

## Drainage Report

<b>On behalf of :-</b>	<b>Mr William Alun Jones</b>
<b>Address :-</b>	<b>Tai Hirion Caravan Park, Rhoscefnhir, Anglesey. LL75 8YY</b>
<b>In respect of : -</b>	<b>Full planning application for touring caravan and camping site for 20 touring caravan pitches and 3 statics, vehicular access, and track on site together with proposed landscape.</b>
<b>Draft Report Issued :-</b>	<b>3<sup>th</sup> November 2021</b>
<b>Final Report Issued : -</b>	<b>17<sup>th</sup> December 2021</b>
<b>Report By : -</b>	<b>Wiliam Samiwel Owen MSc</b>

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*Os rydych am wybodaeth yn Gymraeg rydym yn hollol gyffyrddus yn cyflwyno gwybodaeth a chyfathrebu yn y Cymraeg gydag unrhyw gwsmer sydd yn dymuno hynny. Gellir hefyd paratoi dogfennau dwyieithog os bydd angen.*

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## 1. Introduction

William Samiwel Owen (WSO) has been employed by the owner of Tai Hirion Caravan Park, William Alun Jones (WAJ) to prepare this report in respect of a *Full planning application for 20 touring caravan, 3 static caravan pitches, vehicular access, and track on site together with proposed landscape*. This report will refer to planning application FPL-2020-22 that has already been granted planning approval for *Retrospective planning application for retention of land as touring caravan and camping site for 32 touring caravan pitches and 20 tents, retention of toilet / shower block, honesty shop, package treatment plant, vehicular access and track on site together with proposed landscape planning*.

Within this report WSO will: -

- Outline the existing drainage arrangement as approved under planning application reference FPL/2020-22.
- Confirm the maximum capacity of both the existing PTP & DF.
- Confirm how the waste from the chemical toilet will be disposed of.
- Confirm the proposed foul and surface water proposal.

## 2. Existing onsite PTP & DF

The existing PTP was installed, inspected, and approved by Isle of Anglesey Country Council Building Control (BC) in January 2016 under BC application reference number FP/13644. This means that the PTP has been in operation for over 5 years' i.e., 6 holiday seasons, refer to drawings 994214/01 & 994214/02 in appendix A of this report for the as built site plan that was approved under planning reference FPL-2020-22. The PTP installed on site by WAJ is a MS150 marsh standard range gravity, details of this PTP can be found in appendix B. A percolation test was carried out in 2020 for results refer to appendix C, WSO concludes the following area for the DF: -

$$At = P \times Vp \times 0.25$$

$$At = 100 \times 42 \times 0.25$$

$$At = 1050m^2$$

WAJ confirms that 30 coils of 50m length of 100mm  $\varnothing$  perforated black flexible pipework has been laid within 1200mm (1.2m) wide trenches to construct the DF with 300mm clean granular stone 30mm – 50mm installed below pipe and 50mm on top of the pipes in accordance with the Diagram 1 of ADH, refer to figure 1 below.

**Diagram 1 Drainage field**

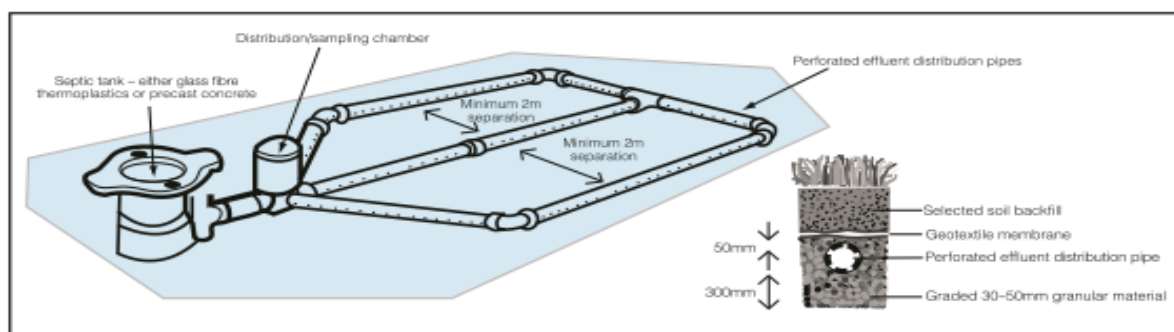


Figure 1: Abstract from ADH building regulations (Wales) – Diagram 1 Drainage field

WAJ has also confirm that the location of the PTP and DF siting is in accordance with requirements of ADH. Refer to figure 2 and 3 below.

#### Siting

- 1.16 Septic tanks should be sited at least 7m from any habitable parts of buildings, and preferably downslope.
- 1.17 Where they are to be emptied using a tanker, the septic tank should be sited within 30m of a vehicle access provided that the invert level of the septic tank is no more than 3m below the level of the vehicle access. This distance may need to be reduced where the depth to the invert of the tank is more than 3m. There should also be a clear route for the hose such that the tank can be emptied and cleaned without hazard to the building occupants and without the contents being taken through a dwelling or place of work.

*Figure 2: Abstract from ADH building regulations (Wales) – Sitting of tank*

#### Siting

- 1.27 A drainage field or mound serving a wastewater treatment plant or septic tank should be located:
- (a) at least 10m from any watercourse or permeable drain;
  - (b) at least 50m from the point of abstraction of any groundwater supply and not in any Zone 1 groundwater protection zone;
  - (c) at least 15m from any building;
  - (d) sufficiently far from any other drainage fields, drainage mounds or soakaways so that the overall soakage capacity of the ground is not exceeded.
- 1.28 The disposal area should be downslope of groundwater sources.
- 1.29 No water supply pipes or underground services other than those required by the disposal system itself should be located within the disposal area.
- 1.30 No access roads, driveways or paved areas should be located within the disposal area.

*Figure 3: Abstract from ADH building regulations (Wales) – Sitting of drainage field*

Refer to drawing reference 994214/02 in appendix A that demonstrate the measurements as per figure 2 and 3 above. WAJ confirms that the PTP and DF currently in place for the shower block and has been in full operational use for over 5 years serving 32 caravans and 20 tents and to date has not experience any problems or pose unacceptable risk to the water environment. WSO therefore concludes that the test of time confirms that the area for DF is sufficient and that any problems would have surfaced by now.

### **3. Maximum capacity of onsite existing PTP & DF**

The maximum people that the PTP can service by design is 150, therefore WSO will base the calculations on this: -

$$A_t = P \times V_p \times 0.25$$

$$A_t = 150 \times 42 \times 0.25$$

$$A_t = 1575\text{m}^2$$

Convert  $\text{m}^2$  to liner meters of pipe required based on trench width of 1200mm (1.2m):

$$1575\text{m}^2 / 1.2\text{m} = 1350\text{m pipe required to cater 150 persons.}$$

**1500 liner meter of pipe has been installed on site within 1200mm (1.2m) wide trenches, refer to section 2 of this report.**

#### **4. Chemical toilet**

WAJ confirms that the waste from the chemical toilet is collected within 3000 litres holding tank and that a registered company takes the waste away from site as required. This process has been in operation for over 5 years and does not pose any unacceptable risk to the environment. Location of the chemical disposal area outline in orange, refer to drawings 994214/01 & 994214/02 in appendix A of this report, also refer to photos in appendix D.

#### **5. Proposed foul and surface water proposal**

Refer to drawings in appendix A.

The proposal is to connect the foul drainage into the existing MS150 tank on site.

The proposal is to connect the surface water from the 3 static caravans into a soakaway.

The touring pitches and track will be constructed of permeable clean stone.

#### **6. Conclusion**

WSO concludes that the existing foul and surface water systems on site have been installed, inspected and in operation in accordance with current building regulations. WSO also concludes that both systems have been in good working order for over 5 years and will easily cope with the additional loading of 20 touring pitches and 3 static caravans. The proposed proposal will not pose any unacceptable risk to the water environment.

# APPENDIX A









Do not scale from this drawing  
 Ffwrnazi - ASK  
 Pwriadu a dymmydd mesurauau graddfa oddi ar y dyluniad hwn.  
 Os ydych chi gynnwys - COP YN WNGH  
 Os rydych chi eiddo yn ystod ymlym yn hollt gyfnewid yn dilynio peribodeth a chyflathrebu yn y  
 Cymraeg gysgaf unrhyw gennwr sydd yn dymuno hynny. Gellir helpu paratoi dogfenau deunyddig os  
 bydd angen.


**Key:**

- Foul drainage.
- Surface water drainage.
- 20m Ø distance.
- 60m Ø distance.
- Chemical disposal area.

---	27/10/20	Drainage	WSO
Rev	Date	Details Of Issue	Initials

Status

## DRAINAGE



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Client	MR WILLIAM ALUN JONES		
Project	TAI HIRION CARAVAN & CAMPING SITE, RHOSCEFNIH, PENRAETH. LL75 8YY		
Title	SITE PLAN AS APPROVED UNDER PLANNING APPLICATION REFERENCE FPL-2020-22		
Drawn	Date:	Scale (at A1)	
WSO	27/10/2020	1/1250	
Dwg no.	Revision No.		---
994214/02			





Do not scale from this drawing  
 Ffwr osazi - ASK  
 Poblwch a dymmydd mesuradai graffia oddi ar y dyluniad hwn.  
 Os yn araf - COP YN WNGH  
 Os yn hysbys am rai o'r wybodaeth hysbys yn hysbysu'r hysbysu yn ddiogelwch a chydrethu yn y  
 Cymraeg gydag unrhyw gwmni sydd yn dymuno hysbys. Gellir helpu paratoi dogfenau ddiogelwch os  
 bydd angen.

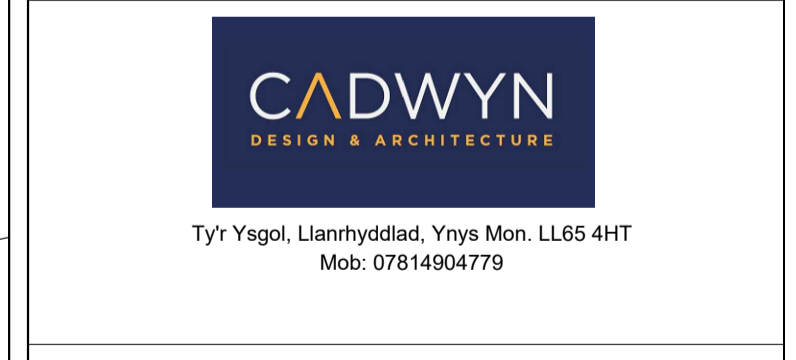
Key:

- Foul drainage.
- Surface water drainage.
- Chemical disposal area.

---	17/12/21	Drainage	WSO
Rev	Date	Details Of Issue	Initials

Status

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Client **MR WILLIAM ALUN JONES**

Project **TAI HIRION CARAVAN & CAMPING SITE, RHOSCEFNIH, PENRAETH, LL75 8YY**

Title **SITE PLAN AS PROPOSED**

Drawn	Date	Scale (at A1)
<b>WSO</b>	<b>17/12/2021</b>	<b>1/1250</b>
Dwg no.	Revision No.	
<b>994214/03</b>	---	



Soakaway constructed in accordance with BRE Digest 365 & ADH, refer to drawing reference 994214/06 and percolation test of VP value of 42.67 refer to appendix B.

Do not scale from this drawing  
 Dim osazi - ASK  
 Poblwch a dymmyd mesurauau graddfa odd ar y dyluniad hwn.  
 Os yn arau - COP/YNWCCH  
 Os nodyn am nodyn a wroddeth nodyn yn hollt gyfnewidau yn cyflwyno perthodeth a chyflwyno yn y Cymraeg gydag unrhyw gwmcer sydd yn dymuno hynny. Gellir helpu paratoi dogfenau deunyddig os bydd angen.

**Key:**

- Foul drainage
- Surface water drainage
- Chemical disposal area



---	17/12/21	Drainage	WSO
Rev	Date	Details Of Issue	Initials

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Project	TAI HIRION CARAVAN & CAMPING SITE, RHOSCEFNIH, PENTRAETH, LL75 8YY		
Title	SITE PLAN AS PROPOSED		
Drawn	Date	Scale (at A1)	
WSO	17/12/2021	1/250	
Drg no.	994214/04		Revision No.
			---





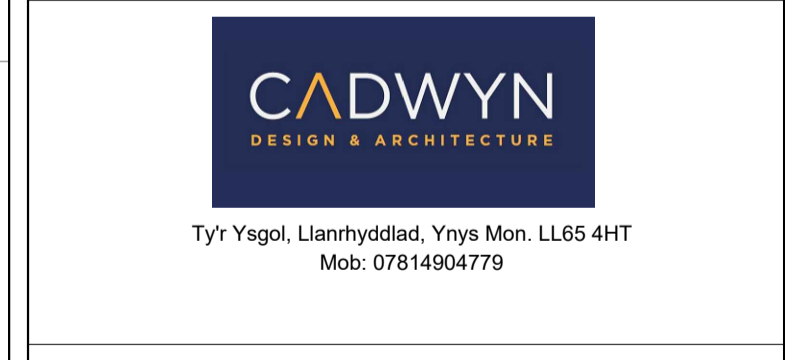
Do not scale from this drawing  
 Ffwrnau: ASK  
 Pŵllwch a dymmydd mesurauau graffia odd ar y dyfyniad hwn.  
 Os yn araf - COP YN WYBODA  
 Os yn hysbys am rai o'r wybodaeth rydym yn hysbysu ydych chi yn ddiogelwch a chyflwyno yn y  
 Cymraeg gydag unrhyw gwmcer sydd yn dymuno hysbys. Galler helpu paratoi dogfenau deunyddig os  
 bydd angen.

Key:  
 --- Foul drainage  
 --- Surface water drainage  
 --- Chemical disposal area

---	17/12/21	Drainage	WSO
Rev	Date	Details Of Issue	Initials

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Client: **MR WILLIAM ALUN JONES**  
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 Title: **SITE PLAN AS PROPOSED**

Drawn	Date:	Scale (at A1)
WSO	17/12/2021	1/250
Drg no.	Revision No.	
994214/05	---	

Drainage field constructed in accordance with the percolation test, refer to appendix B.

Treatment plant installed: Marsh standard range gravity MS150, refer to appendix C.

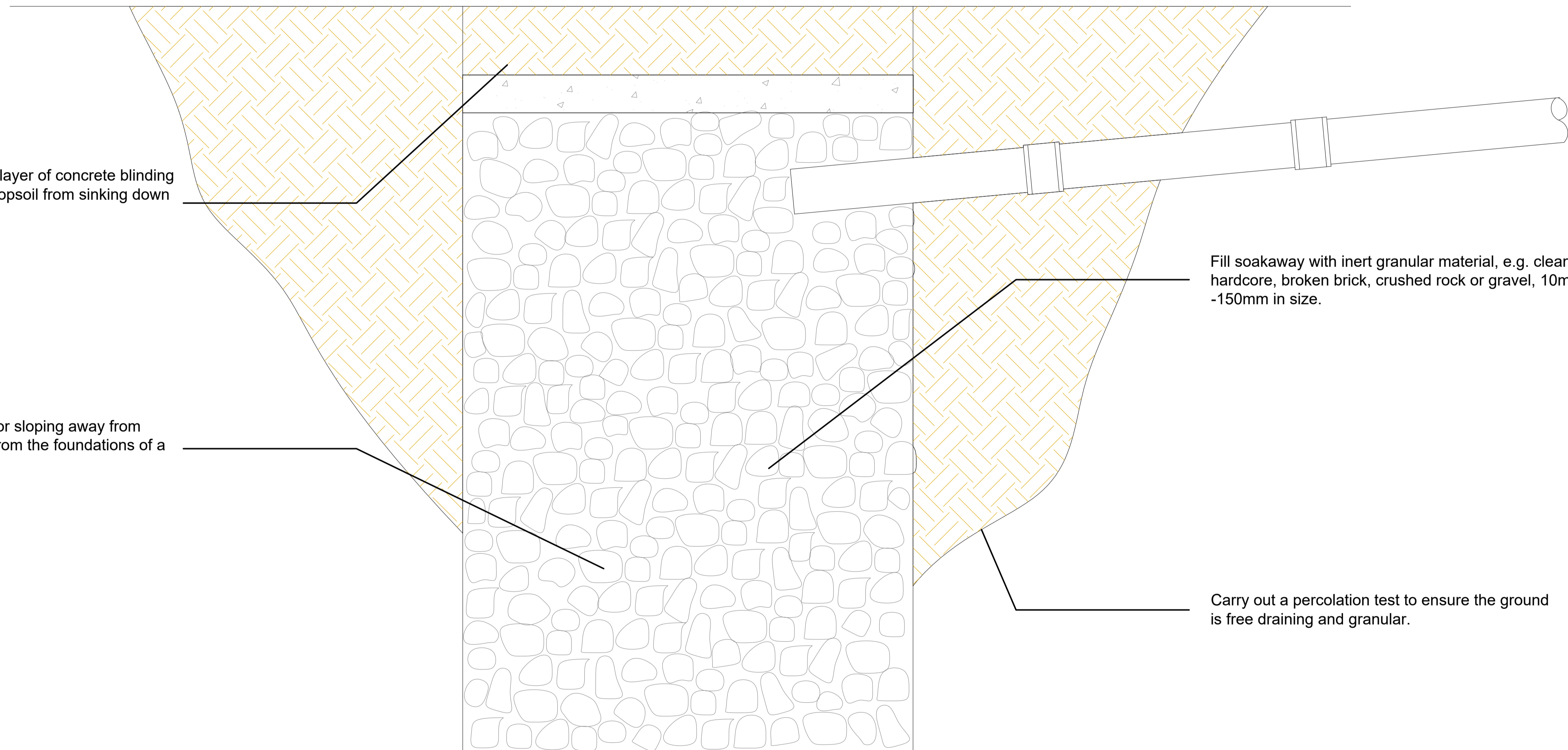
A1

B1



# SOAKAWAY DETAIL

Soakaway size and type dependent on space requirements, site layout, topography, water table, subsoil type, etc.  
Designed to BR Digest 365 & Approved Document H



Provide a PVC sheet or layer of concrete blinding over the top to prevent topsoil from sinking down into the soakaway.

Fill soakaway with inert granular material, e.g. clean hardcore, broken brick, crushed rock or gravel, 10mm -150mm in size.

Build soakaways on land lower than, or sloping away from buildings, at a minimum of 5m away from the foundations of a building (BS 8301).

Carry out a percolation test to ensure the ground is free draining and granular.

Width, length and depth of soakaway to be determine on site. Based upon the VP value percolation test on 42.67 refer to appendix b.

Do not scale from this drawing  
Ffwr osazi - ASK  
Pobwch a dymmyd mesurwau grafffa oddi ar y dyluniad hwn.  
Os yn arau - COP YN WNGH  
Os trwyd am ragor a wybodwch rhydd yn holl gyfnewidau yn cyflwyno pernodau a chyflwyno yn y  
Cymraeg gydag unrhyw gwmwr sydd yn dymuno hynny. Gellir helpu paratoi dogfenau deunyddig os  
bydd angen.

Rev	Date	Details Of Issue	Initials
---	17/12/21	Drainage	WSO

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Client **MR WILLIAM ALUN JONES**

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Title **SOAKAWAY DETAIL**

Drawn	Date:	Scale (at A1)
WSO	17/12/2021	N/A
Dwg no.	Revision No.	
994214/06	---	

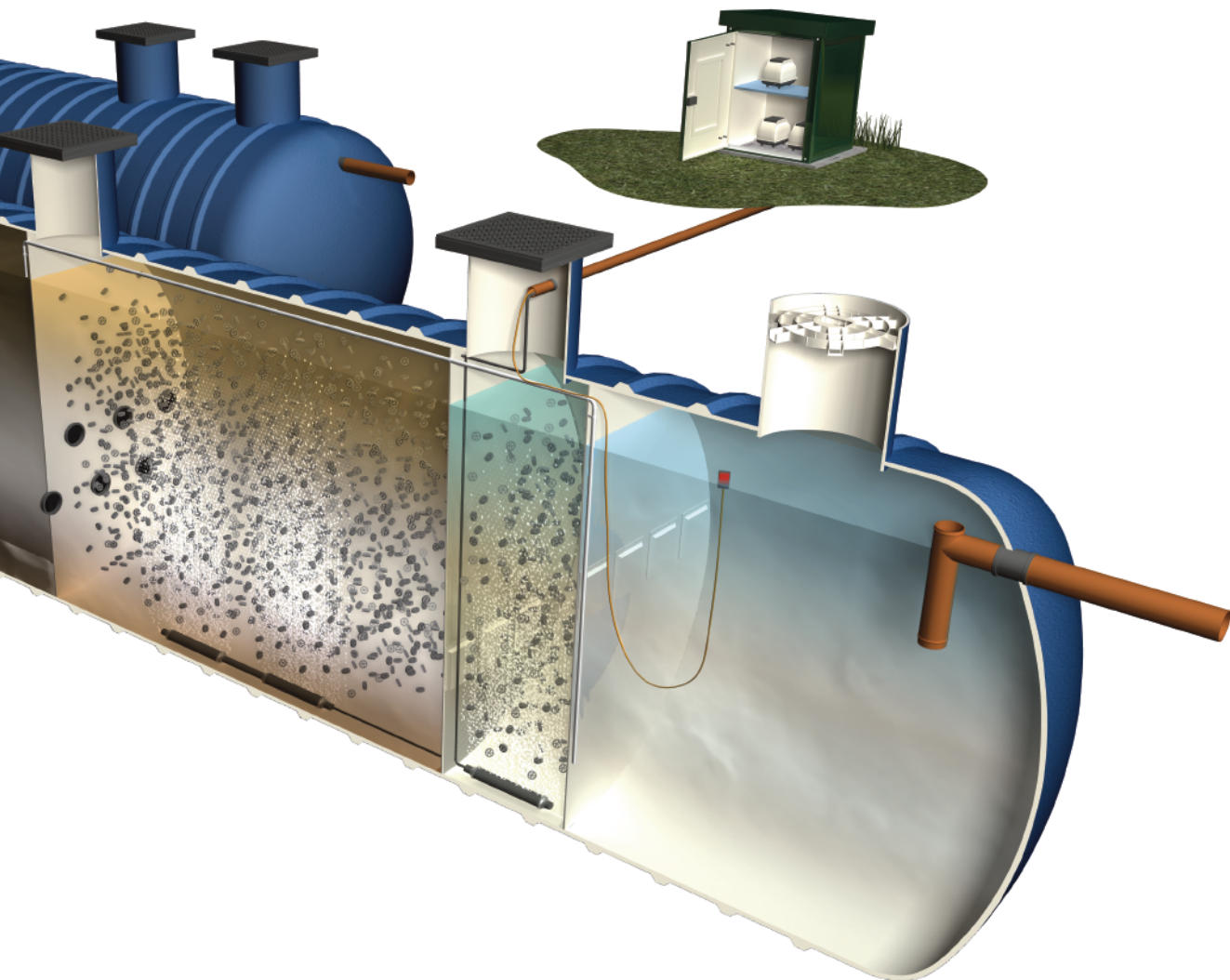


# APPENDIX B

# Marsh:Standard

## Cost-effective sewage treatment plants

The UK 'industry-standard' range of sewage treatment plants for domestic, commercial, industrial and agricultural applications



 **MADE IN  
BRITAIN**



[www.marshindustries.co.uk](http://www.marshindustries.co.uk)

# Marsh:Standard

## Cost-effective sewage treatment plants

### Biological processing for off-mains wastewater

## Overview

Marsh:Standard cost-effective sewage treatment systems provide biological treatment to off-mains wastewater on large residential, commercial, industrial and leisure sites ranging from 50-300+PE.

Proven reliability of the simple but effective Submerged Aeration Filtration (SAF-MBBR) system offers both operating and financial benefits when compared to more complex and expensive alternatives that require frequent servicing and maintenance to sustain performance.

## Benefits

### Plant sizing

Designed to BS12255, systems are available from 50-300+ PE in sizes ranging from Ø2.5-3m satisfying the demands of virtually all site conditions.

### Class-leading effluent quality

Designed to British Water loadings (150litres per person, 60mg BOD litre and 8mg/litre Ammonia) ensures effluent discharge is well within national consent standards.

### Cost-effective operation and maintenance

Systems have no internal moving parts and require minimal ongoing maintenance.

### Heavy duty shell as standard

Structurally sound and built to last. Enables easy installation in all ground conditions.

### High media surface area

High specification bio-media (310m<sup>2</sup> per m<sup>3</sup>) and membrane diffusers provide even circulation to eliminate 'dead spots'.

### Low energy compressor(s)

Easily accessible low energy compressor for minimal running, maintenance and servicing costs. Integral alarm detects low pressure in air line.

### Internal recirculation

Continues the treatment process to provide higher effluent quality whilst balancing flow over 24 hour period or periods of intermittent use.

### Lockable manhole covers

600mm lockable manhole covers provide significant strength and durability, and helps to reduce possible odours.

### Health and Safety considerations

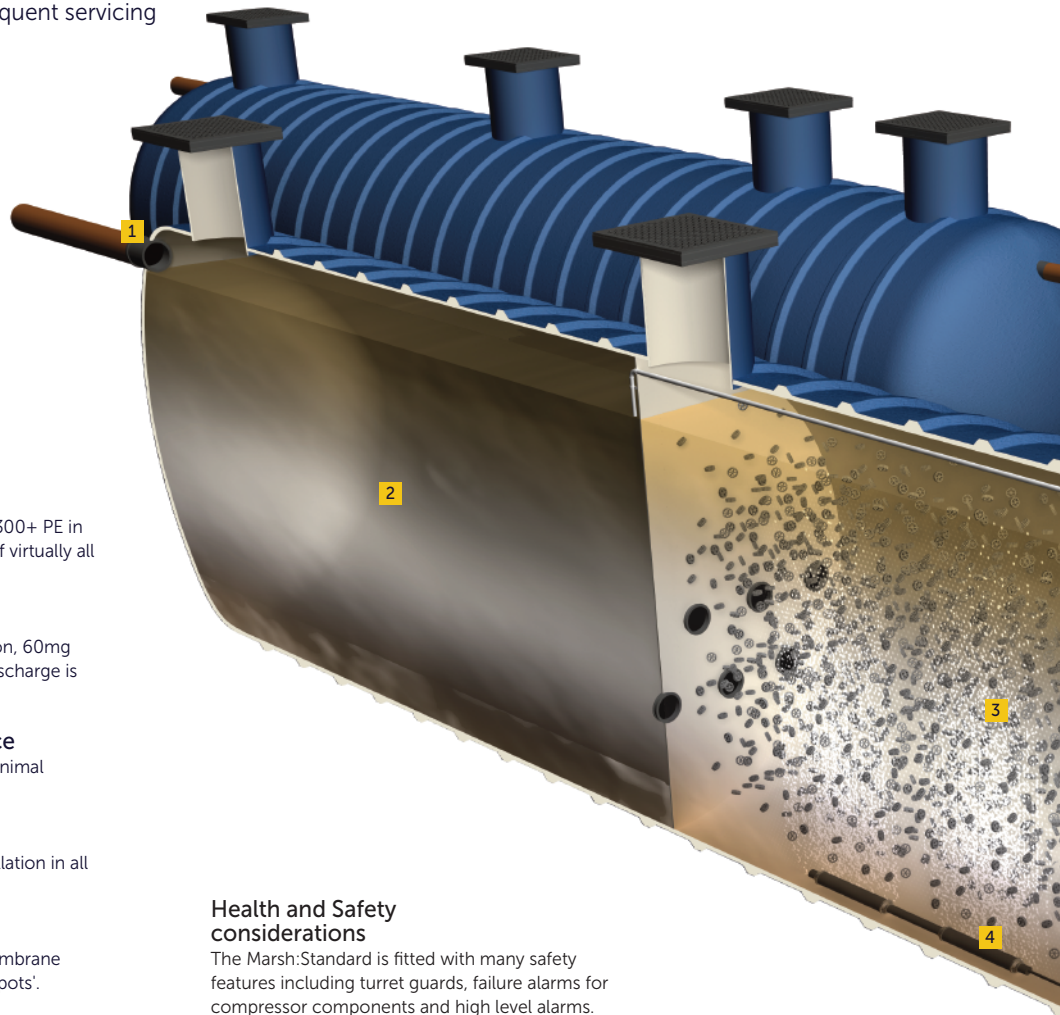
The Marsh:Standard is fitted with many safety features including turret guards, failure alarms for compressor components and high level alarms.

### Optional extras

Optional extras include carbon covers for odour control, turret guards for additional safety, polylok filters to further reduce suspended solids, high level alarms and telemetry for monitoring, and risers/pumped outlets for deeper installations.

### Manufactured in the UK

All units are manufactured in our twin manufacturing plants at Kettering and Bridgwater. The tanks are constructed using GRP (virgin unfilled resin – no 'fillers' such as chalk) providing consistent wall thickness ensuring superior structural strength and durability.

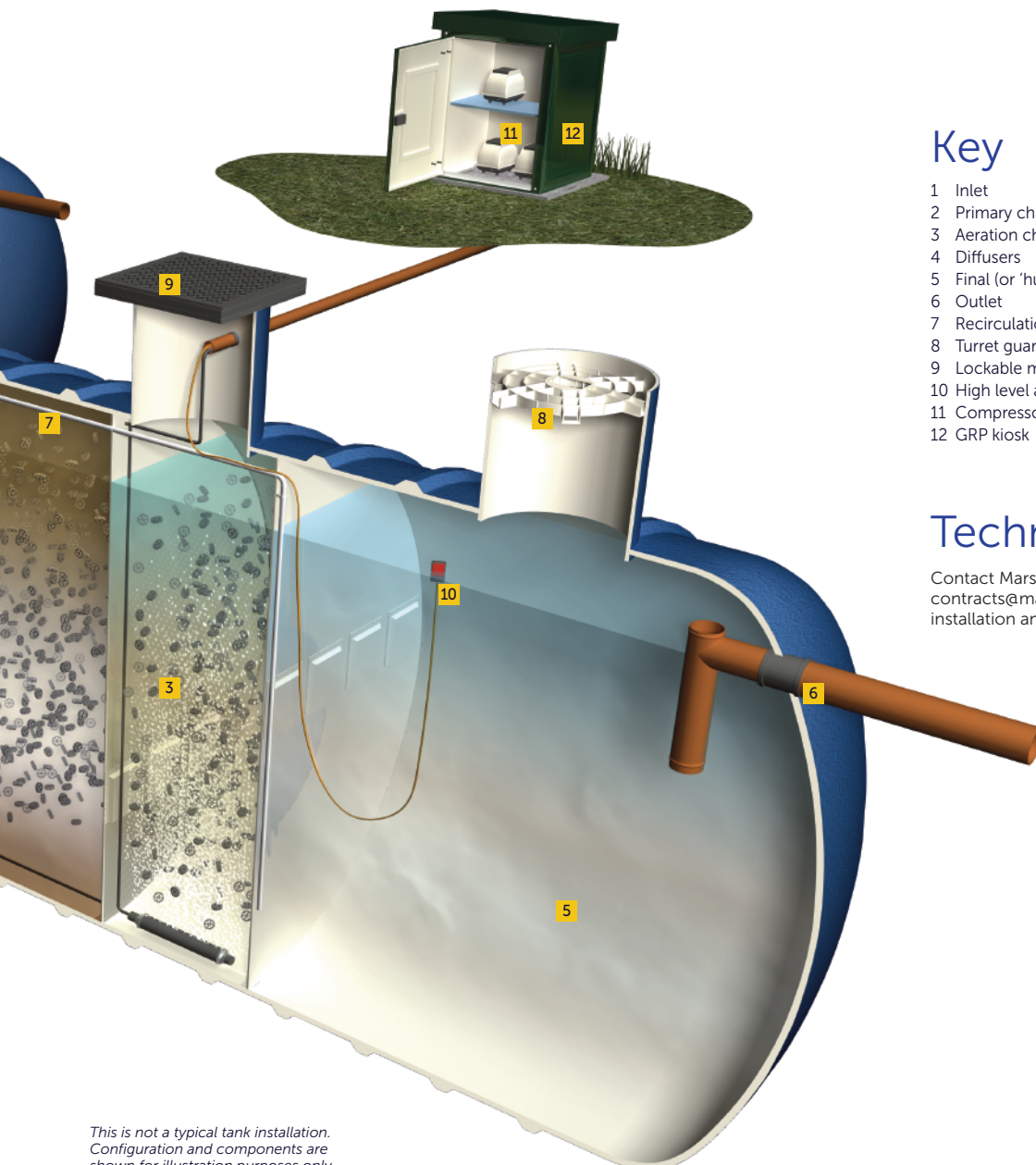


# Specifications

Model	Population served	Width	Length	Height	Inlet		Outlet		Turrets x 4 Ø	Desludge Days
					Invert	Ø	Invert	Ø		
MS55	50-55	2500	4160	2950	600	160	800	160	600	90
MS60	60	2500	4470	2950	600	160	800	160	600	90
MS70	70	2500	5350	2950	600	160	800	160	600	90
MS85	85	2500	6000	2950	600	160	800	160	600	90
MS100	100	2500	6950	2950	600	160	800	160	600	90
MS125	125	2500	8550	2950	600	160	800	160	600	90
MS150	150	2500	10200	2950	600	160	800	160	600	90
MS200	200	2500	13400	2950	600	160	800	160	600	90
MS250	250	3000	9650	3450	600	160	800	160	600	60
MS300	300	3000	9650	3450	600	160	800	160	600	45

## Notes:

- > Pumped outlets are available
- > The dimensions given on this page are for guidance only
- > For precise tank sizes and configurations, please contact Marsh Industries
- > All dimensions in mm



## Key

- 1 Inlet
- 2 Primary chamber
- 3 Aeration chambers
- 4 Diffusers
- 5 Final (or 'humus') chamber
- 6 Outlet
- 7 Recirculation to primary chamber
- 8 Turret guard (optional)
- 9 Lockable manhole covers
- 10 High level alarm (optional)
- 11 Compressors
- 12 GRP kiosk

## Technical support

Contact Marsh Industries on 01933 654582 or email [contracts@marshindustries.co.uk](mailto:contracts@marshindustries.co.uk) for FREE design, installation and technical support.

*This is not a typical tank installation. Configuration and components are shown for illustration purposes only*





# Marsh Industries

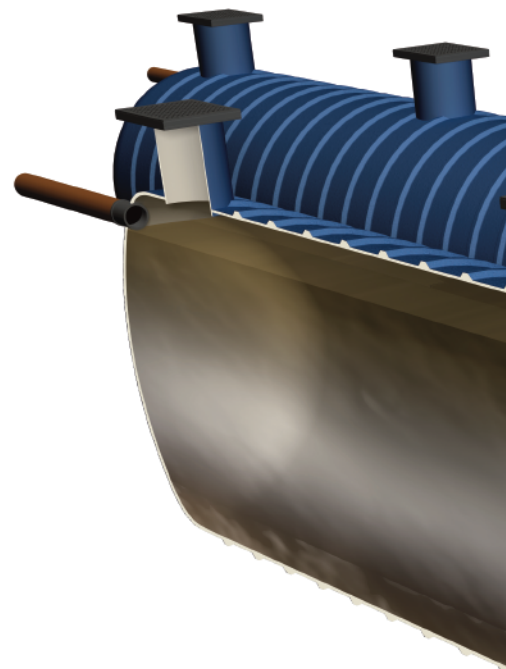
Marsh Industries delivers world-class water/wastewater treatment products and solutions to the domestic, commercial and agricultural sectors from its UK manufacturing plants in Kettering and Bridgwater.

The company is recognised as a collaborative and trusted partner to its customers, with a reputation for providing quality products that really do add value:

- Sewage treatment plants 4-500+ PE
- Pump chambers 234-20,000+ litres
- Septic tanks and cesspools 2800-20,000+ litres
- Uni:Gem™ septic conversion units 4-60+ PE
- Marsh GMS grease traps 234-20,000+ litres
- Degrilleur™ trash/debris barrier
- Agri-silage tanks Up to 100,000 litres
- Storm:Dammer™ stormwater attenuation Up to 130,000 litres
- RainCell™ rainwater harvesting systems 1500-20,000+ litres
- Hydroil™ oil separators

All products are fully type-tested and certified to ensure compliance with relevant environmental permitting programmes and building regulations.

In addition, the company's state-of-the art computer software, GAIA, can generate precise, bespoke commercial sewage treatment plants and pump chamber systems to the finest specification.



[sales@marshindustries.co.uk](mailto:sales@marshindustries.co.uk)  
+44 (0)1933 654582  
[www.marshindustries.co.uk](http://www.marshindustries.co.uk)



# APPENDIX C

# Percolation Test Recording Sheet

1. The tests were carried out within the proposed infiltration area.
2. Two percolation holes was excavated, not less than 5m apart, 300mm square to a depth of 300mm below the proposed invert level of the effluent distribution pipe.
3. The 300mm square section of the hole was filled to a depth of at least 300mm with water and allow it to seep away overnight. This was important to saturate the soil surrounding the test hole to simulate day to day conditions in an operational drainage field.
4. Next day, the holes were refill the test sections with water to a depth of at least 300mm and observe the time (T) in seconds, for the water to seep away from 75% to 25% full level.
5. Weather conditions was fair at time of testing.
6. In evaluating test results please note that where the Vp value does not fall between 12 secs/mm and 100secs/mm then infiltration trench or bed systems may not be possible.

Trial Hole	Depth below ground level	Depth of Water (minimum 300mm)	Time taken between 75% & 25% full(seconds) (T)	Percolation Value $V_p = T/150$ (Vp)
<b>1</b>	(Test 1)	300mm	6402	42.68
	(Test 2)	300mm	6351	42.34
	(Test 3)	300mm	6435	42.90
<b>2</b>	(Test 1)	300mm	6418.5	42.79
	(Test 2)	300mm	6438	42.92
	(Test 3)	300mm	6400.5	42.40
			Average (Vp)	42.67

Site Location: **Caravan Park, Tai Hirion, Rhoscefnhir, Pentraeth. LL75 8YY**

Description of ground strata: **Shale / Clay**

Date test carried out: **26/02/2020**

Name of person carrying out the test: **Wiliam Samiwel Owen MSc**

# APPENDIX D



