

On-site sewerage facilities for non-sewered properties application guidelines

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1 INTRODUCTION

1.1 Purpose

These guidelines provide information to land owners and other related parties for use during the permit application and installation stages of an on-site sewerage facility and should be read alongside the Townsville City Plan policy *SC6.4.3.10 On-site sewerage facilities*. *SC6.4.3.10* is particularly relevant to the planning approval stage, particularly for subdivision planning, but also contains information that may be relevant to permit applications. On-site sewerage facility designers need to be familiar with the requirements of both documents.

Council's Assets and Hydraulics Team will apply these guidelines when processing applications to install an on-site sewerage facility.

1.2 Definitions

Unless noted otherwise all terms have the same meaning as given in the *Plumbing and Drainage Act 2018* (the Act), the *Plumbing and Drainage Regulation 2019* (the Regulation) and the relevant Australian/New Zealand Standard or Australian Standard. If a definition given in the relevant Australian/New Zealand Standard or Australian Standard is inconsistent with the Act or Regulation, the Act or Regulation prevails to the extent of the inconsistency.

Designer: An appropriate person in accordance with Section 69 of the Regulation for assessment of on-site sewerage work.

Intermittent water course: A natural or artificial channel, identifiable by recognizable bed and banks, along which rain water or storm water usually or occasionally flows. The term does not include a closed conduit for conveying storm water.

Top bank - the same meaning as outer bank as defined in the *Water Act 2000*.

1.3 Types of systems

There are many types of sewerage systems used in the treatment of on-site sewerage. The most common types utilised in Townsville are as follows:

Primary or septic systems

These are the most basic type of treatment systems. The effluent must, in most circumstances, be discharged below ground level into trenches.

Secondary treatment plants

These systems are commonly installed and the effluent may be used for sub-surface and surface irrigation (in addition to below ground trenches).

Advanced secondary treatment plants

These systems produce an effluent of a very high quality and are especially suited to situations where high water tables exist, or where set back distances need to be kept to a minimum. The effluent may be used for sub surface or surface irrigation (in addition to below ground trenches).

Composting

These systems can be wet or dry systems with the effluent being of a primary category. There will be strict conditions on the disposal of compost from these types of toilets which must be adhered to. This type of installation requires a greywater treatment system for the disposal of greywater. The installation is to comply with the requirements of the *Queensland Plumbing and Wastewater Code*.

Chemical

There will be strict conditions on the disposal of waste from these types of toilets which must be adhered to. This type of installation requires a greywater treatment system for the disposal of greywater. The installation is to comply with the requirements of the *Queensland Plumbing and Wastewater Code*.

Hybrid toilet

This system requires a minimum of land application area. This type of installation requires a greywater treatment system for the disposal of greywater.

1.4 Authorised treatment plants

Only treatment plants authorised by the appropriate state government department shall be installed.

1.5 Legal parameters

Plumbing and Drainage Act 2018 (and associated Regulations)

Queensland Plumbing and Wastewater Code

AS/NZS 1547:2012 On-site domestic wastewater management

AS/NZS 3500.2:2018 Sanitary Plumbing and Drainage

Townsville City Plan 2014

[SC6.4.3.10 On-site sewerage facilities](#), SC6.4 Development manual planning scheme policy

2 APPLICATIONS

2.1 Applying for a permit

Before an on-site sewerage facility can be installed on a property, the land owner (the applicant) is required to apply for a permit to install the treatment facility on that property, giving Council all the necessary information required to make an informed decision.

Applications to install an on-site sewerage facility are to be lodged with Council's Assets and Hydraulics Team as part of a plumbing/drainage application for a particular property. Fees are applicable at this time.

2.2 Forms and documents required

The following forms and documents must be submitted as part of the application process (refer to Associated Documents).

- a) Form 1 Permit work application for plumbing, drainage and on-site sewerage work.
- b) One copy of the drainage design plan at a scale of 1:100 or 1:200, indicating the drainage from the house fixtures to the treatment facility
- c) OS-03 Design certificate for on-site sewerage facilities
- d) One copy of the Designer's Report/Design

2.3 Assessment process

Following the lodgement of the application and payment of the applicable application fee, the following assessment procedures will take place. At any stage of the assessment, incorrect or incomplete information may cause a delay in the approval process while further information or clarification is sought.

- a) The application will be checked to ensure that the application and associated documentation is in accordance with the requirements.
- b) A Council inspector will carry out a site inspection to confirm the information supplied in the application.
- c) The application is checked to ensure that it complies with *the Queensland Plumbing and Wastewater Code*, , AS/NZS 1547:2012 and these guidelines.
- d) If discrepancies are revealed, an information request will be sent to the applicant requesting further information.
- e) If the application is successful, a permit will be issued. This permit will contain certain conditions and/or notes applicable to the installation of an on-site sewerage facility on that site.

3 DESIGN

3.1 Registered designers

For a design to be accepted, the designer must be registered with the Assets and Hydraulics Unit. Persons wishing to be registered as a designer must apply to Council on *Form OS-02 Application to Register as a Designer of On-Site Sewerage Facilities*.

It is the designer's responsibility to carry out their duties in accordance with AS/NZS 1547:2012 Clauses 3.3 and 3.4, the *Queensland Plumbing and Wastewater Code* and these guidelines. Repeated failure to abide by these instructions and submission of substandard applications may see the designer deregistered with Council. Should this happen, no further designs would be accepted by Council from this designer.

3.2 Designer's report/ design

3.2.1 Report requirements

The designer's report/design must comply with the requirements of AS/NZS 1547:2012, the *Queensland Plumbing and Wastewater Code* and these guidelines. All relevant documents must be referenced on the *Design Certificate for On-Site Sewerage Facilities form* by means of a report number and a drawing number. See the Designer's Report/Design Checklist at Attachment A.

3.2.2 Completion of works requirements

Designers of on-site sewerage facilities shall provide at the completion of the works a completed *Form 8 An on-site sewerage work declaration* together with a certified as-constructed plan of the installation before a final plumbing/drainage certification is issued. Designers must carry out, or have carried out on their behalf, the inspections necessary to enable them to provide this documentation.

Please note that the person certifying the completed works cannot be the person who carried out the installation works.

3.3 Equivalent persons and flow rates

The number of equivalent persons, on which the wastewater flow design allowances for an on-site sewerage treatment facility and effluent disposal area are based, shall be the number of bedrooms (as indicated on the floor plan) plus one. The minimum design for a dwelling shall allow for three persons. The minimum design for a single bedroom relative's apartment shall allow for two persons.

While some of the Appendices in AS/NZS 1547:2012 are listed as informative, Council will accept these as Acceptable Solutions when used. If information supplied as part of the design is outside these guidelines then information to support the design criteria will be required.

The flow rates shall be determined using Appendix H Typical Domestic Wastewater Flow Design Allowances in AS/NZS 1547:2012.

If the wastewater flow design allowance is reliant on the installation of water reduction fixtures the designer must clearly indicate in the report or design the water reduction fixtures that are to be installed to achieve these flow rates. It is the designer's responsibility to ensure that the water reduction fixtures are installed.

3.4 Set back distances

Set back distances are to comply with the requirements of the *Queensland Plumbing and Wastewater Code* and AS/NZS1547:2012.

Council may, at its discretion, consider viral die off and nutrient decay calculations as a means of justifying a reduced set back distance from the following features:

- » top bank of an intermittent water course
- » easement boundary of an unlined open stormwater drainage channel or drain.

The consideration of reduced setback distances are subject to the requirements of the Townsville City Plan, which may require increased setback distances to watercourses or in some instances, development to be placed outside of riparian or wetland buffer areas as detailed in 8.2.9 Water resources catchment overlay code or 8.2.8 Natural assets overlay code. Furthermore, it will be necessary for applications to demonstrate that there will be no adverse environmental impacts, taking into consideration cumulative impacts from other development, to place infrastructure near a watercourse, wetland or open stormwater drainage channel/drain.

3.5 Site and soil evaluation

The on-site designer must undertake (or have undertaken) whatever soil testing procedures they consider necessary to enable an appropriate design to be completed. This may include, but not be limited to, the following: soil percolation tests; bore holes; test pits; and soil textural analysis.

Council will be assessing whether the following areas have been addressed:

- » topography and drainage;
- » off-site impacts;
- » presence of any fill material;
- » geotechnical hazards;
- » potential for environmental or public health impacts.

In addressing the above elements, the site and soil evaluator (as described in AS/NZ Standard 1547:2012) should take the following points into consideration when carrying out a site and soil evaluation.

- a) The evaluator is to conduct a site evaluation to determine potential effluent disposal problems. These could include gullies, rock formations, hollows, or inconsistent soil texture, both on and off the property.
- b) The evaluator is to also consider previous and current weather conditions in the determination of the site's suitability for effluent disposal.
- c) The site plan should show the setback requirements (for buildings, pools, bores, permanent and intermittent water courses and drains etcetera) both on and off the property, which may influence the location of the disposal area.
- d) From the commencement of site work the proposed disposal area must not be subject to vehicular traffic or machinery of any type except those required for installation.
- e) The proposed land application area shall not be cut, filled or modified in any way after the site evaluation has been carried out. If this does occur the designer must be informed so that appropriate amendments can be made to the design.
- f) The designer is to make their recommendation based on the site and soil evaluation carried out.

3.6 Water tables in tidal areas

To determine the minimum accepted tidal water table in seaside areas that experience tidal influence such as Cungulla, Magnetic Island, Cleveland Palms, etc., the minimum water table level is taken to be the contour level of 2.25 metres (Australian Height Datum). This allows for an astronomical tide of 4.1 metres. Therefore, to determine vertical separation distances, this level must be taken into consideration.

Please note that a site and soil evaluation may indicate the presence of a higher water table. This, along with wet weather water tables, should be taken into consideration.

3.7 Pump wells

Pump wells are to be designed using the following design parameters:

- » have an automatic pump out systems, e.g. float switch;
- » be fitted with a high water-level alarm;
- » have a retention volume as required by AS/NZS 1547:2012;
- » be located/installed so as not to be influenced by flooding;
- » be cleaned out on a regular basis.

3.8 Greywater dispersal

3.8.1 Dispersal using a sullage hose

Greywater (excluding greywater from a kitchen sink) may be dispersed over a lawn or garden area (within the property), by means of a sullage hose. The following conditions shall apply.

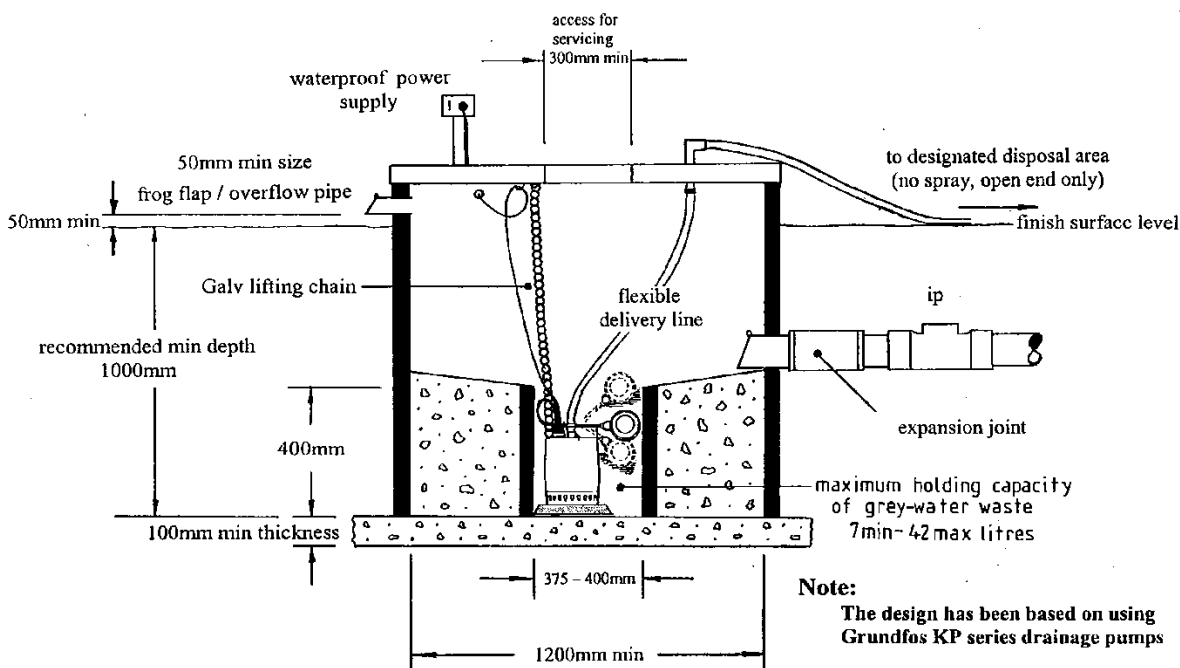
- a) The minimum length of a sullage hose shall be 9 m;
- b) The minimum internal diameter of a sullage hose shall be 65 mm;
- c) Baths and laundry tubs shall not discharge to a floor waste gully unless the floor waste gully either discharges through an overflow relief gully to a 65 mm sullage hose or alternatively discharges to an 80 mm (minimum) sullage hose;
- d) Fixtures located in different rooms shall not be connected to the same waste pipe unless the waste pipe either discharges through an overflow relief gully to a 65 mm sullage hose or alternatively discharges to an 80 mm (minimum) sullage hose;
- e) The waste pipe connection point for the sullage hose shall be a minimum of 150 mm above the ground surface level unless the ground surface level slopes away from the waste pipe connection point a minimum of 150 mm over the 9 m length of the sullage hose;
- f) A vent or air admittance valve shall be installed on any waste pipe when the length of waste pipe exceeds 10 m.

3.8.2 Greywater transfer station

A greywater transfer station may be utilized as an alternative to the sullage hoses mentioned above. The following conditions will apply:

- The waste pipes/drainage connecting fixtures to the greywater transfer station must comply with the AS/NZS 3500. An overflow relief gully and vent will be required.
 - The greywater transfer station shall be of a design similar to that indicated in the diagram below.
 - The greywater shall be pumped out of an open-ended hose. (Sprinklers, etc., that allow the greywater to become airborne are not permitted.)
 - It is possible for the waste from an existing kitchen sink to discharge to a greywater transfer station provided it discharges through an appropriate grease interceptor trap prior to discharging to the greywater transfer station. (This is only possible for existing kitchen sinks that were originally approved to discharge through a sullage hose.)
- Note: Greywater from all other kitchen sinks must be disposed of through the treatment system.

Typical design of a greywater transfer station



3.9 Spray irrigation areas

When surface irrigation is used, the irrigation hose must be of a length that ensures the spray plume remains inside the land application area. Note that some set back distances are increased if surface irrigation is used. Spray irrigation will only be allowed for secondary or advanced secondary quality effluent.

4 INSTALLATION

4.1 Installation procedure

Following the granting of a compliance permit to carry out the work, the licensed drainer may now begin installation of the on-site sewerage facility.

The installation process will need to be inspected by the designer of the facility (or the designer's representative) to ensure that the on-site sewerage facility and land application area have been installed in accordance with their design. If the on-site sewerage facility and/or the land application area are to be located in a position different to that indicated on the design approved by Council, an amended design may need to be submitted for approval. Council's standard fee would apply for the approval of the amended design.

4.2 Materials

Only approved materials are to be used in the installation of on-site sewerage facilities.

Any pipe and fittings used for the transfer of effluent from a treatment plant to a land application area must be identified by lilac markings or fully lilac in colour. If not then ALL such pipe work not colour coded is to be covered with appropriate marking tape to designate treated effluent.

4.3 Certificates

The following certificates must be submitted following installation:

- a) Form 11 Service Report – Treatment Plant
- b) Form 8 An on-site sewerage work declaration

At the completion of the installation the designer must complete these forms and lodge them with Council's Assets and Hydraulics Team before a final plumbing/drainage certification is issued.

These certificates are to be completed by the approved individual. Certificates issued by a firm or company will not be accepted.

5 POST-INSTALLATION

5.1 Building modifications

Extensions or modifications to buildings may lead to the on-site sewerage facility requiring modification to cope with the extra flow. When a building is to be altered so that more bedrooms are proposed, an application along with a report by a registered designer is required to be submitted for any associated plumbing work to verify that the existing on-site treatment facility will adequately cope with the extra flow. Most likely, the system will need to be upgraded if an extra load is placed on the existing system. Alternatively, any plumbing fixtures associated with the new building work may discharge to a new on-site sewerage facility designed for the purpose.

5.2 Replacement/relocation of existing on-site sewerage facilities

Facilities designed by a registered designer (usually after the year 2000).

Existing on-site sewerage facilities that have been designed and certified by a registered designer may only be modified in certain circumstances. (The inappropriate modification of a facility may void any liability the designer had in relation to the facility). Further information can be sought from Council's Assets and Hydraulic Team in relation to this issue.

Facilities not designed by a registered designer (usually before the year 2000).

Existing on-site sewerage facilities that have not been designed and certified by a registered designer may in most cases be replaced/relocated (like for like) to a position as close as practical to the existing facility. A plumbing/drainage application would need to be submitted for this work. The application should include:

- » the location and size of the existing facility/trench;
- » the location and size of the proposed facility/trench;
- » the location of relevant buildings/structures, etc.;
- » a cross sectional detail of the proposed trench.

Please contact Council's Assets and Hydraulics Team to determine if the above is a possible option for a particular installation.

5.3 Maintenance

The owner of a property on which an on-site sewerage facility is located is required to maintain the facility in appropriate working order, in accordance with the *Queensland Plumbing and Wastewater Code*. Treatment plants are to be serviced in accordance with the model approval (as granted by the appropriate state government department). A copy of each service certificate is to be submitted to Council's Assets and Hydraulics Team.

5.4 Registration of treatment plants

Council will be maintaining a register of all on-site treatment plants within the Townsville area.

5.5 Audit program

Council may carry out audit inspections to ensure that on-site sewerage facilities are performing to the requirements of their licence agreements and conditions set out in the permit to install and that there is no threat to public health or damage being caused to the environment.

6 ASSOCIATED DOCUMENTS

Forms Application to register as a designer of on-site sewerage facilities, Design Certificate for on-site sewerage facilities, and On-site sewerage facility commissioning certificate can be found on Council's website at townsville.qld.gov.au/payments-rates-and-permits/forms-and-permits

Form 1 Permit work application for plumbing, drainage and on-site sewerage work and *Form 8 An on-site sewerage work declaration* are issued by the Queensland Government. Copies of these forms can be found on the Queensland Government web site.

The *Queensland Plumbing and Wastewater Code* is available on the Queensland Government website.

7 REGISTERED DESIGNER'S REPORT/DESIGN CHECKLIST

✓	Typical information a designer should include in an on-site sewerage facilities report/design. Note: This checklist does not need to be submitted
	1. All documents are to be referenced on the <i>Design Certificate for On-Site Sewerage Facilities</i> form by means of a report number and a drawing number
	2. The owner's name and the address of the property
	3. Council registered designer name
	4. Show the number of bedrooms (if applicable)
	5. Show the number of equivalent persons (refer to the calculation in these guidelines)
	6. Show the "design flow rate" per person (expressed in Litres/Person/Day)
	7. Show the total design flow rate in litres/day (this equates to the design flow rate per person x equivalent number of persons)
	8. Level of treatment: primary, secondary or advanced secondary
	9. Septic tank capacity (state if an outlet filter is required)
	10. Soil texture
	11. Soil category
	12. State the design loading rate or the design irrigation rate
	13. Land application area dimensions and total sq/m required
	14. State the type of land application area and provide cross sectional and plan details of the land application area (include relevant pipe-work and fittings)
	15. State if a pump station is required (must have 12 hrs retention volume)
	16. The alarm type and location of panel (if applicable)
	17. Detail any environmental concerns. For example, the location of any bores, wells or water courses, etc., are to be indicated on the design, or an indication is to be given that none of these features are located within the applicable set-back distances
	18. State the type of water reduction fixtures to be installed (if required)
	19. Are all vertical and horizontal separation distances met?
	20. Show the ground level height above AHD (if in seaside area)
	21. Cut off drains/diversion mounds (if required)
	22. A reserve land application area is to be indicated or the issue adequately addressed
	23. The percentage of fall in the land (in the vicinity of the land application area) should be indicated on the design or an indication given that the land is essentially level

✓	<p>Typical information a designer should include in an on-site sewerage facilities report/design.</p> <p>Note: This checklist does not need to be submitted</p>
	<p>24. Site plan</p> <ul style="list-style-type: none"> • north point; • full property description; • name of person who evaluated the site; • scales of 1:200 or 1:500; • predominant wind direction; • location, height, density and type of vegetation; • relevant access roads, tracks, vehicle manoeuvring areas, storage areas; • test boreholes/pits; • fall of land; • setbacks; • the location of relevant bores, wells, drains, water courses (including intermittent water courses), creeks, etc.; • relevant buildings, fences, property boundaries, pedestrian paths, walkways, recreation areas, retaining walls, in-ground swimming pools, in-ground potable water tanks; and • primary and reserve land application areas.