DOMESTIC

WATER AND WASTEWATER TREATMENT SOLUTIONS



Achilles UVDB SILVER PLUS

NBS Source PARTNER

SpecifiedBy

MADE IN BRITAIN®

MARSH

UNRIVALLED PERFORMANCE



Marsh Industries delivers eco-friendly wastewater treatment products and solutions to the UK domestic sector from its manufacturing plants in Kettering, Raunds and Bridgwater.

We strive to be recognised as a collaborative and trusted partner to our customers, with a reputation for providing unrivalled products with unrivalled performance.

- Sewage treatment plants, septic tanks, septic conversion units, pump chambers and more

www.marshindustries.co.uk

Achilles UVDB SILVER PLUS · NBS Source PARTNER · SpecifiedBy · BRITISH WATER MEMBER · Future Water Association · QMD · BRITISH SAFETY COUNCIL Member · MADE IN BRITAIN

What are your options?

Choosing the right sewage treatment and disposal method for your site is essential to ensure effective long-term performance, protection of public health and the environment, and compliance with relevant legislation.

Sewage treatment and disposal can be provided by either public (foul) sewer or by a private sewage system. Use of a private system is only usually acceptable where connection to the public sewer is not possible, and as such should be discussed with your local Planning Authority at an early stage.

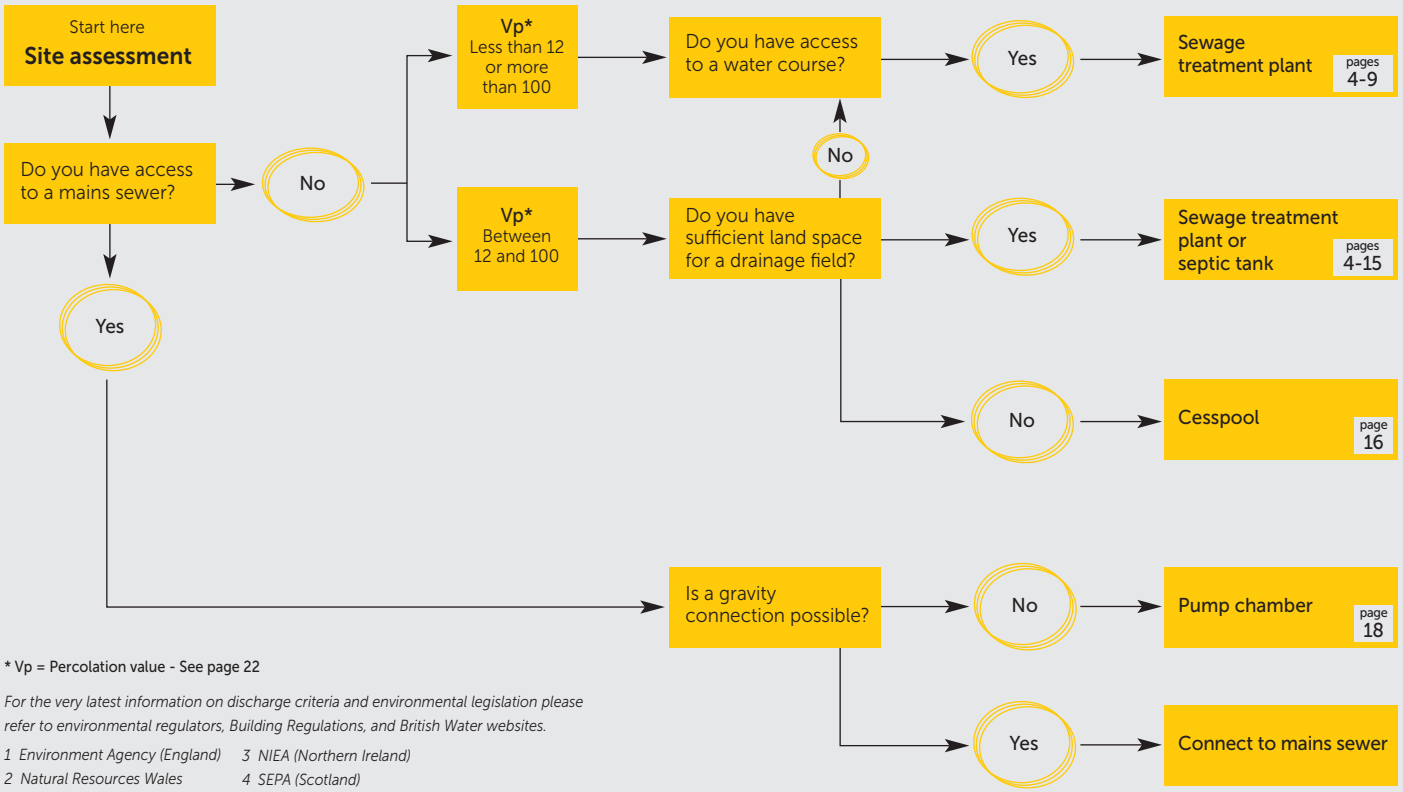
Before sewage effluent can be discharged to 'controlled waters' it must receive at least primary and secondary treatment:

- *For a discharge to ground the micro-organisms in the soil provide the secondary treatment*
- *For a discharge to a water course the sewage treatment must be provided by a Package Sewage Treatment Plant (PSTP) or equivalent*

See page 22 for further guidance on sewage treatment.

System selection

Hierarchy of off-mains discharge routes as laid out by the environmental regulators and British Water



* Vp = Percolation value - See page 22

For the very latest information on discharge criteria and environmental legislation please refer to environmental regulators, Building Regulations, and British Water websites.

1 Environment Agency (England)
2 Natural Resources Wales
3 NIEA (Northern Ireland)
4 SEPA (Scotland)

GEM-APS Aerated Precipitation System NEW
Eco-friendly, economical phosphate and ammonia reduction
page 10

Need to upgrade your existing septic tank?
The Marsh Uni:Gem★ septic conversion unit may be a practical solution
page 12

Noisy diaphragm compressors?
The Marsh Whisspurr® acoustic vibration reduction unit eliminates noise and vibration
page 17



Ensign®
Sewage treatment plants
Intensive biological processing for off-mains wastewater

Overview

The Marsh Ensign is widely regarded as one of the most efficient, reliable and economical sewage treatment plants on the market.

The standard Ensign has been adapted to improve reliability and the Ensign:Ultra now brings unique enhancements to further improve noise level, treatment efficiency and final effluent quality.

Class leading performance
Tested and approved to BSEN12566-3/A1:2009 all Ensign units provide treatment well within national consent requirements. Published test results of 11.5:19.2:8.4mg/ltr (BOD:suspended solids:ammonia), with influent concentrations on test higher than those chosen by most competitor plants, effectively equates to 97% pollutant removal.

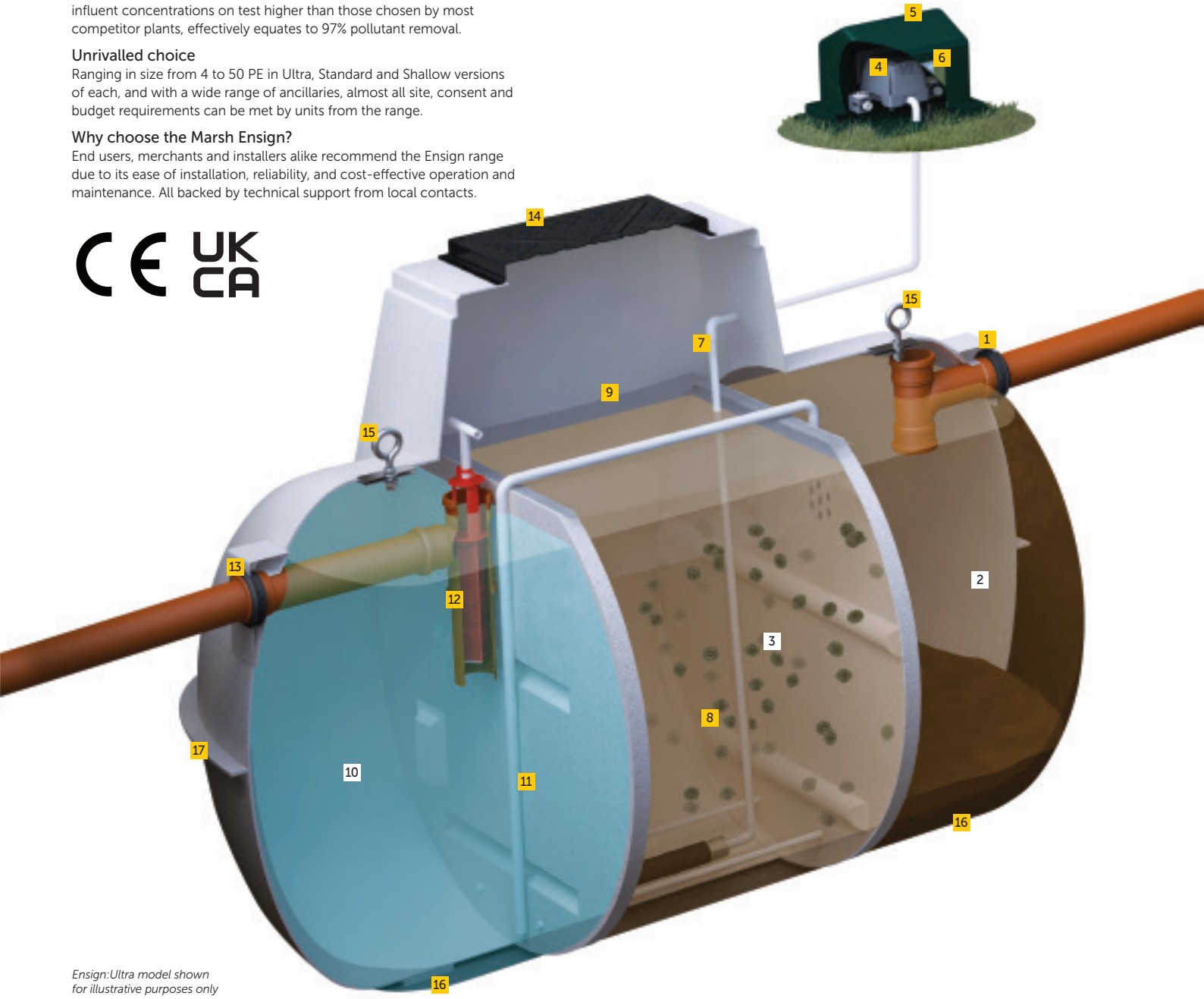
Unrivalled choice
Ranging in size from 4 to 50 PE in Ultra, Standard and Shallow versions of each, and with a wide range of ancillaries, almost all site, consent and budget requirements can be met by units from the range.

Why choose the Marsh Ensign?
End users, merchants and installers alike recommend the Ensign range due to its ease of installation, reliability, and cost-effective operation and maintenance. All backed by technical support from local contacts.

CE UKCA

Operating principle

In addition to anaerobic digestion taking place in the primary settlement chamber [2] the Ensign:Ultra unit allows the clarified water to pass into a second 'aeration' chamber [3] where it is treated to remove the dissolved constituents. Here aerobic bacteria, supported by diffused air and mobile media, ensures full treatment is achieved before the treated effluent and 'sloughed off' bacteria flows to a final settlement chamber [10]. The final effluent is then discharged to the drainage field or watercourse via a Polylok filter.



Ensign:Ultra model shown for illustrative purposes only

Benefits

1 **Inlet with 'Forsheda seal'**
Forsheda seal provides flexibility in the joint for easier installation.
Optional risers to increase invert depth are available.

2 **Primary settlement chamber**

3 **Aeration chamber**

4 **Advanced compressor with alarm (Ensign:Ultra units only)**
Near silent compressor ensures minimal running, maintenance and servicing costs. Integral alarm detects low pressure in air line. (Regular Low-energy compressor on Ensign:Standard models).

5 **Compressor housing - internal or external options available**
The compressor can be housed internally or externally with no difference in cost.
External recommended to increase compressor life, and supplied as standard on 4PE, shallow and pumped outlet versions.

6 **RCD/Electrical connection (Ensign:Ultra units only)**
The RCD box provides easier installation and proveds a higher degree of safety. (Regular plug/socket connection on Ensign:Standard models).

7 **PVC pressure pipe/diffuser(s)**
Provides a protective conduit for the air diffuser line. Can be easily removed for maintenance and cleaning.

8 **Bio-media**
High specification bio-media (310m^3 per m^2) and membrane diffusers ensure even circulation to eliminate 'dead spots'. The bio-media is contained by a stainless steel securing mesh to ensure no migration during handling or potential flooding.

9 **Stainless steel mesh (Ensign:Ultra units only)**
Retains media in aeration chamber during transportation and handling, and in the event of flooding.

10 **Final settlement chamber**

11 **32mm sludge return**
Larger diameter sludge return prevents the possibility of blockages and improves system circulation. Provides higher effluent quality whilst balancing flow over a 24 hour period or periods of intermittent use.

12 **Unique Polylok tertiary filter (Ensign:Ultra units only)**
The Polylok tertiary filter reduces suspended solids and BOD by a further 40% helping to extend drainage field life.

13 **Outlet with 'Forsheda seal'**
Forsheda seal provides flexibility in the joint for easier installation.
Optional pumped outlets are available.

14 **Impermeable lid (Ensign:Ultra units only)**
Heavy duty lid/frame improves strength and durability whilst blending into the surrounding environment. (Regular lid on Ensign:Standard models).

15 **Integral lifting eyes**
For safe and secure on-site handling.

16 **Stabilising feet**
Stabilising feet prevents the tank from rolling and allows safe and steady transportation and installation.

17 **Unique 'keying-in' lip**
Assists anchoring into granular or concrete surrounds.



Whisspurr
Acoustic Vibration Reduction (AVR) unit
Reduces noise and vibration on all types of diaphragm compressors. See page 17.

Guidance notes

Package Sewage Treatment Plant's (or PSTP's) are often a suitable option where groundwater in the surrounding environment is vulnerable, drainage field percolation values are restrictive, or direct discharge to a water course or surface water sewer is the prefered discharge method.

- *PSTP's should be sized using the latest version of British Water Flows & Loads which provides detailed information on sewage production figures and sizing calculations*
- *Regulatory authorities for the control of pollution in the UK normally require treatment plants conforming to BSEN12566:3 to be demonstrated as capable of producing a minimum effluent discharge quality of 20:30:20 (Biochemical Oxygen Demand;Suspended Solids: Ammoniacal Nitrogen in mg/ltr), although in certain areas more stringent site-specific qualities may be required*
- *No surface water should enter the system as this can reduce the system's capacity and cause solids to be flushed out which may prematurely block drainage field or cause pollution*
- *As with septic tanks sludge should be removed annually or in line with manufacturers instructions*

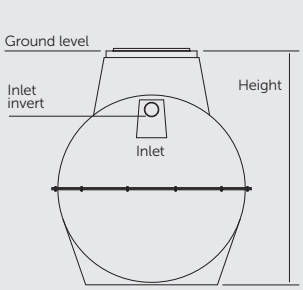
Many domestic sewage treatment plants offered by "internet resellers" claim to hold EN12566-3 compliance. This does not necessarily mean compliance with the UK National Forward, May 2007.

These plants may have been tested in their country of origin but not tested to the same criteria as Marsh Industries, where we strictly adhere to the UK National Forward. Contact contracts@marshindustries.co.uk for more information.

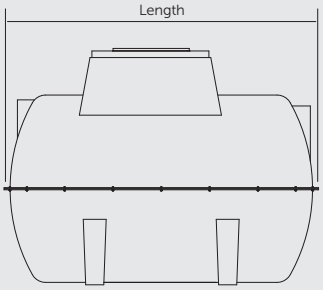


> The Marsh Ensign is widely regarded as one of the most efficient, reliable and economical sewage treatment plants on the market

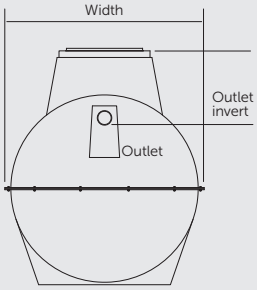
Specifications



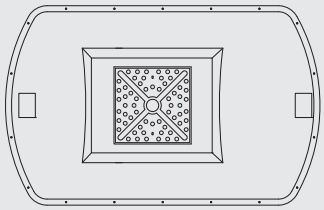
View on inlet end



Typical side elevation



View on outlet end


Typical plan view

Ensign:Ultra and Ensign:Standard

Model	Plant sizing examples (Approximate)		Length	Width	Height	Inlet		Outlet	
	Residential	Workplace (no canteen)	+/-50mm	+/-50mm	+/-50mm	Invert	Ø	Invert	Ø
4	NA	6 people	1620	1352	1575	540	110	600	110
6	4-bed / 6 people	9 people	2602	1650	1935	550	110	625	110
8	5-bed / 8 people	12 people	2602	1650	1935	550	110	625	110
10	2 x 3-bed / 10 people	15 people	2602	1650	1935	550	110	625	110
12	2 x 4-bed / 12 people	18 people	2860	1912	2139	550	110	625	110
16	2 x 4-bed & 1 x 3-bed / 16 people	25 people	2860	1912	2284	720	110	800	110
20	3 x 4-bed / 18 people	32 people	3650	1912	2284	720	160	800	160
25	4 x 4-bed & 1 x 3-bed / 24 people	38 people	3650	1912	2284	770	160	850	160
30	5 x 4-bed or 6 x 3-bed / 30 people	48 people	4200	1912	2284	770	160	850	160
35	7 x 3-bed / 35 people	56 people	4200	1912	2284	770	160	850	160
40	8 x 3-bed / 40 people	72 people	5200	1912	2284	770	160	850	160
45	9 x 3-bed / 45 people	80 people	5200	1912	2284	770	160	850	160
50	9 x 3-bed / 45-50 people	80-90 people	5200	1912	2284	770	160	850	160

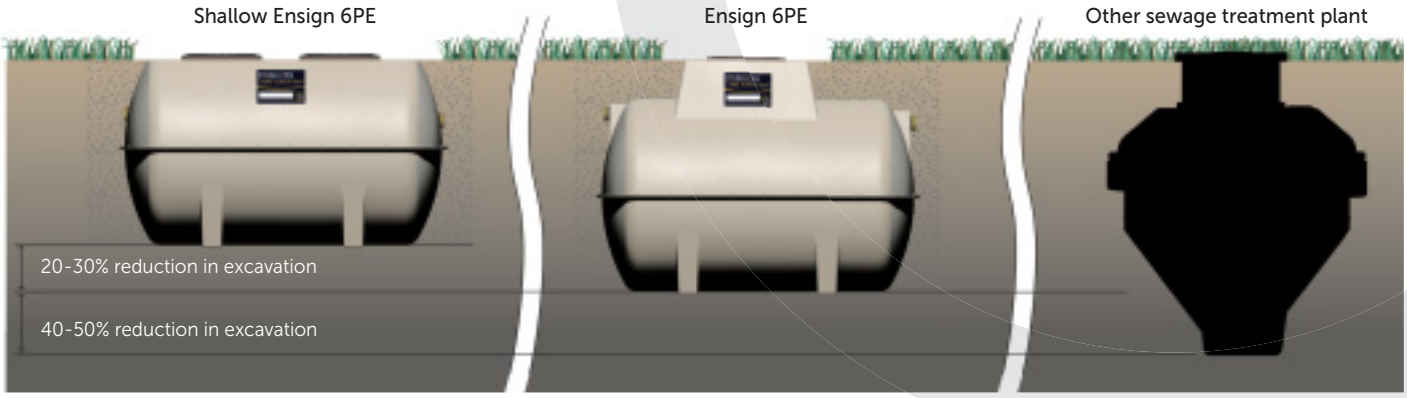
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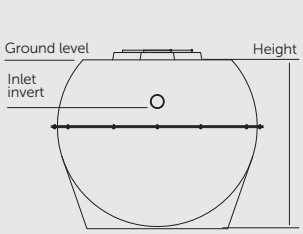
> *Larger population sewage treatment plants may be supplied as multiple tank configurations.*
> *For plant sizing, precise tank sizes and configurations, please contact Marsh Industries*
> *All dimensions in mm*

Shallow units

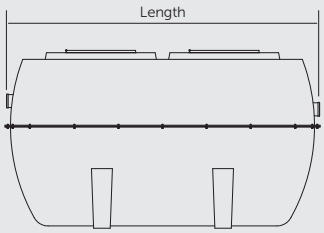
Common sewage treatment plants on the market often exceed 2.3m high. Marsh Industries offer a range of shallow plants from 4-35PE that are only 1.6m in height, meaning installation is not only possible*, but easier and safer too.

**Shallow Ensign's are often favoured when hard rock site conditions mean deeper alternatives, involving costly and time-consuming excavation.*

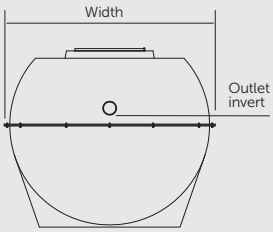




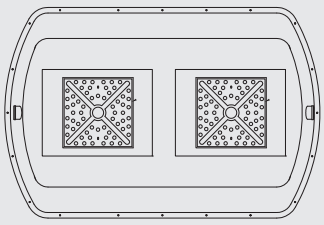
View on inlet end



Typical side elevation



View on outlet end


Typical plan view

Shallow Ensign:Ultra and Shallow Ensign:Standard

Model	Plant sizing examples (Approximate)		Length	Width	Height	Inlet		Outlet	
	Residential	Workplace (no canteen)	+/-50mm	+/-50mm	+/-50mm	Invert	Ø	Invert	Ø
6	4-bed / 6 people	9 people	2860	1912	1600	500	110	575	110
8	5-bed / 8 people	12 people	2860	1912	1600	500	110	575	110
10	2 x 3-bed / 10 people	15 people	2860	1912	1600	500	110	575	110
12	2 x 4-bed / 12 people	18 people	2860	1912	1600	500	110	575	110
16	2 x 4-bed & 1 x 3-bed / 16 people	25 people	3650	1912	1600	500	110	575	110
20	3 x 4-bed / 18 people	32 people	4200	1912	1600	500	160	575	160
25	4 x 4-bed & 1 x 3-bed / 24 people	38 people	4200	1912	1600	500	160	575	160
30	5 x 4-bed or 6 x 3-bed / 30 people	48 people	5200	1912	1600	500	160	575	160
35	7 x 3-bed / 35 people	56 people	5200	1912	1600	500	160	575	160

Notes:
> *Larger population sewage treatment plants may be supplied as multiple tank configurations.*
> *For plant sizing, precise tank sizes and configurations, please contact Marsh Industries*
> *All dimensions in mm*