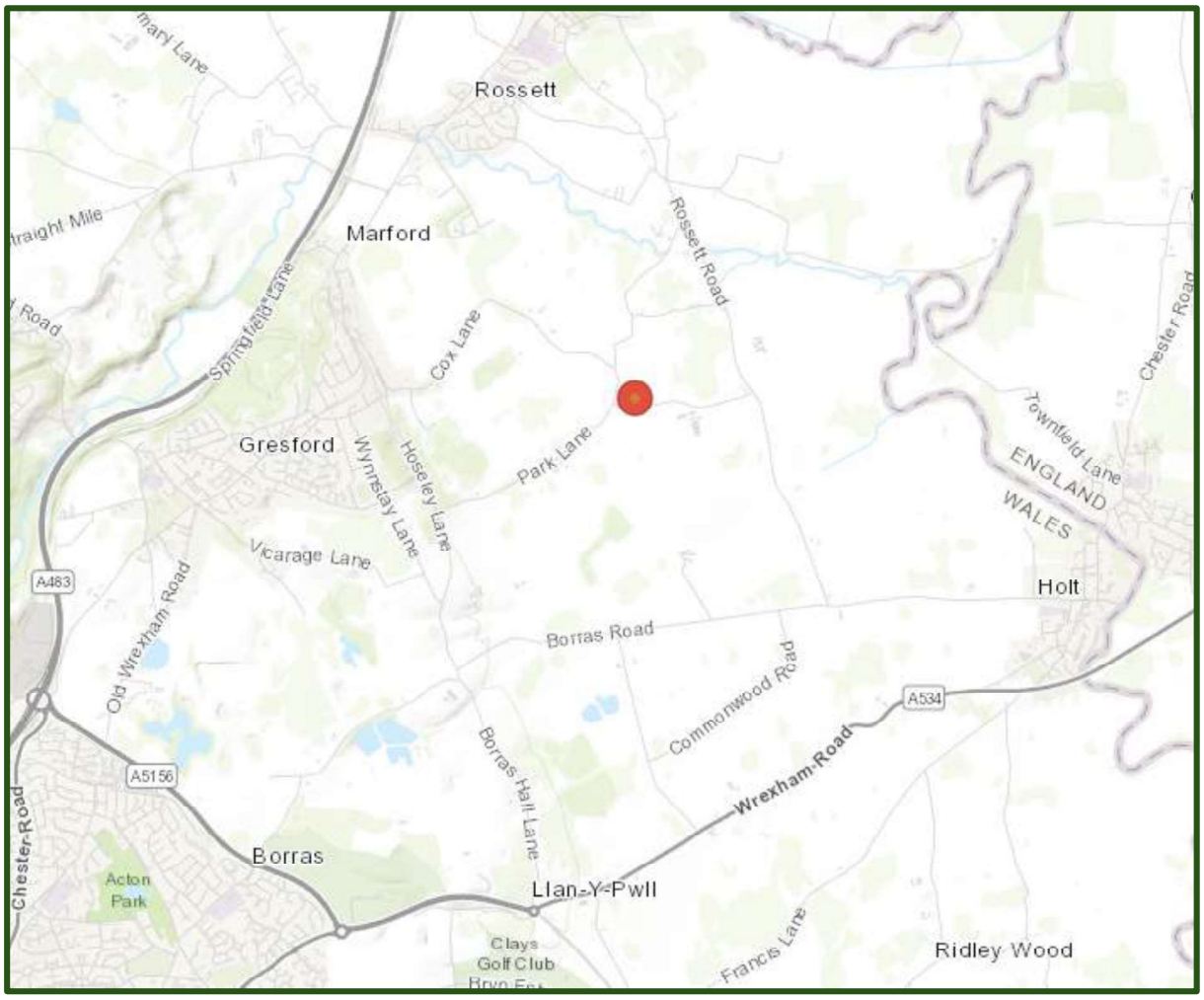


Figure 3.1 – Site Location

Outline Site Hydrology

3.2. Interrogation of local topographical information around the development parcel identifies that a watercourse runs to the west of the development. This watercourse runs east and ultimately discharges into the River Dee.

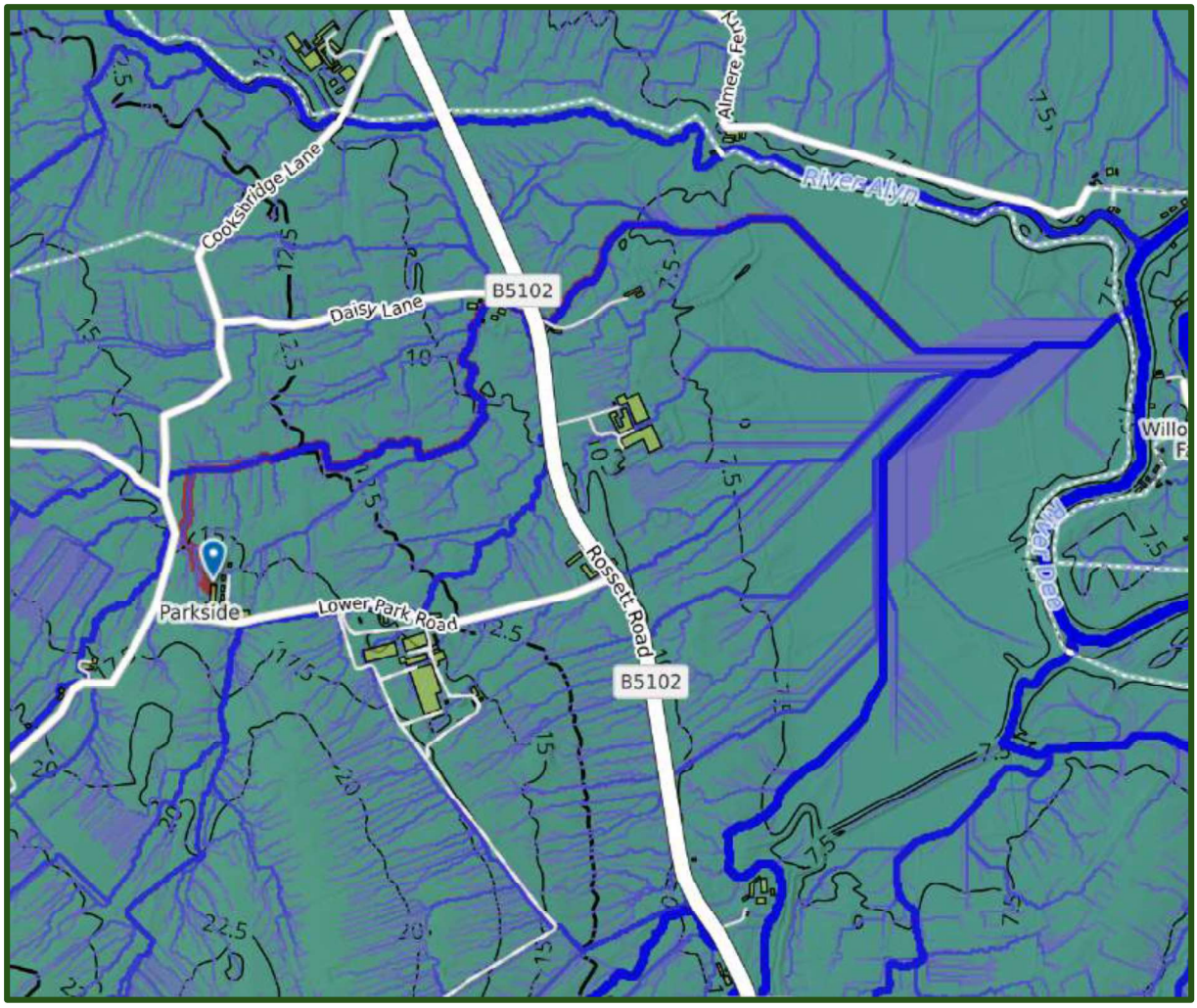


Figure 3.2 – SCALGO Topographic Data – Site Hydrology

3.3. The development sits within the hydrological catchment of the River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC as indicated in **Figure 3.3**.

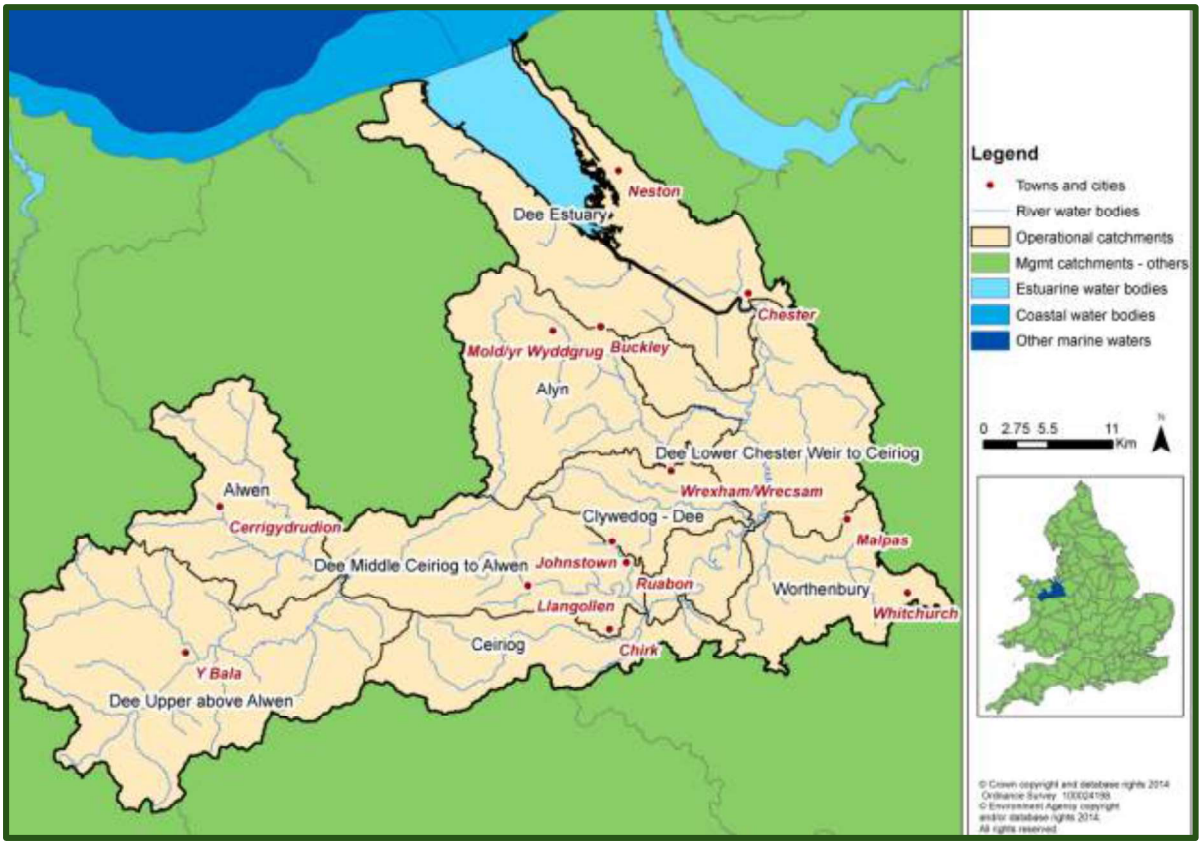


Figure 3.3 – Hydrological Catchment Plan

Existing Site Description

3.4. The area to be developed currently constitutes grazing land. The site is approximately 0.151 hectares in size when considering the areas in the site plan (see **Appendix 1**). The site parcel is bordered to the west by Park Lane Court Road, and grazing land on all other sides.



Figure 3.4 – Aerial Reconnaissance Photography

4. Development Proposals

4.1. The development is to consist of three glamping pods with associated infrastructure.

4.2. The foul water drainage from the proposed glamping pods shall discharge to the west, firstly to a Package Treatment Plant (PTP) located a minimum of 7m away from the proposed glamping pods, beyond this chamber a Drainage Mound (DM) shall be installed which allows liquid effluent to discharge to ground (see **Appendix 3**).

4.3. The drainage mound shall be sized to accept the flows of the proposed glamping pods, ensuring that the treated effluent dissipates and does not cause pollution to the underlying groundwater or nearby watercourses.

Proposed Controls

4.4. The applicant shall install a NRW compliant Package Treatment Plant serving the proposed glamping pods which shall be connected to a drainage mound. To ensure that the proposed treatment train will work effectively and will not cause Diffuse Water Pollution (DWP) in the downstream water network the development must comply with the guidance issued by Natural Resources Wales (NRW).

4.5. The document states that private sewage treatment systems discharging domestic wastewater to ground can be screened out as not likely to have a significant effect on a river SAC in relation to nutrient inputs, as there is unlikely to be a source of additional nutrients or pathway for impacts, if the following can be achieved:

a) *The system is built to the relevant British Standard (BS 6297:2007+A1:2008) and has a maximum daily discharge rate of less than 2 cubic metres (m3);*
b) *Th drainage field is located more than 40m from any surface water feature such as a river, stream, ditch or drain;*
c) *The drainage field is located more than 50m from a SAC boundary;*
d) *The drainage field is located at least 50m from any other known discharge to ground.*

4.6. A detailed analysis of these points has been undertaken which proves that a drainage mound can be incorporated as part of the proposals in line with NRW Guidelines:

Proximity to the Designated Site Boundary

4.7. As can be shown in **Figure 4.1** the site sits within the Hydrological Catchment of the River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC and is surrounded by a number of SSSIs, however, it is far more than 50m from their boundary. On the basis of the above the arrangement complies.



Figure 4.1: Protected Site Proximity

Proximity to the Nearest Surface Water Feature

4.8. The nearest open watercourse/ditch sits approximately 61 m to the northwest of the drainage mound and therefore the drainage mound is more than 40 m away from this feature. On this basis a drainage mound (as presented in **Appendix 1**) complies.

Discharge to Ground proximity

4.9. Owing to the rurality of the development, it is likely there is no combined sewer. The dwellings to the west are known to discharge to the nearby watercourse and it is assumed the dwelling to the south discharges to ground. However, the drainage system of the dwelling to the south is likely further than 50m away from the proposed drainage mound.

Table 4.1 – Compliance with the NRW Guidance		
Interim Guidelines Criteria	**Description**	**Compliance**
Discharge volume	The discharge volume is less than 2m3/day.	☑
Proximity to Designated Site Boundary	The arrangement is more than 50m away from the edge of the nearest Protected Site.	☑
Proximity to the nearest Surface Water Feature	The nearest open watercourse is over 40m away.	☑
Discharge to Ground Proximity	The discharge from the adjacent dwellings will not cause in-combination effects with the drainage mound for the glamping pods.	☑

Package Treatment Plant Specification

4.10. The PTP to be installed ins a GRAF One2Clean, which is a BS EN 12566 compliant system (see **Appendix 4**).

Percolation Results

4.11. As percolation test results demonstrated unfavourable ground conditions, a drainage mound will be constructed using imported soils with a Vp value of 12.

Spatial Restrictions

4.12. Approved Document H places spatial requirements on the use of PTPs. The discharge from PTP is to be 10m away from any habitable parts of glamping pods. However, this drainage mound will be built 7m away from the glamping pods, according to BS6297, following confirmation from Building Control. They should be located within 30m of vehicle access if they are to be emptied by a tanker with a clear access for the suction hose without passing through the glamping pods. PTP should have adequate capacity for the population equivalent that they serve. The secondary treatment measures also have their own spatial restrictions.

4.13. Drainage Mounds are a network of perforated pipes arranged in a continuous loop in a similar manner to a Drainage Field. The difference being that the Drainage Mound is above ground level and the level between the underside of the pipes and the underlying ground is made up with washed gravel and filter sand, this comprises a 200mm thick layer of 10-20mm sized granular material and at least 700mm of 2mm sized coarse filter sand. Drainage Mounds should be designed so that there is aerobic contact between the liquid and the filter material to ensure that biodegradation can take place. The pipes should be laid at a nominal grade of circa 1:200 and have at least 2m of undisturbed ground between each perforated pipe (see **Figure 4.2**).

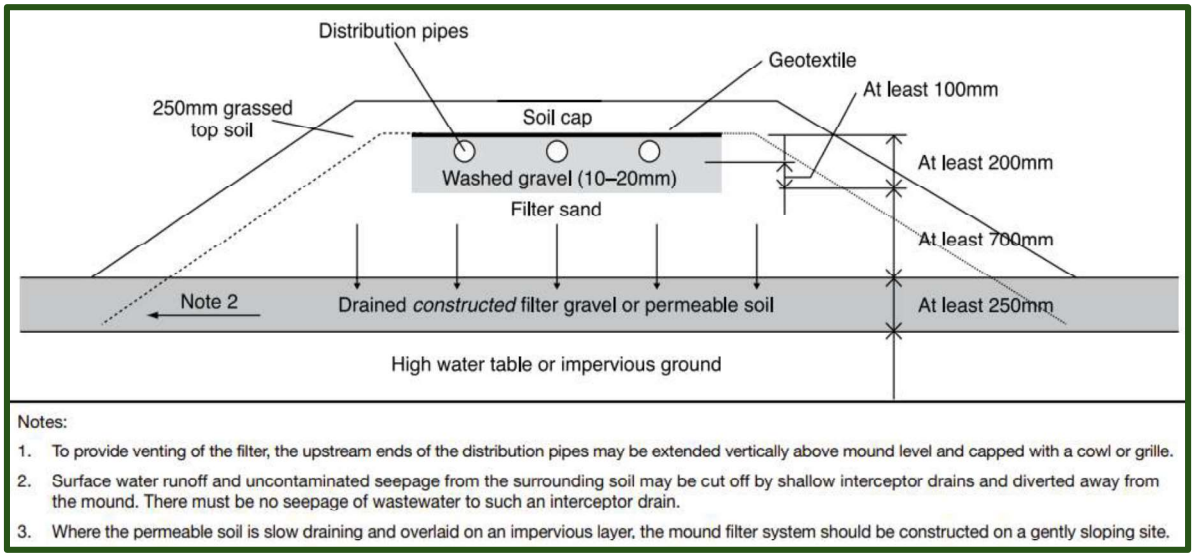


Figure 4.2 – Drainage Mound Arrangement.

4.14. Drainage Mounds must be constructed at least 10m away from any watercourse or permeable drain, this includes soakaways. Drainage Mounds must be constructed 50m from any groundwater abstraction point and not located in a Source Protection Zone. They should be constructed 7m away from any building according to BS 6297, however, this will need to be confirmed with building control. Drainage Mounds should be constructed sufficiently far from any soakaway or other drainage field/mound to ensure that the soakage of the ground isn't exceeded. Providing all of these conditions are met Drainage Mounds may be considered as part of on-site mitigation methods. The Drainage Mound should be sized in accordance with Paragraph 1.44 of Approved Document H and the average Vp value as described below:

$$A_t = p \times 12 \times 0.20$$
$$A_t = 12 \times 12 \times 0.20$$
$$A_t = 28.8\ m^2$$

Where:

A_t = The Area of the Drainage Mound required.

p = The number of people to be served by the Drainage Mound (conservatively assumed as 12, based on *British water flows and loads*)

V_p = The Percolation Value (s/mm), soils with a Vp of 12 shall be used.

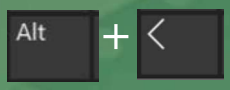
4.15. The Drainage Mound therefore should be at least 28.8 m^2 in footprint area, however it should be sized as per the minimum requirements of BR478. On the basis of this analysis; on-site mitigation options are an appropriate form of sewage disposal (see **Appendix 3**).

5. Conclusion

5.1. As can be seen in this report, the phosphorus and nitrogen arisings associated with the development have been extensively considered, along with off-site and on-site mitigation methods. The applicant shall install a Package Treatment Plant in accordance with Natural Resources Wales (NRW) guidance. The applicant shall achieve Nutrient Neutrality through the proposals; therefore nutrient arisings should not prevent planning permission being granted.

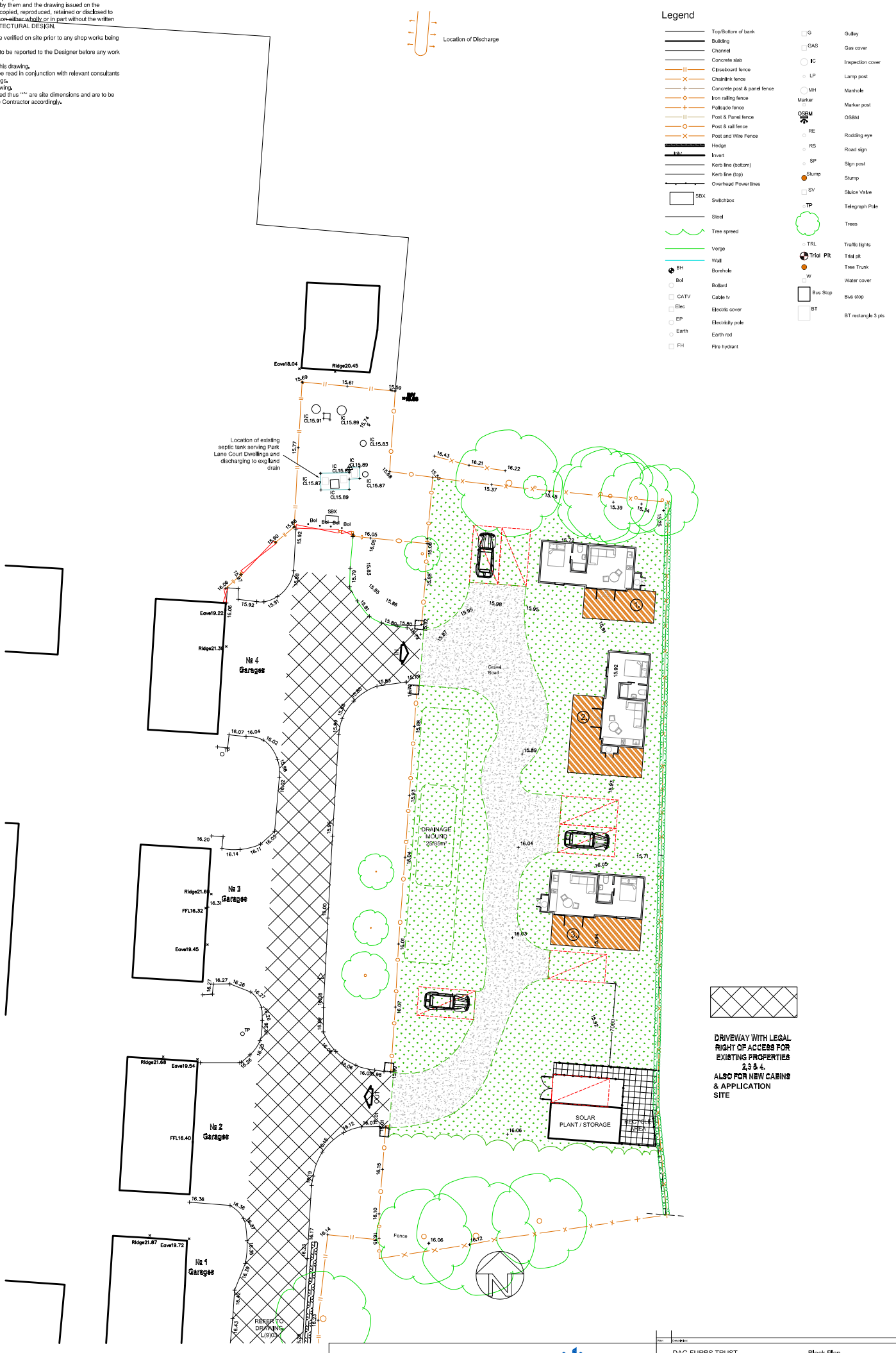
Appendix 1
Site Plan

For convenience – press "Alt + Left Arrow" to return to the section of the report



This drawing is the property of CB ARCHITECTURAL DESIGN. Copyright is reserved by them and the drawing issued on the condition that it is not copied, reproduced, retained or disclosed to any unauthorised person either wholly or in part without the written consent of CB ARCHITECTURAL DESIGN.

1. All dimensions to be verified on site prior to any shop works being commenced.
2. Any discrepencies to be reported to the Designer before any work is put in hand.
3. Do not scale from this drawing.
4. This drawing is to be read in conjunction with relevant consultants and specialists drawings.
5. This is a metric drawing.
6. Dimensions indicated thus "*" are site dimensions and are to be adjusted onsite by the Contractor accordingly.



T: 07833 029535
E: info@cbarchitecturaldesign.co.uk
W: www.cbarchitecturaldesign.co.uk
Architectural Design

Client: DAG FURBS TRUST
Drawing title: Block Plan AS PROPOSED
Project: Glamping Pods at Land Adj. Park Lane Court Rossett LL12 0BQ
Scale: 1:200 Drawn: C.B. Chkd: C.B. Date: 17/09/25
Drawing No.: 894/L(9)01 Revision: -

0 10 20 50mm NATURAL SCALE

ORIGINAL DRAWING SIZE 594 x 420 (A2)

Appendix 2
Review of Welsh Government Circular 008/2018- Assessment of Private Drainage Proposals

For convenience – press "Alt + Left Arrow" to return to the section of the report

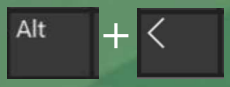


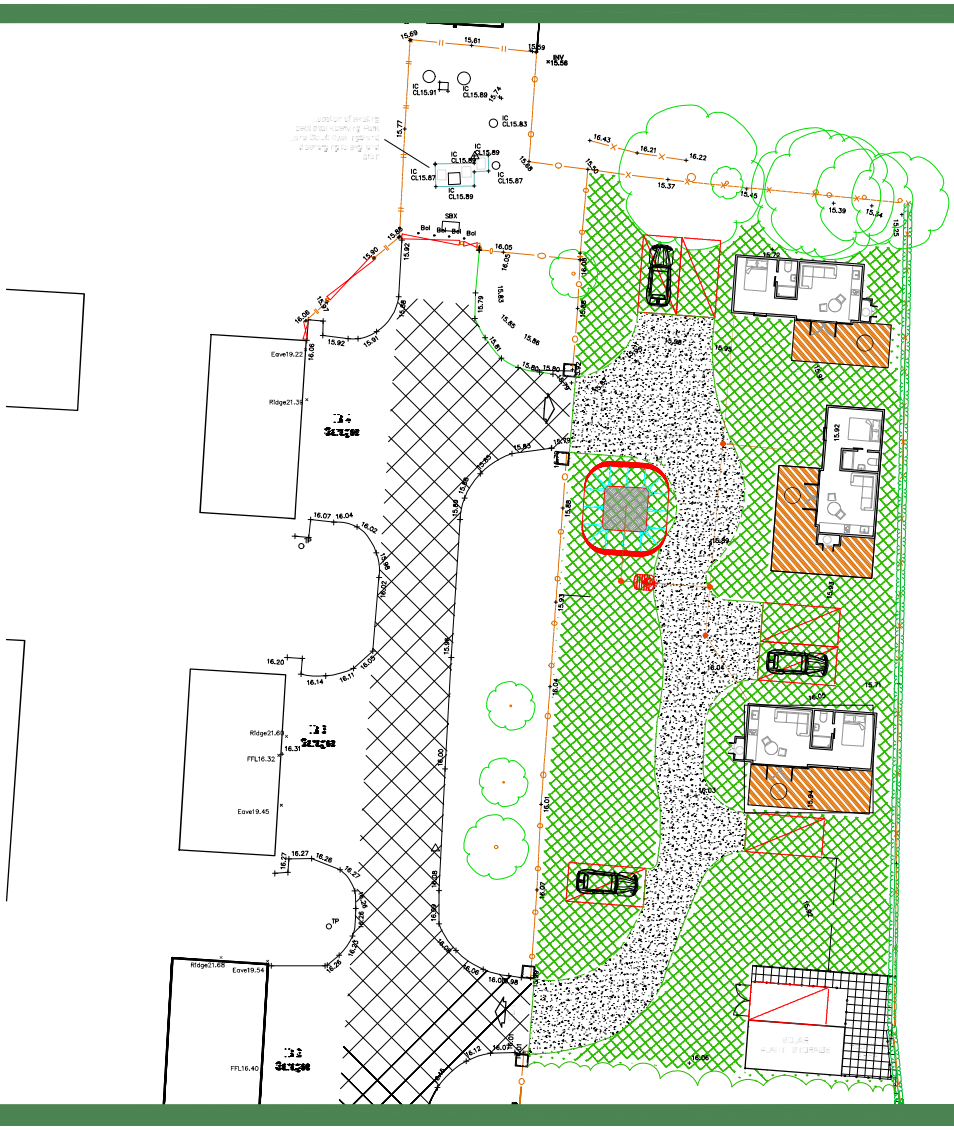
Table A3.1 – Assessment of Private Drainage Proposals			
Factor	**Description**	**Compliance**	**Justification**
Factor A	**Contravention of recognised practices**	✓	No evidence to show the proposed arrangements are likely to prejudice, contravene or breach any statute, Regulation, Directive, Code of Practice, Byelaw, water quality objective or any other authoritative standard (such as British Standards, Groundwater protection position statements research papers/reports with proven conclusions).
Factor B	**Adverse effect on water sources/resources**	✓	Discharge will be to ground.
Factor C	**Health hazard or nuisance**	✓	No evidence which indicates the proposed arrangements and the associated effluent disposal system is likely to lead to a risk to public health or cause a nuisance
Factor D	**Damage to controlled waters**	✓	No evidence which indicates the proposed arrangements may result in the entry of any poisonous, noxious or polluting matter or any solid waste matter into

			any controlled waters, including ground waters.
Factor E	**Damage to the environment and amenity**	✓	No evidence that the proposed arrangements are likely to lead to raw or partially treated sewage entering into receiving waters, to such an extent as to damage or undermine the environment and amenity value of the locality or any other area, particularly if it is of special significance such as a Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) or public open space.
Factor F	**Overloading the existing capacity of the area**	✓	The discharge is to ground with likely acceptable Vp levels and therefore shall not result in ponding, sewage flooding, pollution or nuisance.
Factor G	**Absence of suitable outlets**	✓	The identified ground is satisfactory.
Factor H	**Unsuitable soakage characteristics**	✓	Soakage characteristics are likely suitable.
Factor I	**High water table**	✓	The drainage mound will be constructed to be at least 2m above this.
Factor J	**Rising ground water levels**	✓	No evidence of rising ground water levels.
Factor K	**Flooding**	✓	The proposed treatment train is not within area subject to flooding.
Factor L	**Maintenance plan**	✓	The system shall be maintained as per the fabricator's instructions.

Appendix 3
Indicative Drainage Layout

For convenience – press "Alt + Left Arrow" to return to the section of the report





All dimensions are to be checked on site prior to manufacture of prefabricated items. Any discrepancy or query to be reported to the Architect before associated work proceeds. All work to be carried out in accordance with the relevant requirements of the Building Regulations, the conditions, limitations requirements and practice recommendations and practice specifications. The drawing must be read in conjunction with the relevant up to date associated specifications, drawings (civil and structural) and documentation by others.

General Notes

1. The drawing is for planning purposes only, and cannot be relied upon as construction information. Detailed levels information will be required for construction drawings.
2. All building levels will vary and will need further investigation. Site and floor levels shown on the layout are indicative and act as a minimum level in relation to adjacent site levels.
3. All installed pipework and drainage infrastructure must be installed inline with the relevant Approved Document and British Standard to the satisfactions of the Building Control Officer and any other relevant inspector.

Key

- Proposed Foul Water Sewer
- Proposed 450mm Plastic Inspection Chamber
- Proposed Package Treatment Plant
- Proposed Drainage Mound

Amendments/Revisions Log

0001	Indicative Drainage Layout
0002	Drainage Mound Detailing

P1	First Issue	21.11.2025	CC
Rev	Description	Date	Drn

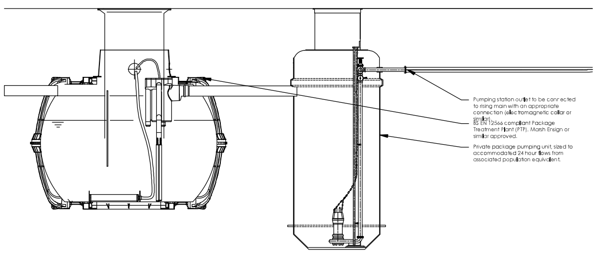
Enviren

Land at Park Lane Court, Parkside Rossett

Indicative Drainage Layout

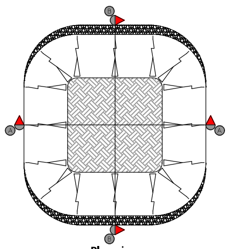
PLANNING	CC
Status	Drawn by
1:200	12.11.2025
Scale @ A1	Date
250011-ENV-ZZ-XX-DR-D-0001	1.1
Drawing No.	Revision No.

A1



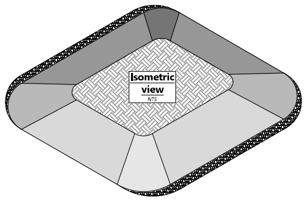
Tank Section

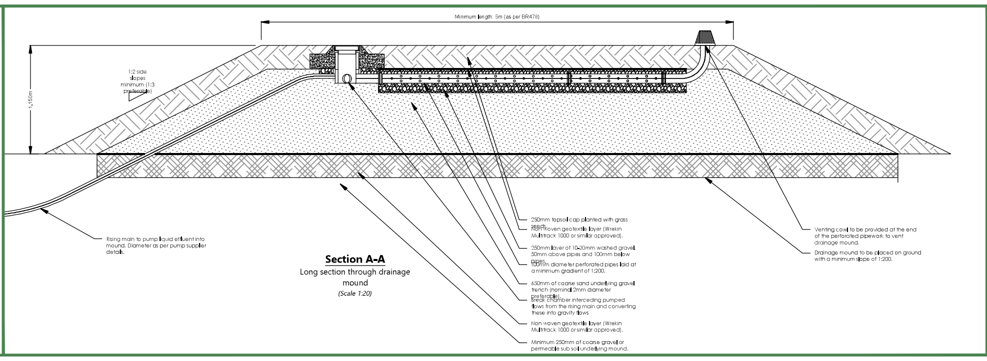
(Scale 1:20)



Plan view

Scale 1:100

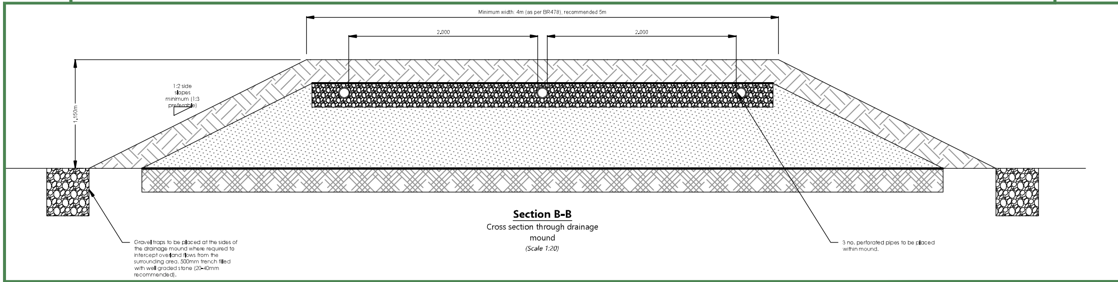




Section A-A

Long section through drainage mound

(Scale 1:20)



Section B-B

Cross section through drainage mound

(Scale 1:20)

A1

All dimensions are to be checked on site prior to manufacture of prefabricated items. Any discrepancy or query to be reported and clarified before associated work proceeds. All construction to be in accordance with relevant Trade and Professional Standards and Guidelines. Statutory requirements and product manufacturers' specifications. This drawing must be read in conjunction with the relevant up to date associated specifications, drawings issued and details

2025 Enviren Ltd ©

General Notes

1. Detailed levels information will be required for construction information.
2. All installed pipework and drainage infrastructure must be installed inline with the relevant Approved Document and British Standard to the satisfaction of the Building Control Officer and any other relevant inspector.
3. This drawing should be read in conjunction with Approved Document H of the Building Regulations, BS 6297 as well as BRE BR478.
4. All works should be undertaken by suitably qualified staff in accordance with the CDM Regulations 2015.

Drawing Reference Table

Drainage Mound Sizing Calculations (Basal Area)

The area of the base of the drainage mound should be a minimum area as outlined below. The equation for the calculation of this area has been based on Equation 2 of BRE BR478, relating to the use of a Package Treatment Plant. The equation reads:

$$A_d = P \times V_f \times 0.20$$

Where:
A_d = The basal area of the drainage mound.
P = The number of persons served by the drainage mound.
V_f = The percolation value of the native soil.

For the purposes of this calculation, the values to be used to size the drainage mound are:

P = 12
V_f =12

$$A_d = 12 \times 12 \times 0.20$$

$$A_d = 28.8\ m^2$$

The area of the base of the drainage mound should therefore be a minimum of 28.8 m^2. The minimum dimensions advised by BR478 shall therefore be sufficient to dissipate the expected flows from the property.

REV.	REVISION DETAILS	DATE	INITIAL
1.1	First Issue.	11.11.2025	CG

Enviren

Land at Park Lane Court, Parkside Rossett

Drainage Mound Construction Detailing

CONSTRUCTION	CG (Drawn by)
As Shown (Drawing Scale)	11/11/2025 (First issued)
2500117-ENV-S1-OT-TR-E-0002	1.1 (Revision Letter)

Appendix 4
GRAF One2Clean Performance Certificate

For convenience – press "Alt + Left Arrow" to return to the section of the report



Prüfinstitut für Abwassertechnik GmbH

PERFORMANCE RESULTS

Otto Graf GmbH
Carl-Zeiss-Str. 2 - 6, 79331 Teningen, Germany

EN 12566-3
Small wastewater treatment systems for up to 50 PT

Small wastewater treatment system one2clean
SBR plant in one two-zone polypropylene tank

Test report PIA2014-216B14.01.e

Nominal organic daily load*	0.27	kg/d
Nominal hydraulic daily load	0.75	m³/d
Material	polypropylene	

Treatment efficiency (nominal sequences)

	Efficiency	Effluent
COD	94.2 %	43 mg/l
BOD_5	98.0 %	7 mg/l
SS	96.3 %	14 mg/l
NH_4-N**	98.3 %	0.5 mg/l
N_{tot}**	87.0 %	7.9 mg/l
P_{tot}	80.2 %	1.6 mg/l

Electrical consumption	0.63	kWh/d

**at a test influent of ≥ 300 mg/l BOD_5 (mean)*
***determined for temperatures ≥ 12°C in the bioreactor*

Performance tested by:

PIA – Prüfinstitut für Abwassertechnik GmbH
(PIA GmbH)
Hergenrather Weg 30
52074 Aachen, Germany

This document replaces neither the declaration of performance nor the CE marking.

Notified Body No.: 1739

Certified according to ISO 9001:2008

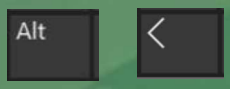
DAkkS Deutsche Akkreditierungsstelle D-PL-17712-01-00

[redacted]

Elmar Lancé November 2014

Appendix 5
GRAF One2Clean Logbook

For convenience – press "Alt + Left Arrow" to return to the section of the report



LOG BOOK

ONE2CLEAN TANKS

The drainage system from this property discharges to a wastewater treatment plant (or septic tank, as appropriate). The owner is legally responsible for routine maintenance and to ensure that the system complies with any discharge consent issued by the relevant authority for your area and that it does not present a health and safety hazard or a nuisance.

Graf UK recommend service and maintenance should be carried out at least once a year by a qualified engineer.

For further details contact Graf UK on 01608 661500.

Document No. Graf-0004 Rev. 1

One2Clean system

Benefits of the Graf system

- Extremely strong & robust injection moulded underground tank
- No concrete required, just gravel base and backfill
- Completely groundwater stable up to the centre line
- CE Certified system to EN 12566-3
- Market leading effluent quality of 5, 6, 0.4 guaranteed on a 95 percentile basis. SBR Technology
- Integrated sampling chamber at no extra cost
- No moving parts inside the tank, easy to install, easy to maintain.
- Plug in and play system, no wiring required
- 10 year warranty on the tank, 2 years on compressor and parts, German engineered
- Low energy consumption of just 75 kwh
- Silent operation
- Programmable holiday mode



Only substances with the characteristics of domestic wastewater should enter the systems. Substances which are not biocompatible or biodegradable must not enter the system because they can block the pipes, contaminate the wastewater or kill necessary bacteria.



The following are not permitted:

- Rainwater from roofs and yards
- Infiltration water (e.g. drainage water)
- Liquid or solid residue from keeping animals
- Commercial or agricultural wastewater, unless it is comparable to domestic wastewater
- Chemicals, pharmaceuticals, mineral oils, solvents
- Cooling water
- Solids in the form of food waste, plastics and hygiene articles, coffee filters, bottle tops and other domestic items
- Milk and milk products
- Water discharged from swimming pools
- Large volumes of blood

If discharging larger volumes of grease or plant-based oils, we would recommend pre-cleaning the wastewater containing the greases/oils in a grease separator upstream of the wastewater treatment system (caution: faeces must not be allowed to enter the grease separator!).



Please don't flush or pour

Ash
Chemicals
Disinfectants
Paints
Photochemical
Chip fat
Adhesive plaster
Cat litter
Cigarette butts
Condoms
Corks
Varnishes
Medicines
Engine oil
Waste containing oil
Plant protection agents
Paintbrush cleaners
Cleaning agents, except chlorine-free products (environmentally sound)
Razor blades
Pipe cleaners
Pesticides
Panty liners
Cooking oil
Food waste
Wallpaper paste
Textiles (e.g. nylon tights, cleaning cloths, handkerchiefs etc.)
Thinner
Bird sane, cat litter
Cotton buds
Toilet blocks
Nappies
Cement water

BIN IT DON'T FLUSH IT!

CE ONE2CLEAN

CE

Otto Graf GmbH, Carl-Zeiss-Str. 2-6, Germany

2014

EN 12566-3:2013-09

Packaged domestic wastewater treatment plant
for treatment of domestic wastewater

SBR-treatment one2clean for 3-18 inhabitants
Material: Polypropylene (PP)

Effectiveness of treatment		
Treatment efficiency ratios (at tested organis daily load BOD5=0,48 kg/d)	COD:	96,2%
	BOD5:	98,6%
	SS:	98,6%
Ammonia nitrogen	NH4-N:	99,0%
Total nitrogen	Ntot:	79,1%
Treatment capacity (nominal designation)		
Nominal organic daily load (BOD5)	0,06	kg/d*PE
Nominal hydraulic daily flow (QN)	0,15	m3/d*PE
Watertightness (water test)	passed	
Crushing resistance (pit test)	passed	
Durability	passed	
Reaction to fire	Class E	
Release of dangerous substances	NPD	

Valid for one2clean plants build in Carat underground tanks



It is essential that you observe the points described in these instructions. Failure to do so will invalidate all warranty claims. For all additional items ordered from GRAF, separate installation instructions will be provided in the transport packaging.

It is essential that you check the components for possible damage before installation.

Contents

1.	General Notes	6
2.	Function of the Wastewater Treatment System	7
3.	Start-up of the Control System	8
4.	Operation of the Control System	9
5.	Inspection and Maintenance	15
6.	Fault Messages and Troubleshooting	17
7.	Operating Notes	19
8.	EC Declaration of Conformity	21
9.	Declaration of Performance	22
10.	Technical Data of the Control System	23

1 GENERAL NOTES

Important tips for safe & long-lasting operation of the one2clean:

- The SBR system is designed for the treatment of all household sewage. The introduction of other wastewater, such as the wastewater from restaurants and/or business establishments, etc. is permitted if these were already known at the time of design of the system and were taken into account.
- Biocides, materials with a toxic effect or materials that are not biologically compatible must not enter the system, as these impede bacteria important for wastewater treatment and lead to biological process problems (detailed notes follow on the next pages).

It is imperative that you follow the operating and maintenance instructions for compliance with the regulatory requirements for cleaning. These instructions can be found on the following pages.

Furthermore, we ask that you carefully read and observe the following notes:

- The location of the control system for indoor installation must be a dry, well-ventilated room (basement or garage).
- If an outdoor control cabinet is used, this should be placed in as shaded place as possible to avoid overheating.
- At no time must the cabinet be covered, in particular its air vents, and that it is freely accessible for maintenance.
- There must be a permanent power supply to the one2clean. Ensure that the control cabinet is adequately fused (16 A) and the power supply is fitted with isolator switch for repair & maintenance. Additional electrical components & consumers should not be using the same fuse as they can could power failure and interfere with one2clean operation.

2 FUNCTION OF THE WASTEWATER TREATMENT SYSTEM

The one2clean small wastewater treatment system is fully biological and works according to the retention process with long-term aeration (sequencing batch reactor). The system is essentially made up of an aerobic stage. This stage is split into a rest area and an activation area. The chambers are connected to one another in the bottom section. During this process, therefore, all domestic sewage is immediately exposed to aerobic wastewater treatment. The entire system is aerated by compressed air being blown in and the sludge activated as a result of this biologically cleans the wastewater.

The coarse and floating solids contained in the wastewater are initially retained in the rest area by means of a baffle. The wastewater then passes through an overflow opening in the lower part of the container from the rest area into the activation area.

As the rest area is also aerated, the solids which remain behind are also degraded aerobically over time. Wastewater treatment is performed in the one2clean without pre-treatment, so that no anaerobic digestion processes can occur.

Operation of the treatment system is carried out via a microprocessor control system which controls the air compressor and air distribution.

The SBR process is a sequence of different steps that occur at set times in a sequence and takes place at least once a day.



Step 1: Aeration

The wastewater is subjected directly to aerobic treatment for a fixed amount of time. On the one hand the microorganisms (activated sludge) are supplied with the oxygen necessary for degradation; on the other hand mixing is achieved as a result of pressure aeration. The air diffuser of the system is supplied with ambient air by a compressor. The aeration is intermittent, so as to allow targeted wastewater treatment. Thus, different environmental conditions can be achieved.



Step 2: Settling

There is no aeration in the second phase. The activated sludge and the remaining settleable solids can now settle by gravity. A clear water zone is created at the top and a layer of mud forms at the bottom. Any floating sludge which might develop is located above the clear water zone.



Step 3: Clear Water Removal

The biologically treated wastewater (clear water) is extracted from the SBR stage. This is done by pumping compressed air according to the mammoth pump principle (air lift pump). The air lift is designed in such a way that no floating sludge which might develop is drained on the clear water layer. A minimum water level in the system is maintained without additional components.

After execution of the third Step, the cleaning process begins again with step 1.
Two cycles are performed per day. The individual adaptation of switching times is possible on the part of the maintenance company.

3 START-UP OF THE CONTROL SYSTEM

After the system is connected to the power supply, a short system test is run, during which time the LED light is red. The LED then becomes green when the start-up phase is completed.

During the system test, the notification “SYSTEM TEST ... OK”, the program version, and serial number of the control system appear for a short time. Following this, the current operating status of the system is displayed. After the system test is complete, the date and the current time should be checked and adjusted if necessary (see Section 4.2.3).

After checking the date/time, a functional check of the system components must be carried out. This check can only be carried out if the necessary air hoses are connected. The check should be carried out via the menu point “manual mode” in the control system, which is intended for this purpose. The individual parts of the system are tested for functionality. After a successful check, the system is reset to automatic mode.

CAUTION: The clear water siphon only functions when the containers are filled.
If the date and time are not set correctly, operating faults will be stored with the incorrect time information.

4 OPERATION OF THE CONTROL SYSTEM

The operation of the system is carried out via a microprocessor in the control unit. The microprocessor allows for the set-up of operating parameters, the display of operating conditions and the query of system parameters as well as the programming of working times through a specialist company.

Adjustments are made by scrolling through numerical values using the two arrow keys ▲ ▼. The settings are then confirmed by pressing the Set button.

The individual dialogues can be terminated ahead of time by pressing Esc or will be terminated automatically after **2 minutes**.

The control system is broken down into the following display pages:

4. Basic level: Status of the cycle sequence with the elapsing remaining time, as well as the display of error messages.

5. Operator level: The operator can access the operator level by pressing Set the button and enter operator- specific settings.

6. Service level: A password-protected service level can be accessed from the operator level using an additional code. This level is reserved for trained personnel. Here adjustments or changes can be made and diagnostic data is retrieved.



Figure 2: View of the operating unit

4.1 Control Programme

The control system switches the outputs for air compressors and stepper motors on a timer.
The timing is determined by the set sequence tables. A complete cleaning cycle is started for each start time in accordance with the selected sequence table.

By setting up holiday times in the operator level, the complete sequence of cleaning cycles can be suppressed for the set period of time. Only one holiday cycle with greatly reduced activity takes place at this time. During this time, no treated wastewater will be removed, as there should be no supply.

4 OPERATION OF THE CONTROL SYSTEM

4.1.1 Display of Operating Status

The operating status is indicated by the LEDs (green = operational / red = fault) and as text on the screen.
In normal operating mode (aeration mode), the display appears as follows:

Aeration Rest: 120:10min

In automatic mode, the liquid crystal display shows the current work phase and the remaining time left in this phase.

If a fault occurs, the red LED is turned on. A message indicating which component is faulty appears in the liquid crystal display (e.g. Fault Compressor o.oA).

4.1.2 The following work phases are displayed

Display	Process performed
Denitrification	Y3 valve (plug X1.1) is actuated intermittently; the activated sludge is brieflymixed with the wastewater. This is followed by long pauses (response times).
Ventilation	Y3 valve (plug X1.1) is actuated; the system is aerated in intervals over a long period of time.
Sedimentation phase	No valves are actuated, the activated sludge settles in the system.
Activity phase	Y4 valve (plug X1.2) is actuated; the clear water is pumped into the drain.
Cycle pause/holiday mode	Y3 valve (plug X1.1) is actuated; the system is aerated in intervals (considerably less than in the aeration phase).
Rest: XXX:XXmin	Display of remaining time.

Symbol	Key assignment	Function
	Enter key	Selection of operating mode, confirmation of entries
	Scroll	Display of operating modes and queries Programming of the system by entering figures
	Acknowledgement	Acknowledgement of entries without saving Acknowledgement of fault messages

4.2 Operating the Control System

You can start different queries from the automatic mode.

You can access the first operating level by pressing Set . You can now call up the individual queries using the arrow keys ▲ ▼ and then pressing Set :

Display	Meaning
Operating mode Remaining time	Remaining time in current work phase
Operating hours	Display of the operating hours of the valve and compressor
Manual operation	Manual control of the valve
Date Time	Current time, day and date. Can be set using Set
Holiday mode	Holiday mode set-up (max. 90 days)
Faults	Operational faults which occur are stored here and can be read. It is possible to switch between the error message and the corresponding date using Set and ↵
Settings	The current settings can be viewed using the arrow keys
Service menu	For qualified personnel

4.2.1 Operating Hours Query

Press the Set button. On the screen will appear:

Operting hours
meter reading

By pressing Set again, the operating hours for the valves and the compressor can be displayed in sequence using the arrow keys ▲ ▼ .

Pressing Esc once will take you back to the display “display operting hours”. You can access the “manual mode” menu by pressing ▲ .

→ **Note:** If you do not press any buttons for a period of 10 minutes, normal operation will begin automatically.

4 OPERATION OF THE CONTROL SYSTEM

4.2.2 Manual Control of the Valve using "Manual Operation"

During checks, each valve should run for at least 5 seconds, as the monitoring the current consumption of the valves takes some time before any faults are detected.

In automatic mode, first press Set then the arrow key ▲ until the following is displayed on the screen:

Manual operation

By pressing on the Set button again, you will receive the following message:

Aeration OFF

Pressing Set allows you to turn the selected programme on and off.

The other programs can be selected using the arrow keys ▲.

Pressing Esc once will take you back to the display "manual mode".

4.2.3 Set Date/Time

Press Set and then the arrow keys ▲ until the following is displayed on the screen (example):

19-12-2007 Mon 20:15:56

By pressing Set, the time and date can then be set using the arrow keys ▲ ▼.

To confirm the correction, you must press Set each time.

Pressing ▲ once will take you to the next display in holiday mode.

A correctly set system clock and date display is absolutely mandatory in order to record the hours of operation and so that any faults can be traced. There is no automatic change from summer to winter time.

NOTE: If you do not press any buttons for a period of 10 minutes, normal operation will begin automatically.

4.2.4 Setting-up Holiday Mode

NOTE: Holiday mode results in the reduced operation of the wastewater treatment system. It should only be applied when no wastewater is introduced into the wastewater treatment system during the selected time period. Wastewater that passes into the system during the holiday mode period will not be cleaned. Holiday mode is switched on and off automatically for the data you have entered.

Press Set, then press the arrow buttons ▲ ▼ until the following appears on the screen:

Vacation oper.

Press Set again to release the input of holiday dates:

Start: YYYY-MM-DD End: YYYY-MM-DD

Start of holiday:

The start of holiday mode is entered in the format YYYY-MM-DD by pressing ▲ ▼. To switch between the different settings, the Set button must be pressed in each case.

End of holiday:

As with for the start of the holiday, the end of holiday mode is entered in the year, month and day format YYYY-MM-DD by pressing ▲ ▼.

Press the Set button to save the input data for holiday mode and to exit this function.

Pressing Esc returns you to the automatic mode display.

NOTE: If you do not press any buttons for a period of 2 minutes, normal operation will begin automatically without the date that you have just entered being saved.

4 OPERATION OF THE CONTROL SYSTEM

4.2.5 Old Faults

The controll system stores all past fault messages and the operation of the control system via the “manual mode” function. Past fault messages with date and time can be read under the menu item “Old faults”. The individual messages can be accessed using the arrow keys. You can exit the menu item by pressing Esc .

Faults are indicated as encoding, in order of their appearance, starting with number 0 (latest signal).

Coding	Meaning
1	Power failure (system is currentless)
2	Net is back (system regains power)
3	Compressor has over-current
4	Compressor current supply too low
5	Manual operation

The faults number 2 (net is back) and number 5 (manual operation) are no faults. They will be registered for a better temporal localization of possibly occurring faults or rather monitoring of manual activities on the control system.

4.2.6 Display Settings

This menu item allows the current control system settings to be seen. It is not possible to change these settings. This menu item is used to analyse the settings without making changes. The individual settings can be called up using the arrow keys ▲ ▼. You can exit the menu item by pressing Esc .

4.2.7 Service Menu

Operating parameters can be changed in the service menu. Access is protected with a code. This second maintenance level is reserved exclusively for qualified specialist personnel only!

Any access to the control system settings by unauthorised persons will cause the warranty to expire!

5 INSPECTION AND MAINTENANCE

5.1 Obligations of the Operator

The system must always be turned on. The operator is obliged to ensure the fault-free operation of the system. Almost all operational faults lead to a deterioration of the system's cleaning performance. These should therefore be detected at an early stage and eliminated immediately by you or a qualified service technician.

5.1.1 Daily checks

The system should be checked daily for correct operation. The system is operating correctly when the operating control is lit up green and no warning signal can be heard.

5.1.2 Monthly checks

- Visual inspection for any sludge output, turbidity or discoloration in the flow
- Check inflows and outflows for blockages (visual inspection)
- Read the operating hours counter on the air compressor (total operating hours), the ventilation (Y3 valve) and the clear water run-off (Y4 valve) and record in the operating log

5.2 Maintenance by a Specialist Company

Maintenance is carried out by a specialist company (experts) at least twice a year (approximately every 6 months). The time intervals and tasks specified by the local water authority in the consent permit under water laws also apply. For this purpose, the system owner must complete a maintenance contract with a qualified specialist.

- The following tasks should be carried out in relation to maintenance:
- Inspection of the log book with determination of the regular operation (target-actual comparison),
- Check the air filter of the air compressor,
- Maintenance of the air compressor according to the manufacturer's instructions,
- Functional check of the air compressor and stepper motors,
- Carry out general cleaning work, e.g. removal of deposits,
- Check for adequate ventilation,
- Examination of activation tank:
  – Oxygen concentration (O2/l › 2 mg), adjust the operating time of the compressor if necessary,
  – Sludge volume (‹ 900 ml/l),

If the sludge volume is greater than 900 ml/l, the sludge must be removed.

Maintenance tasks carried out, any damage detected or repairs made as well as other instances should be summarised by the maintenance company in a maintenance report.

5 INSPECTION AND MAINTENANCE

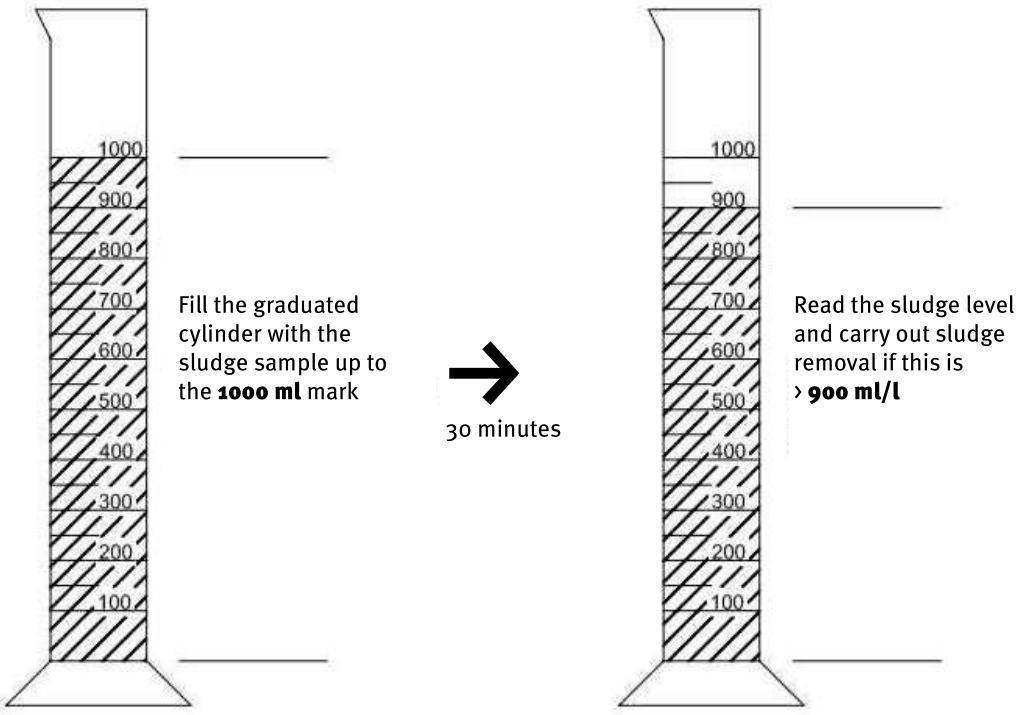
5.3 Determination of Sludge Removal

In order to determine the need for sludge removal in the wastewater treatment system, a settling test should be carried out at maintenance intervals. For this settling test, the SV30 is measured. The SV30 is the sludge volume occupied by 1000 ml of activated sludge after a settling period of 30 minutes. It is a measure of the amount of sludge present in the wastewater treatment system.

Measurement of the SV30 is carried out in a 1000 ml graduated cylinder.

The following points must be observed during this measurement:

A. Turn ventilation on - if not active - and allow to mix for a short time
B. Submerge the scoop into the tank and remove sludge sample
C. Fill the graduated cylinder with the sludge sample up to the 1000 ml mark
D. Let the cylinder containing the sample stand in a place free from vibrations for 30 minutes
E. Read the sludge level and carry out sludge removal if this is › 900 ml/l



5.4 Sludge Removal

Removing sludge from the wastewater treatment system should be carried out according to the following points:

F. Remove the cover
G. Remove the deposits on the water surface and on all visible surfaces (baffle, sample container, siphon)
H. Wash down the visible surfaces
I. Insert the suction hose into the wastewater treatment tank until it reaches the floor
(CAUTION: air admittance valves on the ground must not be damaged!)
J. Aspirate until about 30 cm of wastewater and sludge remain in the wastewater treatment system
K. After emptying the tank, you should refill the tank with fresh water again so the tanks is two thirds full.

6 FAULT MESSAGES AND TROUBLESHOOTING

Technical problems of system operation (failure of a unit) are visually displayed.

6.1 System Behaviour after switching off the Power Supply

If the system is disconnected from the mains (e.g. power failure), the control program and the counted operating hours are retained due to the memory of the control system. The red LED will light up. When the system is supplied with power again, it will self-start.

NOTE: If the system is disconnected from the mains for more than 24 hours, cleaning of the existing wastewater is not or is only possible to a very limited extent.

6.2 Fault Message in the Display

Faults are shown as text or as numbered codes on the liquid crystal display. The operating control lamp then lights up red.

The numbered fault codes are explained below:

A. Power failure (system is de-energised)
B. Power returned (system is supplied with power again)
C. Compressor has overcurrent
D. Compressor power supply too low
E. Manual operation

The displays no. 2 (power returned) and no. 5 (manual mode) are not faults in the proper sense. These are only registered as fault messages for better time limitations of any faults that occur and for monitoring manual activities on the control system.

Table 2: **Fault Causes and Troubleshooting**

Display	Possible cause	Remedy
Mains failure No display, no light	• Power failure • System turned off • There is no voltage at the control cabinet	• Check the power supply to the system and to the control system • Turn system back on • Check supply to the control cabinet • Wait for resumption of power supply
No display, light is green		• Turn system off and back on again after 10 seconds
Mains returned	• Power available again	
Set the clock	• Internal clock/date not set	• Set date and time via menu item
Compressor **overcurrent**	• Short-circuit	• Check supply to the control cabinet
Compressor **current too low**	• Compressor does not work / is not receiving power	• Check the compressor in manual mode
Manual operation	• System was activated manually in manual mode	

6 FAULT MESSAGES AND TROUBLESHOOTING

6.3 Unusual Water Levels - Fixing a Fault

Observation	Possible cause	Remedy
The water level in the activation tank is unusually high	• System is running in holiday mode • System runs continually in cycle pause • Control system settings are incorrect • The drain siphon is clogged • The air hose to the drain siphon is leaking • System has been flooded from external water source and not allowing water to drain from the system • Control system is defective	• End holiday mode • Have the control system settings checked by the maintenance technician • Allow tank to be pumped out and clean siphons • Seal hose connections • Wait out flooding • Get in touch with maintenance company
The system smells, the treated water is cloudy or discoloured	• Too little air is entering the system • Single-sided ventilation due to defective air admittance valves	• Have service company increase ventilation time • Check the ventilation, get in touch with maintenance company
Ventilation is onesided or large air bubbles appear at points	• Membrane unit is defective • Seal leaky air admittance valves	• Get in touch with maintenance company • Get in touch with maintenance company

7 OPERATING NOTES

Essentially, the system should only be supplied with materials that correspond to domestic wastewater in their characteristics.

Biocides, materials with a toxic effect or materials that are not biologically compatible or degradable must not enter the system, as these lead to biological process problems. The following, in particular, should not be introduced into the system:

- Rainwater from roofs and courtyards,
- Extraneous water (e.g. drain water)
- Residues from livestock in solid or liquid form,
- Industrial or agricultural wastewater, as far as it is not comparable to domestic wastewater,
- Chemicals, pharmaceuticals , mineral oils, solvents,
- Cooling water,
- Coarse materials in the form of food scraps, plastics and hygiene products, face wipes, coffee filter papers, bottle caps and other household items,
- Milk and dairy products
- Drain water from swimming pools,
- Large amounts of blood.

In the case of large amounts of fats or vegetable oils, it is recommended that the fatty wastewater is pretreated in one of the grease traps upstream of the wastewater treatment system (Caution: No faeces may be introduced into the grease trap!).

7 OPERATING NOTES

The following is a list of individual substances which must not be disposed of via the wastewater treatment system:

Solid or liquid substances that do not belong in the sink or in the toilet:	What it does:	Where it should go:
Ash	Does not decompose	Dustbin
Chemicals	Contaminates wastewater	District collection point
Disinfectants	Kills bacteria	Do not use
Paints	Contaminates wastewater	District collection point
Frying fat	Accumulates in pipes and leads to blockages	Dustbin
Adhesive plasters	Clogs pipes	Dustbin
Cigarette ends	Accumulates in the system	Dustbin
Condoms	Causes blockages	Dustbin
Corks	Accumulates in the system	Dustbin
Medication	Contaminates wastewater	Pharmacy
Engine oil	Contaminates wastewater	District collection point
Oily waste	Contaminates wastewater	District collection point
Plant protection products	Contaminates wastewater	District collection point
Paintbrush cleaner	Contaminates wastewater	District collection point
Cleaning agents, except those which are chlorine-free (environmentally friendly)	Contaminates wastewater, corrodes pipes and seals	District collection point
Razorblades	Causes risk of injury for workers in sewers and wastewater treatment systems	Dustbin
Drain cleaner	Corrodes pipes and seals, contaminates wastewater	District collection point
Pesticides	Contaminates wastewater	District collection point
Panty liners/Sanitary towels	Leads to blockages, non-degradable plastic film spoil water	Dustbin
Cooking oil	Leads to deposits and pipe blockages	District collection point
Food leftovers	Leads to blockages, attracts rats	Dustbin
Wallpaper paste	Leads to blockages	District collection point
Textiles (eg. nylon tights, cloths, handkerchiefs, etc.)	Clogs pipelines, can cripple a pumping station	Charity shop
Thinner	Contaminates wastewater	District collection point
Bird sand, cat litter	Leads to deposits and pipe blockages	Dustbin
Cotton buds/Face wipes	Clogs the system	Dustbin
Toilet blocks	Contaminates wastewater	Do not use
Nappies	Clog pipes	Dustbin
Cement water	Creates deposits, becomes concrete	Send to a specialist company

8 EC DECLARATION OF CONFORMITY

Manufacturer: Otto Graf GmbH
Carl-Zeiss-Straße 2-6
D-79331 Teningen

hereby declares that the product **one2clean** small sewage treatment system complies with the following Directives:

2006/42/EC Directive of the European Parliament and of the Council, dated 17 May 2006, on machinery, and amending Directive 95/16/EC.

2006/95/EC "Directive of the Council relating to electrical equipment designed for use within certain voltage limits"

The following harmonised standards have been applied:

EN 60204-1 Electrical equipment of machines Part 1: General requirements
EN ISO 13849-1 Safety of machines - Safety-related parts of control systems - Part 1: General principles for design

This EC declaration of conformity becomes invalid if the product is modified without consent.

Teningen, 22.02.14



Arne Schröder
(Product Management Team Leader)

Declaration of performance one2clean

Nr. 008/Translation

1. Unique identification code of the product-type	**EN 12566-3: Small wastewater treatment system**
2. Type, batch or serial number or any other element allowing identification of the construction product as required pursuant to Article 11(4)	**one2clean 3-18 Inhabitants** **Type size and serial number on control cabinet type plate**
3. Intended use or uses of the construction product, in accordance with the applicable harmonised technical specification, as foreseen by the manufacturer	**Cleaning domestic wastewater in a volume of up to 150 l per inhabitant and day with a maximum pollution load of 0.06 kg/BOD_5 per inhabitant and day**
4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required pursuant to Article 11(5)	**Otto Graf GmbH Kunststofferzeugnisse** **Carl-Zeiss-Str. 2-6** **79331 Teningen** **Germany**
5. System or systems of assessment and verification of constancy of performance of the construction product as set out in Annex V	**System 3**
6. **The notifying authority PIA (Prüfinstitut für Abwassertechnik GmbH) - NB 1739 - tested the cleaning performance of the wastewater treatment system. The Carat tank were tested for stability, leaks, durability and fire behaviour, see number 7. The fire behaviour of the Carat XL tank was tested by the Hoch test institute - NB 1508.**	

7. Declared performance

	Performance	Test report No.
Treatment efficiency	CSB: 96,2 % 26 mg/l BSB_5: 98,6 % 5 mg/l NH_4-N: 99,0 % 0,4 mg/l N_{ges}: 79,1 % 13 mg/ AFS: 98,6 % 6 mg/l	PIA2013-181B14
Watertightness	Passed	PIA2008-WD-AT0805-1027b
Crushing resistance	Passed	PIA2008-ST-AT0804-1019
Durability	Passed	PIA2008-ST-AT0710-1020+DH
Reaction to fire	Class E	PIA2013-FR-1306-1039

8. **The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 7. This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.**

Signed for and on behalf of the manufacturer by:

[redacted]

i.V. Arne Schröder
Team leader, product management

Teningen, 22.01.2014

10 TECHNICAL DATA OF THE CONTROL SYSTEM

- Programmable logic microcontroller
- T3,15A fuse (internal)
- Wide-range 100-240 VAC/50-60 Hz power supply
- Real-time clock with 5 min/a deviation, battery back-up
- Logbook, non-volatile
- Cable break monitoring for compressors by measuring output currents
- Operating/error message display with LED (green/red)
- Operating temperature range: 0°C to +55°C
- Permissible temperature range outside of operation: -20°C to +85°C
- Relative humidity: 10% to 95%, no condensation
- Degree of protection IP54, front side (with properly glued front foil)
- 4-key control panel
- Display: 2 lines of 16 characters with backlighting (blue)
- Outputs:
  - 230 VAC 50Hz compressor (standard),
  - 2x 24 VDC step motors/solenoid valves for compressed air flow

WARRANTY CERTIFICATE

Otto Graf GmbH
Kunststofferzeugnisse

Dear Sir or Madam,

Congratulations on the purchase of a quality product from Otto Graf GmbH. Herewith we confirm a 10 years' warranty on the underground rainwater tank

CARAT RS

10 years warranty

Warranty clause

Above mentioned 10 years' warranty only refers to the underground tanks and not to individual parts or accessories, even if included in the package price.

Within the warranty period we offer free material replacement, further indemnifications are excluded. In order to grant warranty services we require correct handling, assembly and installation according to the installation manual. The warranty is only valid with the proof of purchase. Please also refer to our general business conditions.

Teningen, March 2016

Otto GRAF GmbH
Carl-Zeiss-Str. 2-6
79331 Teningen
Germany
www.graf.info

WARRANTY CERTIFICATE

Otto Graf GmbH
Kunststofferzeugnisse

Dear Sir or Madam,

Congratulations on purchasing a quality product from Otto Graf GmbH. Herewith we confirm a

2-YEAR WARRANTY

on the small wastewater treatment system one2clean you have purchased.

The warranty applies to the purifying technology only. Accessories and optional add-ons are not covered by the warranty. During the warranty period, Otto Graf GmbH provides free material replacement; but services extended beyond this are not covered.

Warranty conditions

The warranty applies under the following conditions:

1. The waste water treatment system must be installed and commissioned by a specialist firm. Companies trained by Graf UK are recognised as Accredited Service Providers. If a recognised Accredited Service Provider signs off and services the system, 1 extra year of warranty will be added.
2. Maintenance must be carried out in accordance with the logbook and approved by a specialist. In the case of warranty claims, all maintenance reports must be submitted on request.
3. Worn parts and any defects or damage resulting from improper operation of the system, maintenance not being carried out, faults caused by the customer and unauthorised changes to the system are not covered by the guarantee.
4. Costs incurred by installing or replacing parts, shutting down the system etc. are not included in the warranty.

Teningen, March 2016

Graf UK Limited
Regen House
Beaumont Road
Banbury
OX16 1RH

12 NOTES

12 NOTES

RAINWATER HARVESTING

STORMWATER MANAGEMENT

WATER BUTTS & COMPOSTERS

MULTIPURPOSE CONTAINERS



Graf UK Ltd
Regen House
Beaumont Road
Banbury
Oxfordshire OX16 1RH

T: 01608 661500
F: 01295 211333
E: info@grafuk.co.uk
www.grafuk.co.uk

Graf UK Ltd (Scotland)
220 Blairtummock Road
Queenslie Industrial Estate
Glasgow
G33 4ED

T: 0141 465 1540
F: 01295 211333
E: info@grafuk.co.uk
www.grafuk.co.uk

ISO 19650 Filing Notation

Project	
0XXX	Project Number
Originator	
ENV	Enviren
Functional Breakdown	
S1	Planning submission
S2	Technical submission
S3	Construction Information
S4	As built details
Spatial Breakdown	
SW	Southwest
EE	East of England
SE	South East
WM	West Midlands
EM	East Midlands
YO	Yorkshire
NW	North West
NE	North East
LO	London
OT	Other
Form	
DR	Drawing
GR	Diagram
TR	Textual Report
Discipline (relevant)	
C	Civil Engineering
E	Environmental Engineering
G	Ground Engineering
O	Other Discipline
T	Town and Country Planning and Building Control
W	Water Engineering
Z	Multiple Discipline
Number	
000X	Report number







Enviren

Copyright Enviren Ltd © 2025