



Specifier Guide

Technical Commentary

**A Practical Guide to Waste
System Solutions.**



When considering waste system solutions when municipal sewer or water systems are not available, it is important to understand the practical applications of alternative systems. This guide will analyse the two most common alternatives for public facility application:

- A collection well (pit) system; and
- On-site treatment systems – sometimes referred to as composter.

Collection Well Systems

The Basics

Waste falls directly into a chamber (pit) and periodically is pumped out and relocated to a municipal sewerage facility for processing. The time between pump-outs is dependant on a) the collection well volume capacity, and b) the usage rate of the toilet facility.

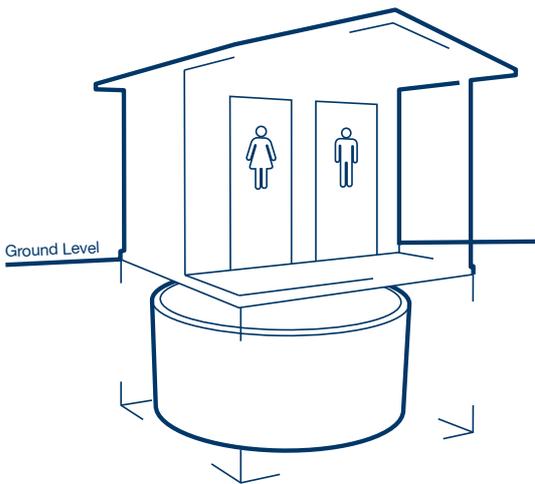
To eliminate odours there are a range of environmentally friendly liquid solutions that can be added to the collection well at maintenance periods that eliminates odours. For example, Triple 7-580 requires a dose of 75ml to be added to the tank quarterly. A 1.2L bottle costs approximately \$30. At Pureablue we also incorporate an odour-skirt in the pedestals to further minimise odours.

Advantages

- Are a simple, sturdy, and vandal-proof solution, easy to maintain and has a life that can outlast the building.
- Some collection wells are engineered sufficiently to be structural footings for the toilet facility building. Essentially performing two jobs at once. No additional structural elements are required – ofcourse based on the size of the building.
- Can be installed below ground level allowing the finished floor level of the building to at ground level. No steps or ramps required.
- Collection well systems are applicable in sensitive water catchment areas where zero-to-earth discharge is required by law.

Disadvantages

- For systems in extreme remote areas, such as bush walking trails, there is no official cleaning schedule. This means a special trip needs to be made for pumpout. However, remote sites usually mean low usage volume and typically even with a small collection well, requires a pump –out only once every twelve months.



On-site Treatment Systems

The Basics

There are several proprietary systems available on the market, each works slightly different. Fundamentally they all consist of a chamber where waste falls into and through a combination of systems that the waste slowly moves through over a period of typically 28 days. After this period the waste is suitable for dispersion into an underground absorption trench.

Systems come in different sizes to cater for different levels of usage volume.

Proprietary available systems are:

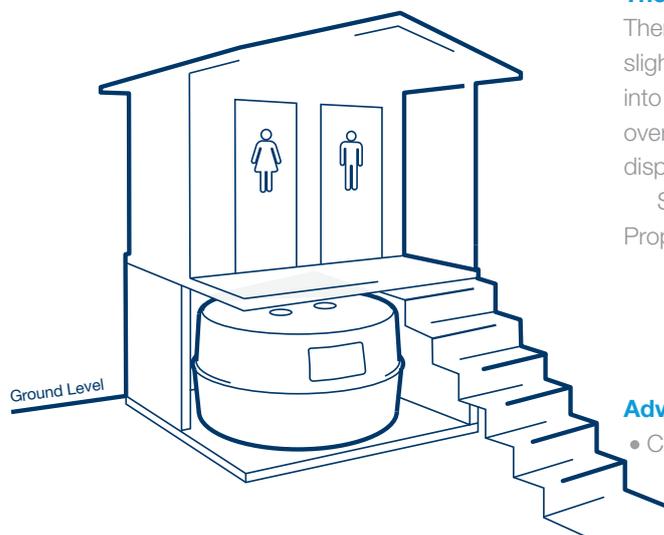
- Downmus
- Biolytix
- Clivus multrum

Advantages

- Can be a self-sustainable waste treatment option.

Disadvantages

- No proprietary systems are available as a structural element and need to have an additional structure built around them to house the system and support the building above.
- The systems need to be positioned above-ground for access to the system and gravity powered discharge to the absorption trench. This requires the building to be elevated with stairs and long, low-pitch disabled access ramps. An additional project cost.
- All of the proprietary systems are roto-molded plastic, which in public facility applications makes them extremely susceptible to vandal attack – predominantly arson. You can read about a typical example of an arson attack on a facility via www.pureablue.com.au/...htm
- Maintenance is resource intensive and requires dedicated maintenance managers. Some systems require the waste to be periodically 'turned-over' and aerated. These requirements create significant occupational health and safety challenges to overcome. Note: a lot of systems in domestic applications fail due to lack of dedication. Understand that a public system requires an even higher level of dedication.
- On-site systems are built to operate within a fairly narrow operating window. This means that if you have an unexpected spike in usage, eg. A few bus loads of people, the results can be disastrous. Raw sewerage will overflow causing public safety risks and potential legal risks in 'zero-discharge-to-ground' water catchment areas. On the following page is a diagram explaining this concept further.



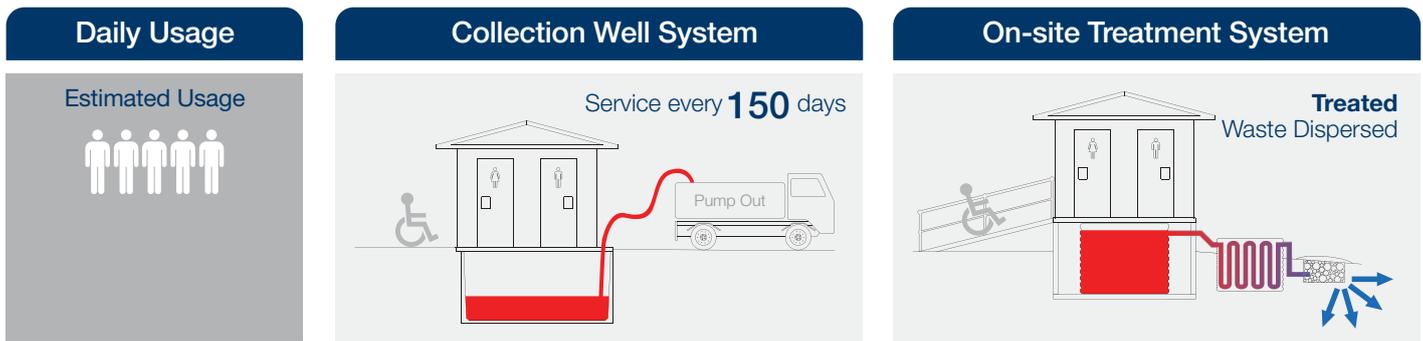
Important Consideration: Typical Failure Of On-site Treatment Systems

Over our 30 years of experience we have seen plenty of systems that succeed and fail. It is important for you to understand the limitations displayed below of on-site treatment systems. Additional reading about waste systems can be in our Vandal Vulnerability report. Available for download from our website at www.pureablu.com.au/news/index.htm

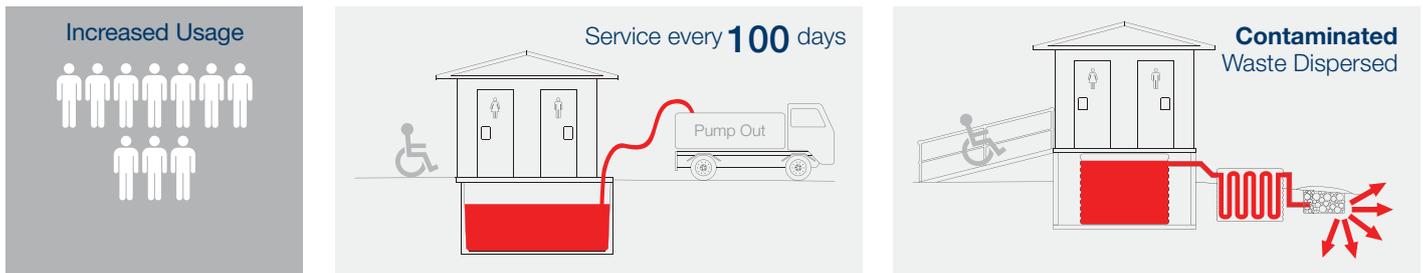
The Guessing Game With On-Site Treatment Systems

Accurately estimating usage rates is an unrealistic task, especially estimating usage rates for the lifetime of the system. All systems need good information to ensure the correct sized system is installed. For example, you may know that 2000 cars pass a roadside rest area per day, and you may make an educated guess that 50 cars will stop, and hence about 100 people will use the system daily.

Comparison of Collection Well and On-site Treatment System



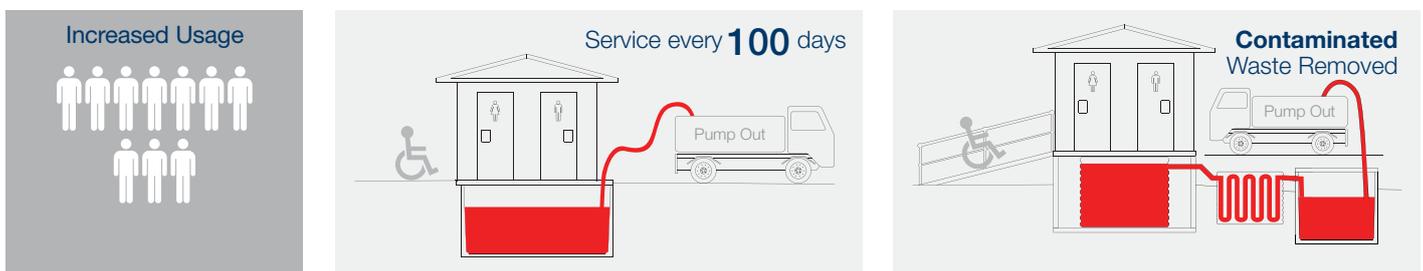
However, if you under-estimate, or rates change over time...



There is no worries with the CWT system. It is capable of 5000 uses per day. There is still 'Nil to ground'. All that has to be changed is the service period.

If system capacity is exceeded, quality of discharge water can degrade. Plus absorption trench can fail, allowing liquid discharge over land which then requires remedial work.

The result... An expensive, over-complicated collection well system. 'What is the point?'



Site Evaluation:

A Checklist to Determine What is Right for Your Project Site

By providing this preliminary information we can select and design a system of suitable capacity to satisfy your needs. These base numbers will ensure there is not a failure of the system, with subsequent environmental issues such as above ground discharges, flows in to waterways, and OH&S concerns in the clean up and remediation of the system. From this information we can also specify maintenance management Plan for your site.

Project details

Q1. Organisation: _____

Q2. Project location: _____

Building configuration

Q3. What is your anticipated building configuration:

- 1 x AS1428 (2009) Accessible booth
- 1 x AS1428 (2009) Accessible booth, and
1 x AS1428 (2009) Ambulant booth
- 1 x AS1428 (2009) Accessible booth, and
2 x AS1428 (2009) Ambulant booths

Environmental considerations

Q4. Is the proposed site a sensitive site adjacent to a water course, lake or dam?

- No Yes

If yes, how far to the waters edge? _____ m

Q5. Do you have to consider mandatory compliance for human waste? Eg NSW Silver book?

- No Yes

If yes, does this compliance specify zero discharge ?

- No Yes

Q6. The weekly cleaning of the facility to be done by:

- Your staff Outsourced to contractor

Q7. The servicing of the site treatment system to be done by:

- Your staff Outsourced to contractor

System capacity design

Q8. What best describes your proposed site:

- Roadside rest area
- Picnic/passive rec area municipal dam
- Picnic/passive rec area riverside in council area
- Picnic/passive rec non urban park
- Sporting complex
- Remote walking trail
- Workplace, staff use only
- Other, please specify: _____

Anticipated Usage

Our experience is, never be conservative. Always over estimate.

Factors you must consider.

Roadside rest areas.

- Seasonal: school holidays, public holidays/long weekend.
- Coaches: will they use it?

Picnic/passive rec area municipal dam, rivers side, non urban parks.

- Seasonal: more use in summer, peaks at weekends.

Sporting complex.

- Single sport or multi purpose for years round use.
- Peak loading at carnivals.

In some cases, an educated guess is probably the best that can be achieved.

Q9. Estimated minimum daily use will be: _____

Q10. Estimated maximum daily use will be: _____

Q11. Percentage safety factor I would prefer to be built in: _____ %

Q12. This form was completed by _____
on / /20

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