



**SEPTIC TANK AND COLLECTION WELL
ACCREDITATION GUIDELINE**

**(Septic Tanks, Collection Wells, Septic Closets (Blackwater Tanks),
Greywater Tanks, CED Pretreatment Tanks, and Sewage Ejection Pump Stations)**

**PART 4
LOCAL GOVERNMENT (APPROVALS) REGULATION, 1999**

DECEMBER, 2001.

CONTENTS

1	OBJECTIVES	1
2	SCOPE	1
3	LEGISLATION.....	1
4	INTERPRETATION.....	2
4.1	Abbreviations	2
4.2	Definitions.....	2
5	ROLES OF INVOLVEMENT	3
5.1	Local Authorities	3
5.2	Environment Protection Authority.....	3
5.3	NSW Department Of Health	3
6	ACCREDITATION REQUIREMENTS.....	3
7	APPLICATION CRITERIA.....	4
8	PERFORMANCE REQUIREMENTS AND PERFORMANCE CRITERIA.....	4
8.1	Scope.....	4
8.2	Function and Context of Use	4
8.3	Performance Requirements	5
8.4	Performance Criteria.....	5
9	GENERAL DESIGN REQUIREMENTS.....	6
9.1	Septic Tanks	6
9.2	Collection Wells	6
9.3	Sewage Ejection Pump Stations	6
10	SPECIFIC REQUIREMENTS - DOMESTIC.....	7
11	INSTALLATION AND USER INSTRUCTIONS	7
12	CERTIFICATE OF ACCREDITATION CONDITIONS.....	8
13	SPECIFIC REQUIREMENTS - COMMERCIAL.....	8
13.1	Accreditation.....	8
13.2	General Design Requirements.....	8
13.3	Structural Requirements.....	8
13.4	Multiple Unit Connection	8
13.5	Single Pump-out systems	8
14	LOCAL AUTHORITY APPROVALS	9
	Annexure 1	10
	Annexure 2	11
	Annexure 3	15
	Annexure 4	22

SEPTIC TANK AND COLLECTION WELL ACCREDITATION GUIDELINE

(Septic Tanks, Collection Wells, Septic Closets (Blackwater Tanks), Greywater Tanks, CED Pretreatment Tanks, and Sewage Ejection Pump Stations)

1 OBJECTIVES

The objectives of this Guideline are to:

- . specify the performance requirements and performance criteria for septic tanks and collection wells;
- . provide details for manufacturers of septic tanks and collection wells to enable product accreditation by an independent third party;
- . specify the capacities of septic tanks and collection wells for installation in NSW.
- . provide guidance for the installation of commercial type septic tanks.

2 SCOPE

This Guideline sets out the minimum requirements for accreditation by the NSW Department of Health (NSW Health) of septic tanks and collection wells used in the treatment and/or collection of domestic sewage primarily from single dwellings.

The vessels used for septic tanks and collection wells must also be used for septic closets (blackwater tanks), greywater tanks, CED pretreatment tanks and sewage ejection pump stations. Aerated Wastewater Treatment Systems (AWTS) although accredited under a separate Guideline must also use accredited collection wells as the vessel to contain the AWTS apparatus.

A manufacturer of a septic tank and/or collection well is legally required to obtain NSW Health accreditation for each capacity tank or well produced. Local Authorities in NSW are only permitted to approve of installations of septic tanks, collection wells, septic closets, greywater tanks, CED pretreatment tanks, and sewage ejection pump stations which are accredited by NSW Health. Specific details on how to obtain NSW Health certification of accreditation are contained in Section 7.

3 LEGISLATION

Section 68, Local Government Act, 1993, prescribes that:

“a person may carry out the activity specified in the following table (Part C Management of Waste, Item 5, of the Table, .install, construct or alter a waste treatment device or a human waste storage facility or a drain connected to any such device or facility, only with the prior approval of the council.”

The Local Government (Approvals) Regulation 1993, was amended on 1 September 1999 by the Local Government (Approvals) Regulation (Sewage Management) Regulation, 1999. A definition of a sewage management facility has been included in Part 4 of the Regulation and it means:

- “(a) a human waste storage facility, or
 - (b) a waste treatment device intended to process sewage,
- and includes a drain connected to such facility or device.”

Clause 43 of the Local Government (Approvals) Regulation 1999, also clarifies the role of NSW Health and Councils.

“A council must not approve the installation or construction of a sewage management facility to which this Division applies unless the council is satisfied that the facility is to be installed or constructed to a design or plan that is the subject of a certificate of accreditation from the Director-General of the Department of Health, being a certificate that is in force.”

In this case septic tanks, collection wells, septic closets septic tanks, collection wells, septic closets, greywater tanks, CED pretreatment tanks, and sewage ejection pump stations are all sewage management facilities which require NSW Health accreditation prior to council installation approval. Because septic closets, greywater tanks,

CED pretreatment tanks, and sewage ejection pump stations are all derived from, and are forms of, septic tanks and collection wells it is only necessary for this Guideline to specify the requirements for septic tanks and collection wells.

NSW Health accreditation of septic tanks and collection wells is not required for installation for test purposes, or where specifically designed by the owner/occupier/consultant for that particular premises ie a cast in situ septic tank or collection well.

Sewage management facilities (waste treatment devices) of a capacity larger than those specified as domestic tanks in this Guideline or those intended for a non-domestic application are not subject to the StandardsMark licensing process. However, the NSW Health accreditation process may still apply depending on the application of legislative provisions administered by the Environment Protection Authority (EPA).

It should be noted that NSW Health certification of accreditation does not include the plumbing to or from the septic tank or collection well; the land application system nor the final disposal method. This is a matter for the Local Authority which should consider relevant Australian and New Zealand Standards, site assessments, recommendations from the Department of Local Government, and its own wastewater management strategy.

Certification of accreditation by the Director-General is to facilitate an approval to install, construct or alter a waste treatment device issued by the Local Authority under the provisions of Section 68, Local Government Act, 1993. Certification granted by the Director-General is issued to a specific tank produced by a specific manufacturer.

4 INTERPRETATION

4.1 Abbreviations

The following abbreviations are used in this guideline:

AS/NZS 1546.1-1998	Australian Standard/New Zealand Standard "Onsite Domestic Wastewater Treatment Units, Part 1: Septic Tanks.
CED	common effluent drain
EPA	Environment Protection Authority
NSW Health	NSW Department of Health
QAS	Quality Assurance Services - a JAS/ANZ accredited division of Standards Australia which conducts product certification of septic tanks and collection wells; or an equivalent organisation
StandardsMark	A licence issued by QAS certifying manufacture of septic tanks and collection wells to AS/NZS 1546.1-1998, or an equivalent product certification scheme
WMAC	Wastewater Management Advisory Committee

4.2 Definitions

In this Guideline:

blackwater	means human excrement or matter contaminated with human excrement discharged from a toilet;
CED pretreatment tank	means a sewage management facility which is a type of septic tank treating sewage prior to discharging effluent to a common effluent drainage scheme;
collection well	means a sewage management facility which is a holding tank used for the receipt and storage of effluent;
greywater	means wastewater from a handbasin, bath, shower, kitchen and laundry but excludes blackwater;

greywater tank	means a sewage management facility which is a single or multiple chambered tank through which greywater is allowed to flow under quiescent conditions to permit settling or floatation of suspended matter for retention so that organic matter contained can be decomposed (digested) by anaerobic bacterial action. It is essentially a septic tank for greywater;
manufacturer	means the person, company or firm, and any nominated representative of the company or firm submitting the application for accreditation to the Department of Health;
septic tank	means a sewage management facility which is a single or multiple chambered tank through which sewage is allowed to flow under quiescent conditions to permit settling or floatation of suspended matter for retention so that organic matter contained can be decomposed (digested) by anaerobic bacterial action;
septic closet	(also called a blackwater tank) means sewage management facility which is a type of septic tank having a toilet constructed, usually in an outhouse, directly over the tank and where the toilet discharges directly into the tank;
sewage ejection pump station	means a sewage management facility which is designed to temporarily store sewage prior to comminution/maceration and/or discharge sewage directly to a sewer;
single dwelling	includes a dual occupancy dwelling;
wastewater	means liquid waste containing solids generated by a domestic premises and includes sewage, greywater and blackwater.

5 ROLES OF INVOLVEMENT

5.1 Local Authorities

The powers allowing local authorities to grant approval to construct and install a waste treatment device at a particular site are contained in Section 68, Part C - Management of Waste, Local Government Act, 1993, and Part 4, Local Government (Approvals) Regulation 1999. It is the function of the Local Authority to administer and facilitate approval of the installation, construction or alteration of waste treatment devices in their areas.

The Local Government (Water Services) Regulation 1999 and the New South Wales Code of Practice Plumbing and Drainage (which adopts the National Plumbing and Drainage Code AS3500 - 1990), applies to all local authority areas.

5.2 Environment Protection Authority

The EPA is not involved in the accreditation process of a septic tank or collection well other than as a member of the WMAC which oversees guideline development.

5.3 NSW Department Of Health

(a) NSW Health has established the Wastewater Management Advisory Committee (WMAC) which is responsible to the Department and Director-General in the accreditation process and produces appropriate guidelines. Membership includes representatives from the Environmental Health Branch of NSW Health, Departments of Land and Water Conservation, Local Government, Urban Affairs and Planning, and the Environment Protection Authority; and the Australian Institute of Environmental Health.

All matters for consideration by the WMAC should be forwarded to the Manager - General Environmental Health, Department of Health, PO Box 798, Gladesville, NSW, 1675, for referral to the Committee.

(b) Public Health Units receive and disseminate information, monitor Local Authority approval processes and liaise with Local Authorities.

6 ACCREDITATION REQUIREMENTS

6.1 NSW Health has adopted relevant clauses of the Australian Standard / New Zealand Standard, AS/NZS 1546.1-1998 "Onsite domestic wastewater treatment units Part 1: Septic Tanks" where indicated in this Guideline, for the statutory purposes of certification of accreditation of septic tanks and collection wells.

6.2 A NSW Health certificate of accreditation will only be issued to septic tank and collection well manufacturers who obtain a StandardsMark Licence from Quality Assurance Services (QAS) for compliance with AS/NZS 1546.1-1998.

6.3 Once a StandardsMark licence from QAS has been obtained by the manufacturer for the manufacture of septic tanks or collection wells, the manufacturer will need to make an application satisfying the requirements of Section 7 of this Guideline to NSW Health for a certificate of accreditation will then be issued by NSW Health.

6.4 A cast in situ septic tank and/or collection well designed by the owner of a premises for installation on that premises are not subject to certification of accreditation by NSW Health but it is still required to obtain installation approval of the local authority.

7 APPLICATION CRITERIA

7.1 All completed applications for certification of accreditation shall be in the format attached as Annexure 1 and forwarded to the Manager, General Environmental Health, NSW Health Department, PO Box 798, Gladesville NSW 2111.

7.2 The prescribed fee, if any, shall be attached.

7.3 The application is to provide the following supporting documentation:

7.3.1 A copy of the StandardsMark licence issued by QAS in respect of the septic tank or collection well;

7.3.2 A copy of the Schedule attached to the StandardsMark licence;

7.3.3 Twenty copies of a printed plan of the septic tank or collection well on A4 size paper, detailing plan and cross sectional views of the vessel and lids, suitable for use with the submission of applications under Section 68, Local Government Act, 1993, and Local Government (Approvals) Regulation 1993 to the local authority.

7.3.4 An installation brochure and a user instruction fact sheet shall be produced by the manufacturer as indicated in Section 11 of the Guideline. The brochure and fact sheet may be combined and may cover the full range of septic tanks and collection wells produced by the manufacturer.

8 PERFORMANCE REQUIREMENTS AND PERFORMANCE CRITERIA

8.1 Scope

This section is intended to outline the general requirements and performance criteria for septic tanks and collection wells and their associated fittings.

8.2 Function and Context of Use

8.2.1 Septic Tanks, Septic Closets, Greywater Tanks and CED Pretreatment Tanks

The function of septic tanks and other similar tanks such as septic closets (blackwater tanks), greywater tanks and CED pretreatment tanks is essentially to provide a stilling chamber and primary treatment for blackwater and greywater either separately or combined. The chamber then functions to allow solids to settle to form sludge, and be retained for anaerobic treatment while the lighter fraction floats to the surface similar to a grease trap to form a scum layer.

The tank is sized to allow firstly for the detention of 24 hours daily flow for a minimum of five persons and to a maximum of ten persons. The tank capacity is then increased to allow for the accumulation of digested sludge which must be removed at about three yearly intervals for separate disposal off site. The liquid component, commonly referred to as effluent, then flows by displacement of incoming sewage to a land application system or some other form of utilisation or disposal, or to a collection well from where the effluent is pumped to a sewer or removed by a road tanker.

Square junctions are placed at the inlet and outlets of the tank to minimise disturbance of the tank contents at the inlet and to minimise scum carryover at the outlet. A range of effluent filters, which can be inserted in the outlet of the septic tank, are now available in NSW. The effluent filters are capable of reducing the suspended solids in the effluent from 80 – 100 mg/L to about 30 mg/L. The effluent filters can be retro fitted into existing septic tanks. A baffle or partition wall is placed across the internal flow path of the effluent to retain solids close to the inlet and to maximise the flow pathway between the inlet and outlet.

Appropriate diagrams are contained in Figures 3.1 to 3.5 of AS/NZS 1546.1-1998.

8.2.2 Collection Wells

Collections wells are storage vessels used to hold effluent after treatment in a septic tank and prior to pumping to a land application system, CED system, sewer, or road tanker.

8.2.3 Sewage Ejection Pump Stations

The function of a sewage ejection well is to receive sewage for maceration and/or pumping directly to a sewer. It is not intended to separate the solid fraction from the liquid component for anaerobic digestion. Sewage ejection wells are used only to pump fresh sewage to a sewer main which cannot be reached by gravity. Pumping is regulated by a float switch but the tank must have additional capacity in case of pump failure.

8.2.4 Context of Use

All septic tanks and collection wells are installed in the outside environment from totally freestanding to totally buried. The tanks are therefore exposed to a range of impacts generated by variable internal and external loads and pressures, weather, ground movement, corrosion, light, and abuse.

Access must be provided for inspection and maintenance and must be extended to ground level if the tank is buried. Unauthorised or accidental access must be prevented.

8.3 Performance Requirements

The performance requirements specified in Section 2.3 .Performance Requirements. of AS/NZS 1546.1-1998 apply as appropriate to all septic tanks and collection wells.

8.4 Performance Criteria

8.4.1 Capacities

The minimum capacities for septic tanks, collection wells, septic closets, greywater tanks, CED pretreatment tanks, and sewage ejection pump stations applicable in New South Wales, are specified in Annexures 2 and 3 of this Guideline.

The capacities of septic tanks, collection wells and other conventional systems specified in Appendix 2 of AS/NZS 1546.1-1998 do not apply in New South Wales.

8.4.2 Other Performance Criteria

The performance criteria specified in Clauses 2.4.2 to 2.4.11 of AS/NZS 1546.1-1998 are adopted in the Guideline.

9 GENERAL DESIGN REQUIREMENTS

9.1 Septic Tanks

All septic tanks, septic closets (blackwater tanks), CED pretreatment tanks and greywater tanks shall comply with the design requirements contained in the Sections of AS/NZS 1546.1-1998 as follows:

Section 3 (Design requirements): Clauses 3.1 and 3.3 to 3.13 including attendant Figures and Appendix F.

Section 4 (Marking requirements): Clauses 4.1 to 4.3. In addition the septic tank shall display the StandardsMark or its equivalent.

Section 5 (Testing requirements): Clauses 5.1 to 5.4.

NOTE: It is a requirement that all septic tanks, septic closets (blackwater tanks), CED pretreatment tanks and greywater tanks are fitted with a partition or baffle wall, dividing the tank into two chambers, where the capacity of the first chamber is twice the capacity of the second chamber, in accordance with AS 1546.1-1998, where the capacity of the tank exceeds 2050 litres.

9.2 Collection Wells

All collection wells shall comply with the requirements contained in the Sections of AS/NZS 1546.1-1998 as follows:

Section 3 (Design requirements): Clauses 3.1, 3.3, 3.4 except 3.4.1 and 3.4.2, 3.9, 3.10, 3.11, 3.12, and 3.13 including attendant Figures and Appendix F.

Section 4 (Marking requirements): Clauses 4.1 to 4.3. In addition the collection well shall display the StandardsMark or its equivalent.

Section 5 (Testing requirements): Clauses 5.1 to 5.4.

9.3 Sewage Ejection Pump Stations

9.3.1 All sewage ejection pump stations shall comply with the requirements contained in the Sections of AS/NZS 1546.1-1998 as follows:

Section 3 (Design requirements): Clauses 3.1, 3.3, 3.4 except 3.4.1 and 3.4.2, 3.9, 3.10, 3.11, 3.12, and 3.13 including attendant Figures and Appendix F.

Section 4 (Marking requirements): Clauses 4.1 to 4.3. In addition the collection well shall display the StandardsMark or its equivalent.

Section 5 (Testing requirements): Clauses 5.1 to 5.4.

9.3.2 The grinder pump in the sewer ejection pump station shall be fitted with float and/or pressure switches to ensure small volumes of sewage are pumped at regular intervals. The small diameter pressure line to the sewer shall be fitted with a backflow prevention device.

9.3.3 The sewage ejection pump station shall be fitted with an alarm system to indicate an electrical or pump failure. The alarm system shall comprise audible and visible alarms with a muting facility for the audible alarm. The muting facility shall reset to audible after 2 hours. The alarms shall be visible from inside the dwelling.

9.3.4 All metal fittings and components within the sewer ejection pump station shall be of non-corroding material and shall have a service life of at least fifteen (15) years. All mechanical and electrical parts shall have a minimum service life of 5 years and a minimum warranty period of twelve (12) months.

9.3.5 All plastic tanks or vessels shall be provided with a means of anchorage. Typical examples of the types of anchorage are given in the comments attached to sections 9.3.3 and 10.3.3 of the Australian/New Zealand Standard AS/NZS 1546.1:1998.

9.3.6 Testing requirements – the tank or vessel shall be tested for compliance with the Australian/New Zealand Standard AS/NZS 1546.1:1998. Two forms of tests are identified in the Standard:

a. Type testing which all tanks or vessels shall be capable of passing. The tests and relevant clauses are set out in section 5.2 of the Standard where applicable. Type testing shall be carried out on the initial production of the tank or vessel or whenever a change is made that may affect the performance of the finished tank or vessel.

b. Routine quality control testing shall be carried out to ensure that a consistent quality of product is maintained. These tests are identified in the relevant material-based sections of the Standard.

9.3.7 NSW Health requires that certification against the Standard is obtained by the manufacturer of the tank or vessel. Therefore the testing regime for both type testing and routine quality control testing shall be established in consultation with a quality audit organisation or certification body accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).

10 SPECIFIC REQUIREMENTS - DOMESTIC

All septic tanks, collection wells and sewage ejection pump stations of a type specified in the following table shall comply with the specified section of AS/NZS 1546.1-1998 and bear the StandardsMark or equivalent.

Septic Tank or Collection Well Type	Section of AS/NZS 1546.1-1998
Precast Concrete Steel Reinforced Tanks and Precast Concrete Steel Fibre Reinforced Tanks	Section 6
Reinforced Cement Ferro-cement Mortar Tanks	Section 7
Glass-fibre Reinforced Plastic Tanks	Section 9
Plastic (Polyolefin) Tanks	Section 10

11 INSTALLATION AND USER INSTRUCTIONS

In accordance with Section 7.3.4 each manufacturer shall submit, in their application for a certificate of accreditation to NSW Health the following documentation:

11.1 An installation brochure which explains how the septic tank and collection well should be installed above or below ground level and anchored, and how the fittings such as baffles, partition walls and square junctions should be installed.

11.2 A users instruction fact sheet shall be produced which will be suitable for use by the domestic operator and shall include but not necessarily be limited to:

- . an overview of the tank
- . warranty and service life
- . trouble shooting and signs of failures
- . a list of toxic substances / loads to be avoided
- . desludging requirements
- . safety information

spreading of hydraulic loads

12 CERTIFICATE OF ACCREDITATION CONDITIONS

The Certificate of Accreditation may be issued subject to conditions and any accreditation granted under this Guideline shall be valid while the StandardsMark is retained. Any modifications or variations of such approval design shall be submitted for separate consideration and variation of accreditation by the Director-General of NSW Health.

13 SPECIFIC REQUIREMENTS - COMMERCIAL

13.1 Accreditation

All septic tanks larger than 5,000L and collection wells larger than 12,000L used for commercial pump out installations require separate accreditation from the NSW Health Department as AS/NZS 1546.1-1988 does not apply.

13.2 General Design Requirements

Septic tanks and collection wells, designed for the installation at commercial premises, shall comply with the intent and contents of AS/NZS 1546.1-1998

13.3 Structural Requirements

Structural requirements such as load bearing capabilities, structural adequacy, concrete specification, wall thicknesses, lid thickness, reinforcement, and the like shall be subject to certification by a structural engineer.

13.4 Multiple Unit Connection

13.4.1 Septic Tanks

Where it is proposed to join two septic tanks together to form the one septic tank unit for a commercial installation, then two septic tanks with their partition walls removed shall be joined together such the capacity of the first septic tank has about twice the capacity of the second septic tank. Both septic tanks shall be fitted with inlet and outlet fittings and both septic tanks shall be fitted with inspection and access openings and covers. Both septic tanks shall be placed on a common concrete slab to ensure that there is no differential movement.

13.4.2 Collection Wells

Where it is proposed to join two or more collection wells together to form one collection well unit for a commercial installation, then the collection well should be located on a common concrete slab to ensure that there is no differential movement. Provision shall be made to ensure that the tanks are connected at the base to facilitate complete effluent removal from one draw off point or draw off points are provided to all collection wells. Both collection wells shall be fitted with inspection and access openings and covers.

13.5 Single Pump-out systems

A single pump-out system is designed to incorporate both the septic tank and collection well into one large tank. The capacities of the septic tank and collection well depend on the number of persons the system serves and the proposed use of the system. A certificate of accreditation needs to be issued by NSW Health for each single pump-out system design.

A single pump-out system may be installed for the purpose of:

- pumping effluent to a sewer main or CED system;
- pumping effluent to a prepared land application area on higher ground; or

disposal of effluent by tanker removal service.

14 LOCAL AUTHORITY APPROVALS

A set of standard approval conditions used by many Local Authorities are attached as Annexure 4.

Annexure 1

The Manager
General Environmental Health
NSW Department of Health
PO Box 798
Gladesville NSW 1675

**APPLICATION FOR CERTIFICATE OF ACCREDITATION OF A
SEPTIC TANK OR COLLECTION WELL**

I / We (person) _____ (Title) _____

of (Registered Business Name) _____

of (Registered Business Address) _____

hereby make application for a certificate of accreditation by the Director-General of the Department of Health, NSW, under the provisions of the Local Government (Approvals) Regulation, 1999, of _____ tanks to be known as:

which is (are) designed to have _____ litres capacity.

Attached in support of this application is:

1. Product Certification to the StandardsMark Quality Assurance Program or equivalent.
2. A statement of the warranty and service life.
3. A copy of the installation brochure.
4. A copy of the users instruction fact sheet.
5. Twenty copies of a printed plan of the septic tank or collection well on A4 size paper suitable for use with the submission of septic tank applications to the Local Authority under Section 68, Local Government Act, 1993.

Signature:

Date:

Annexure 2

CAPACITY CALCULATION CRITERIA - DOMESTIC INSTALLATIONS

1 FLUSH SIZE

1.1 A dual flushing cistern having a nominal 3/6 litre flush fitted with an external overflow connected to a WC pan with a nominal 50mm water seal should be fitted to new installations.

1.2 A nominal 9 litre flushing cistern fitted with an external overflow connected to a WC pan with a nominal 50mm water seal may also be installed.

1.3 Flushing cisterns fitted with external overflows (external to the cistern not the building) shall be installed in all septic tank installations. Most cisterns may be easily modified by plumbers.

1.4 Manually operated cisterns shall be installed in all septic tank installations.

2 SOIL LINE DISTANCE LIMITATIONS: nominal 3/6 litre dual flush cisterns.

2.1 For an installation treating WC Wastes only or WC/basin wastes the vertical drop in the soil line from the outlet of the pan shall not be greater than 2.25 metres.

2.2 For an installation treating WC wastes only the horizontal length of pipe between the outlet of the pan and the inlet to the septic tank shall be not less than 1.5 metres and shall not exceed 3 metres.

2.3 For an installation treating WC/basin wastes the horizontal length of pipe between the outlet of the pan and the inlet to the septic tank shall not exceed 5 metres.

2.4 The horizontal length of pipe between the outlet of the pan and the junction with another waste to the main drain line shall not exceed 3 metres.

3 NUMBER OF PERSONS

3.1 Minimum number of persons for calculations: Five.

3.2 Maximum number of persons for calculations: Ten.

4 WASTEWATER MINIMISATION

4.1 Garbage grinders and spa baths are excluded and their installation on premises served by on-site wastewater management is not recommended.

4.2 Householders should minimise wastewater generation by limiting water usage and by the selection of appliances which conserve water usage. Appliances such as low volume shower heads, front loading clothes washing machines and low water consumption dishwashers should be chosen.

4.3 Greywater diversion devices which may be installed on laundry tubs to divert final rinse greywater are not recommended unless the greywater is utilised in specifically designed sub-surface land application systems.

5 SEWAGE CLASSIFICATIONS

In order to calculate the required capacities of tanks sewage (wastewater) needs to be classified according to its source and an allowance made for sludge accumulation. For the purposes of calculation of capacities the sewage source is classified as follows using abbreviations:

5.1 Sewage Source

WC	= Water Closet (Blackwater)
HB	= Handbasin
K	= Kitchen
B	= Bath
SHR	= Shower
L	= Laundry

5.2 Abbreviations

S	= Sludge Allowance
N	= Number of persons (minimum = 5)
L	= Litres
DF	= Daily Flow

Table 1 assigns the basic allowance for sludge accumulation in Litres and a daily flow in Litres per person of wastewater generated.

Table 1: Allowances and Daily Flows for Calculation of Tank Capacities

Waste	Calculation Allowance
S (Sludge Allowance)	1550 L
WC (Water Closet)	50 DF Litres/person/day
HB (Handbasin)	10 DF Litres/person/day
K (Kitchen)	10 DF Litres/person/day
B + SHR (Bath and Shower)	50 DF Litres/person/day
L (Laundry)	30 DF Litres/person/day
All wastes (WC + HB + K + B + SHR + L)	150 DF Litres/person/day

AS/NZS 1546.1-1998 establishes an allowance for scum and sludge accumulation in a conventional all waste septic tank of 80 litres / person / year and a recommendation that septic tanks be desludged at regular intervals of 3-5 years.

NSW Health has set a sludge allowance of 1550 litres irrespective of the number of persons for which the septic tank is designed. Therefore, a septic tank designed for a minimum of 5 persons needs to be desludged approximately every 4 years. Where a septic tanks installation serves more than 5 persons the desludging interval should be correspondingly shortened.

It is preferred that Council implement a management program where the frequency of desludging is based upon regular inspection and monitoring of the septic tank.

6 Capacity Calculation for Septic Tanks, Septic Closets, CED Pretreatment Tanks and Greywater Tanks

The general formula used to calculate tank capacity in litres is:

$$\begin{array}{lclcl} S & + & (DF & \times & N) & = & \text{Capacity} \\ \text{Sludge Allowance} & + & (\text{Daily Flow} & \times & \text{Number of Persons}) & = & \text{Tank Capacity.} \end{array}$$

It should be noted that the minimum number of persons who may be used in any capacity calculation is five.

Table 2 describes, in the first column, the combination of wastewater categories to be contained or treated in the tank. The second column indicates the appropriate tank which may be used and the third column displays the assumed daily flow / person / day for the wastewater categories. The fourth column provides the formula to calculate the tank capacity.

In the circumstances of a septic closet (blackwater tank) or greywater tank a minimum capacity of 2050 litres is specified as being the minimum accepted tank size to ensure efficient treatment. Similarly, where kitchen wastewater is included in the wastewater flow a larger minimum capacity of 2300 litres is necessary to ensure that a partition is included in the tank to enhance its ability to function as a grease trap. It should be noted that kitchen wastewater is excluded from a greywater tank and kitchen wastewater may only discharge to a septic tank or CED pretreatment tank.

Table 2: Daily Flows per Person and Capacity Calculation for Septic Tanks, Septic Closets, CED Pretreatment Tanks and Greywater Tanks

Wastewater	Waste Treatment Device	Daily Flow (DF) (Litres/person/day)	Waste Treatment Device Capacity (Litres minimum)
WC only	Septic Closet (Blackwater Tank)	50	S + (N x 50) 2050 L minimum
WC + HB	Septic Closet (Blackwater Tank)	60	S + (N x 60) 2050 L minimum
HB+B+SHR+L	Greywater Tank	90	S + (N x 90) 2050 L minimum
All wastewater	Septic Tank or CED Pretreatment Tank	150	S + (N x 150) 2300 L minimum

7 Capacity Calculation for Collection Wells

To calculate the capacity of a collection well firstly select the appropriate daily flow (DF) from Table 2 and multiply it by the number of persons (N). Refer also to Table 3.

Where the effluent is to be pumped to a land application system, to a sewer, or forms part of a CED system then a single pump will be installed on the collection well and the specified formula used to calculate the capacity based on two days storage. Where the owner wishes to install dual pumps, in case of pump failure, then it is only necessary to store one days flow. Minimum collection well capacities are again stated. Council should require that a float switch on the pump be activated when the volume of the tank exceeds 300 Litres. The pressure line should be fitted with a backflow prevention device. It may be worthwhile requiring an alarm to be installed on a high level float switch.

When a septic tank pump out system is installed is it necessary to allow seven days storage in the collection well. Some Local Authorities require larger minimum capacities to allow for peak flows from higher loadings from visitors (ie parties).

Table 3: Calculation of Collection Well Capacities

Collection Well Use	Single Pump	Dual Pump	Tanker Pump Out
Capacity Calculation Formula	$DF \times N \times 2$	$DF \times N$	$DF \times N \times 7$
Minimum Capacity	2050 L	2050 L	5250 L

8 Sewage Ejection Pump Stations

As a sewage ejection pump station is used to macerate/comminute and/or pump all sewage to a small diameter reticulated sewer system the calculation for capacity is based on the daily flow of all waste of 150 litres / person / day.

The tank or vessel, containing the grinder pump, shall have a minimum capacity equal to six (6) hours of the average peak flow measured over an eight-hour period per day.

As an example: - The daily flow rate for a 3-bedroom residential dwelling, designed for occupation by a minimum of 5 persons, is calculated at 750 litres/day. The average peakflow over an eight-hour period is approximately 100 litres/hour. The minimum capacity for a sewage ejection pump station installed to serve a 3-bedroom residential dwelling therefore shall be 600 litres.

Annexure 3

CAPACITY CALCULATION CRITERIA - COMMERCIAL INSTALLATIONS

1 FLUSH SIZE:

1.1 Nominal 9 Litre flushing cistern fitted with external overflow connected to a 50mm water seal WC pan shall be installed.

1.2 A dual flushing cistern having a nominal 3/6 litre flush fitted with an external overflow connected to a WC pan with a nominal 50mm water seal may be fitted in a common bathroom group.

1.3 Manually operated cisterns shall be installed in all septic tank installations.

2 SOIL LINE DISTANCE LIMITATIONS: nominal 3/6 litre dual flush cisterns.

2.1 For an installation treating WC wastes only or WC/basin wastes the vertical drop in the soil line from the outlet of the pan shall be not greater than 2.25 metres.

2.2 For an installation treating WC wastes only the horizontal length of pipe between the outlet of the pan and the inlet to the septic tank shall be not less than 1.5 metres and shall not exceed 3 metres.

2.3 For an installation treating WC/basin wastes the horizontal length of pipe between the outlet of the pan and the inlet to the septic tank shall not exceed 5 metres.

2.4 The horizontal length of pipe between the outlet of the pan and the junction with another waste to the main drain line shall not exceed 3 metres.

3 GREASE ARRESTER: With certain types of commercial premises the installation of a grease trap/grease arrester may be essential. The requirement for, sizing and location of the grease trap/grease arrester shall be the responsibility of the local authority or the sewerage authority. Full details shall be included on the application form and plans.

4 CAPACITIES

4.1 Minimum capacity septic tank - 2050 Litres.

4.2 Minimum capacity collection well - 2050 Litres.

5 NUMBER OF PERSONS: Minimum number of persons - Five.

6 CALCULATIONS: Unless otherwise stated in the following tables septic tanks and collection wells may be calculated as:-

Septic Tanks

Sludge allowance (S) + (No. persons x daily flow) = Litres capacity.

NOTE: Basic sludge allowance in most cases is 1550 litres; but may be increased to 1820 on premises with commercial cooking facilities, or 2730 in the case of hospitals.

Collection Wells

No. persons x daily flow x 7 = Litres (for a weekly pump out)

No. persons x daily flow x 4 = Litres (twice weekly pump out)

TYPE OF PREMISES	WASTES	DAILY FLOW Litres/Person/Day	CALCULATION OF DAILY FLOW RATE	REMARKS
Baby Health Centres	WC, basin, kitchen WC, (visitors)	23 14	Staff x 23 + Visitors x 14	Visitors = estimated attendance <u>Septic tank capacity</u> = daily flow + 1550 Litres
Bowling Alleys	WC, urinal, basin WC, urinal, basin, kitchen	14 15	72 x No. of alleys x 14 72 x No. of alleys x 15	Estimate 72 persons/alley/day <u>Septic tank capacity</u> = daily flow + 1550 Litres
Camping Grounds and/or Caravan Parks	WC, urinal, basin WC, urinal, basin, kitchen WC, urinal, basin, kitchen, & showers WC, urinal, basin, kitchen, showers, & laundry	27 32 59 86	4 x No. of Sites x 27 4 x No. of Sites x 32 4 x No. of Sites x 59 4 x No. of Sites x 86	Estimate 4 persons/site/day <u>Septic tank capacity</u> = daily flow + 1550 Litres
Clubs unlicensed	WC, urinal, basin WC, urinal, basin, shower WC, urinal, basin, shower & kitchen	9 23 25	Persons x 9 Persons x 23 Persons x 25	Persons = total club membership Dishwasher Allowance = 1550L/100 members <u>Septic tank capacity</u> = daily flow + 1550 + dishwasher allowance/100 members

TYPE OF PREMISES	WASTES	DAILY FLOW Litres/Person/Day	CALCULATION OF DAILY FLOW RATE	REMARKS
Clubs licensed	WC, urinal, basin WC, urinal, basin, shower WC, urinal, basin, Shower, kitchen bar patrons	2 16 18 14	Persons x 2 Persons x 16 Persons x 18 Patrons x 14	Persons = total club membership + staff Bar patron = estimated patrons/day Dishwasher/glasswasher allowance = 1550L/100 Persons Over 50 persons basic capacity increased to 1820 Litres <u>Septic tank capacity all wastes over 50 pers.</u> = persons x 18 + patrons x 14 + 1820 + dishwasher/glasswasher allowance/100 persons.
Drive-in-theatres	WC, urinal, basin, kitchen	2	Persons x 2	Persons = staff + 3 persons/car site. <u>Septic tank capacity =</u> daily flow + 1550 litres
Factories and offices	WC, urinal, basin WC, urinal, basin, shower WC, urinal, basin, shower, kitchen	27 41 43	Persons x 27 Persons x 41 Persons x 43	Persons = total staff/day <u>Septic tank capacity =</u> daily flow + 1550 Litres

TYPE OF PREMISES	WASTES	DAILY FLOW Litres/Person/Day	CALCULATION OF DAILY FLOW RATE	REMARKS
Hotels and Motels	WC, urinal, basin WC, urinal, basin, 1 waste WC, urinal, basin, & 2 wastes WC, urinal, basin, & 3 wastes Non-resident staff bar patrons	55 82 109 136 36 14	Persons x 55 + staff x 36 Persons x 82 + staff x 36 Persons x 109 + staff x 36 Persons x 136 + staff x 36 Staff x 36 Patrons x 14 Note: Add daily flow for bar patrons as applicable	Persons = guests + resident staff Staff = non resident or casual staff Bar patrons = estimate patrons/day Dishwasher/glasswasher allowance = 1550L/100 Persons Over 50 Persons Basic Capacity increased to 1820 Litres <u>Septic tank capacity</u> <u>all wastes over 50 persons =</u> persons x 136 + staff x 36 + patrons x 14 + 1820 + dishwasher/glasswasher allowance/100 persons

TYPE OF PREMISES	WASTES	DAILY FLOW Litres/Person/Day	CALCULATION OF DAILY FLOW RATE	REMARKS
Hospitals	WC, urinal, basin WC, urinal, basin, 1 waste WC, urinal, basin, 2 wastes WC, urinal, basin, 3 wastes Non resident staff	55 82 109 136 55	Persons + staff x 55 Persons x 82 + staff x 55 Persons x 109 + staff x 55 Persons x 136 + staff x 55 Staff x 55	Persons = No. of patient beds + resident staff Staff = non resident or casual staff Basic capacity = 1820 Litres Over 50 persons increase to 2730 Litres <u>Septic tank capacity all wastes over 50 persons</u> = persons x 136 + staff x 55 + 2730
Mines	WC WC, urinal, basin WC, urinal, basin, Shower	23 27 45	Persons x 23 Persons x 27 Persons x 45	Persons = total staff/day <u>Septic tank capacity</u> = persons x daily flow + 1550 Litres
Railway Stations	WC, urinal, basin	27	Persons x 27	Persons = staff/day + 20% of travellers/day. <u>Septic Tank Capacity</u> = persons x 27 + 1550 Litres
Recreation Grounds	WC, urinal, basin For shower add	3 23	Persons x 3 User x 3 + users x 23	Persons = estimated daily attendance. Shower usage = estimated No. persons using showers. <u>Septic tank capacity</u> = persons x 3 + users x 23 + 1550

TYPE OF PREMISES	WASTES	DAILY FLOW Litres/Person/Day	CALCULATION OF DAILY FLOW RATE	REMARKS
Restaurant	WC, urinal, basin WC, urinal, basin, kitchen	12 28	Persons x 12 persons Persons x 28 + 1550L/100/Day.	Persons = staff + seating capacity. dishwasher/glasswasher allowance = 1550L/100 persons/day. <u>Septic tank capacity</u> = persons x 28 + 1550L/100/day + 1550 Litres
Service station and cafe	WC, urinal, basin service station customers Allowance for cafe seating capacity	27 14 10	Persons x 27 Driveway customers x 14 Cafe seating capacity x 10	Persons = staff + customers + cafe seating capacity Septic tank capacity = persons x 27 + customers x 14 + cafe seating x 10 + 1550 Litres
Squash courts	WC, urinal, basin WC, urinal, basin, shower WC, urinal, basin, shower, kitchen	14 32 33	Persons x 14 Persons x 32 Persons x 33	Persons = staff + estimated daily attendance <u>Septic tank capacity all wastes</u> = persons x 33 + 1550 Litres

TYPE OF PREMISES	WASTES	DAILY FLOW Litres/Person/Day	CALCULATION OF DAILY FLOW RATE	REMARKS
Schools	WC, urinal WC, urinal, basin WC, urinal, basin, domestic science WC, urinal, basin, shower (Gym)	14 18 23 36	Persons x 14 Persons x 18 Total class/day x 23 Total class/day x 36	Persons = staff + total enrolment Domestic science = total enrolment in class/day Gym/shower = total enrolment in class/day <u>Septic tank capacity all wastes</u> = persons x 18 + domestic science x 23 + gym x 36 + 1550
Swimming Pools	WC, urinal, basin WC, urinal, basin, shower	2 20	Persons x 2 20 Persons x	Persons = staff + estimated maximum daily attendance <u>Septic tank capacity</u> = persons x 20 + 1550
Theatres and Public Halls	WC, urinal, basin WC, urinal, basin, kitchen	2 3	Persons x 2 Persons x 3	Persons = staff + licensed seating capacity <u>Septic tank capacity</u> = persons x 3 + 1550

Annexure 4

Local Authority Approval Conditions

Those conditions which are most commonly imposed by environmental health officers when recommending approval for the installation of any septic tank or collection well follow. The blanks should be filled in as appropriate to each Local Authority.

EXAMPLE

39. "The collection well is emptied at least once in every seven consecutive days and the contents removed in an approved vehicle to the sanitary depot for disposal."

The local authority, if it wishes, may produce its own condition sheet incorporating the conditions together with any others thought to be relevant to the local authority's area and individual policies and strategies.

SEPTIC TANK CONDITIONS OF APPROVAL

Date: _____

A GENERAL CONDITIONS

1. All house sewer and plumbing work is carried out in accordance with the requirements of the local sewerage authority or the Local Government (Water, Sewerage and Drainage) Regulation 1993.
2. The installation incorporates _____ flushing suite.
3. The installation incorporates a 3/6 litre dual flush cistern.
4. Manually operated cisterns are installed.
5. The maximum vertical drop in the soil line from the pan is 2.25 metres.
6. Flushing cisterns fitted with internal overflows shall not be connected to any WC pan.
7. The horizontal length of pipe between the outlet of the pan and the inlet to the septic tank does not exceed 3 metres.
8. The horizontal length of pipe between the outlet of the pan and the junction with another waste to the main drain line does not exceed 3 metres.
9. The elevated pipe line is adequately supported.
10. The septic tank is elevated as high as the minimum fall of the pipe line from a "P" trap pan to the septic tank, will permit, and the elevated pipes are adequately supported.
11. The septic tank is located not less than 1.5m from any building.
12. The _____ wastes are treated in the septic tank.
13. The _____ wastes are discharged to a _____.
14. The capacity of the septic tank/collection well (1)/collection well (2) is _____ L _____ L _____ litres respectively.

15. An automatically operated pump is provided to operate when the collection well contains _____ litres.
16. Liquid trade wastes, generated on the premises, are not to be discharged into the septic tank or collection well.
17. The contents of the existing _____ are removed to the sanitary depot in an approved vehicle and the disconnected _____ is either demolished or filled with clean soil and garden lime.
18. The allotments on which the building, the septic tank, and the effluent disposal drains are situated are maintained in one ownership and are not separately disposed of whilst the septic tank is in use.
19. An adequate water supply is available at all seasons of the year.
20. An additional _____ litre elevated water storage tank is provided for flushing purposes.

B ON SITE DISPOSAL

21. The septic tank is elevated so that the effluent can be discharged into an absorption trench in the approximate position indicated on the plan.
22. The septic tank and absorption trenches are constructed in the approximate positions indicated, with the trenches parallel to the contour.
23. All sullage not treated in the septic tank or directed to the collection well must be disposed of in a manner so as not to create any nuisance or pollute any water course.
24. The _____ is or are constructed in the approximate position indicated on plan in red ink.
25. The absorption trenches are constructed parallel with the contour of the _____ and in the approximate position indicated on plan in red ink.
26. The disposal area is retained and filled with absorbent soil as indicated on the plan. Such work to be carried out to the satisfaction of Council.
27. The disposal area is terraced and filled with absorbent soil as indicated on the plan. Such work to be carried out to the satisfaction of Council.
28. An impervious retaining wall is erected in the approximate position shown on plan and the area filled with absorbent soil to Council's satisfaction.
29. The disposal area is prepared by covering with at least _____ mm of absorbent soil and ripped into the existing top soil.
30. Transpiration beds are constructed to the requirements of Council and/or AS 1547, in the approximate position shown on plan.
31. The depression in the disposal area are filled with absorbent soil and the site graded to an even grade.
32. The septic tank and the disposal area is to be protected from possible vehicle damage. Such work is to be carried out to the satisfaction of Council.
33. All stormwater and seepage from higher levels is diverted from the disposal area by a _____ drain.

- 34. The site has been inspected and council considers that effluent and sullage can be completely disposed of on the site without nuisance or likely danger to health.
- 35. The prepared disposal area is to be graded to a minimum of 1% cross fall on completion, and provided with turf or grass prior to occupation of the premises.
- 36. No water supply or any source of water supply used for drinking or domestic purposes or for stock is likely to be polluted or rendered unwholesome by the disposal of effluent from the proposed septic tank.
- 37. The disposal area is sited so as not to contaminate the natural watercourse which traverses the property.

C TANKER

- 38. The site has been inspected and is suitable for the collection of effluent by the removal vehicle.
- 39. The collection well is emptied at least _____ and the contents removed in an approved vehicle to the sanitary depot for disposal.
- 40. The suction line is to be fitted with a gate valve and approved locking device at the _____ boundary.
- 41. A graduated dipstick of copper material not less than 13mm diameter is provided to the collection well. The highest graduations is to indicate when the collection well is full.

D PUMP TO SEWER

- 42. The conditions stipulated by the _____ in its letter of ____/____/____ are complied with.

NOTE:- Other conditions which may apply to the specific application being recommended for approval may be either written on the "conditions of approval" sheet or may be attached as a separate sheet.
