

NZS 5465:2001

New Zealand Standard

Self Containment of Motor Caravans and Caravans

Superseding NZS 5465:1990

NZS 5465:2001

COMMITTEE REPRESENTATION

This Standard was prepared by Technical Committee P 5465 for the Standards Council established under the Standards Act 1988.

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Bruce Stanger	New Zealand Motor Caravan Association
Harold Thomas	Local Government New Zealand & New Zealand Plumbers Gasfitters & Drainlayers Board
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AMENDMENTS

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RELATED DOCUMENTS

Reference is made in this Standard to the following:

NEW ZEALAND STANDARDS

AS/NZS 3500:- - - National plumbing and drainage
Part 2.2:1996 Acceptable solutions

AUSTRALIAN STANDARDS

AS 2070:1999 Plastics materials for food contact use

OTHER DOCUMENTS

Building Industry Authority. New Zealand Building Code Handbook
and Approved Documents.

NEW ZEALAND ACTS AND REGULATIONS

Land Transport Act 1998
Plumbers, Gasfitters, and Drainlayers Act 1976
Resource Management Act 1991
Resource Management (Infringement Offences) Regulations 1999

FOREWORD

The objective of this Standard is to set out a basic Standard for the containment of waste water and solid waste to help provide a solution to the problems associated with the use of motor caravans and caravans in areas where there are no sewage disposal facilities.

The revised Standard is a revision and update of NZS 5465 :1990 *Self Containment of Caravans, Motor Caravans and Boats* with boats now deleted from its scope.

The revised Standard is intended to provide for the containment of solid waste, toilet waste and grey waste water, resulting from the approved number of occupants' daily activities, and to supply their minimum fresh water needs, for at least three days.

Compliance with this Standard is not compulsory but compliance will enable the vehicle to be occupied in some areas to which entrance would otherwise be denied. Compliance will be confirmed by a Self Containment Certificate. The procedure for issuing Self Containment Certificates is part of this Standard.

Recognition of the Standard in Territorial Authority Plans including Reserve Management Plans will provide a ready means for proprietors of camping sites which do not have sewage disposal facilities to control the environmental impact of overnight stays with limited or no external facilities.

REVIEW OF STANDARDS

Suggestions for improvement of this Standard will be welcomed. They should be sent to the Chief Executive, Standards New Zealand, Private Bag 2439, Wellington.

NOTES

NEW ZEALAND STANDARD

**SELF CONTAINMENT OF MOTOR CARAVANS
AND CARAVANS**

1 GENERAL

1.1 Scope

This Standard specifies the requirements for water supply, sanitary plumbing and drainage installation and solid waste containment in motor caravans and caravans for the purpose of obtaining a self containment certificate.

1.2

This Standard supersedes NZS 5465:1990.

1.3 Objectives

1.3.1 Vehicle equipment

The objective of this Standard is to define the minimum facilities that a motor caravan or caravan needs to contain the waste which its occupants produce, and to provide the fresh water which they require, for a minimum of three days.

1.3.2 Approval scheme

This Standard specifies the requirements for certifying that a vehicle meets this Standard.

1.3.3 Dump stations

This Standard defines minimum requirements of dump stations for servicing vehicles that have a self containment certificate.

2 DEFINITIONS AND INTERPRETATION

2.1 Definitions

For the purpose of this Standard, the following definitions shall apply:

CARAVAN. Any structure designed for human habitation, which is capable of being moved from one place to another, by being towed, or transported on another vehicle.

MACERATOR PUMP. A pump, which pulverizes waste.

MOTOR CARAVAN. A motor caravan is a motor vehicle, which can be used as a place of abode and contains facilities for cooking, eating, sleeping and washing, and is not a passenger service vehicle.

NZBC. New Zealand Building Code.

POTABLE WATER. Any water that is fit for human consumption.

SANITARY FITTING. A sanitary accessory like sink, handbasin, and shower.

SELF CONTAINMENT. The ability to meet the ablutionary and sanitary needs of the occupants of the motor caravan or caravan for a minimum of three days without requiring any external services or discharging any waste.

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TOILET (types).

CASSETTE TOILET. A fixed toilet with a removable holding tank.

EFFICIENCY FLUSHING TOILET. A toilet which is flushed by a small volume of water.

MARINE TOILET. A fixed flushing toilet with a macerator pump, either manual or electrically operated.

PORTABLE TOILET. A toilet with its own holding tank, the toilet is not fixed to the motor caravan or caravan.

WASTE WATER. Includes both grey water and black water.

BLACK WATER. Any water that contains human body waste.

GREY WATER. Any waste water that does not contain any human body waste.

2.2 Interpretation

2.2.1

In this Standard, the word "shall" identifies a mandatory requirement for compliance with the Standard. The word "should" refers to practices which are advised or recommended.

2.2.2

Clauses prefixed by "C " and printed in italic type are comments, explanations, summaries of technical background, recommended practices or suggested approaches which satisfy the intent of the Standard. These clauses are not to be taken as the only or complete interpretation of the corresponding clause. The Standard can be complied with if the comment is ignored.

2.2.3

All measurements quoted in the Standard are nominal metric dimensions. The nearest imperial size is acceptable.

3 PLUMBING REQUIREMENTS

All installations shall comply with the sanitary requirements of the New Zealand Building Code (NZBC) Clause G13 Foul Water. Compliance may be by use of the Acceptable Solution AS1 or use AS/NZS 3500.2.2 as a verification, unless otherwise specified in this Standard.

4 WATER SUPPLY

4.1 Water supply tank or tanks

4.1.1

The motor caravan or caravan shall be fitted with a water supply tank or tanks having a capacity of not less than 4 L per day for each of the number of persons authorised by the Self Containment Certificate, for not less than three days (i.e. a minimum of 12 L per person).

4.1.2

The water supply tank or tanks shall be made of a non-toxic and opaque material, capable of storing water while maintaining its potability.

If permanently connected to the public water supply, and are pressurized or gravity fed, the inlet to the motor caravan or caravan shall be fitted with a backflow prevention device.

4.1.3

All tanks shall:

- (a) Be adequately supported and secured to avoid creating any hazard, while the motor caravan or caravan is in motion;
- (b) Have an inlet of not less than 25 mm diameter, fitted with a seal capable of preventing the entry of foreign matter into the tank or tanks. Should the tank be pressure fed, 12 mm diameter is acceptable;
- (c) If of rigid construction, have an air vent of not less than 6 mm diameter, protected so as to prevent the entry of any contaminant;
- (d) Where the supply system relies on tank pressurization an air vent is not required;
- (e) Should a mains pressure system be fitted a 12 mm inlet is acceptable (this should not pass through the tank).

C4.1.3

Transportable individual containers are acceptable.

Air vents larger than the 6 mm minimum will permit more rapid filling of the tank.

Drawn water shall not be returned to the main as per Clause 2.1.1 of NZBC G12/AS1 Water Supplies.

Tanks, especially the larger ones should have baffles fitted to enhance the rigidity of the tank and prevent surging that may affect vehicle stability.

4.2 Water reticulation

Potable water reticulation in all installations shall be in non-toxic and opaque material. Materials should comply with AS/NZS 3500, AS 2070 or equivalent, and be suitable for contact with potable water. The use of clear plastic pipe is not permitted.

C4.2

Clear plastic admits light which encourages the growth of algae in the pipe, which discolours the water, and may be harmful.

Where a water heating device such as a califont heater is installed it is recommended that the hot water reticulation be carried out in 10 mm copper tubing. This tubing, being soft-drawn is easily routed around corners and can be installed as one continuous length from califont to faucet. The flow of water through such a pipe is more than adequate as a califont restricts the water flow so that it will heat whilst exposed to the gas flame. A larger diameter pipe will hold a fair proportion of cold water which is a waste when used in conjunction with a supply of limited proportions.

Figure 1 shows a typical schematic plumbing layout for motor caravans and caravans.

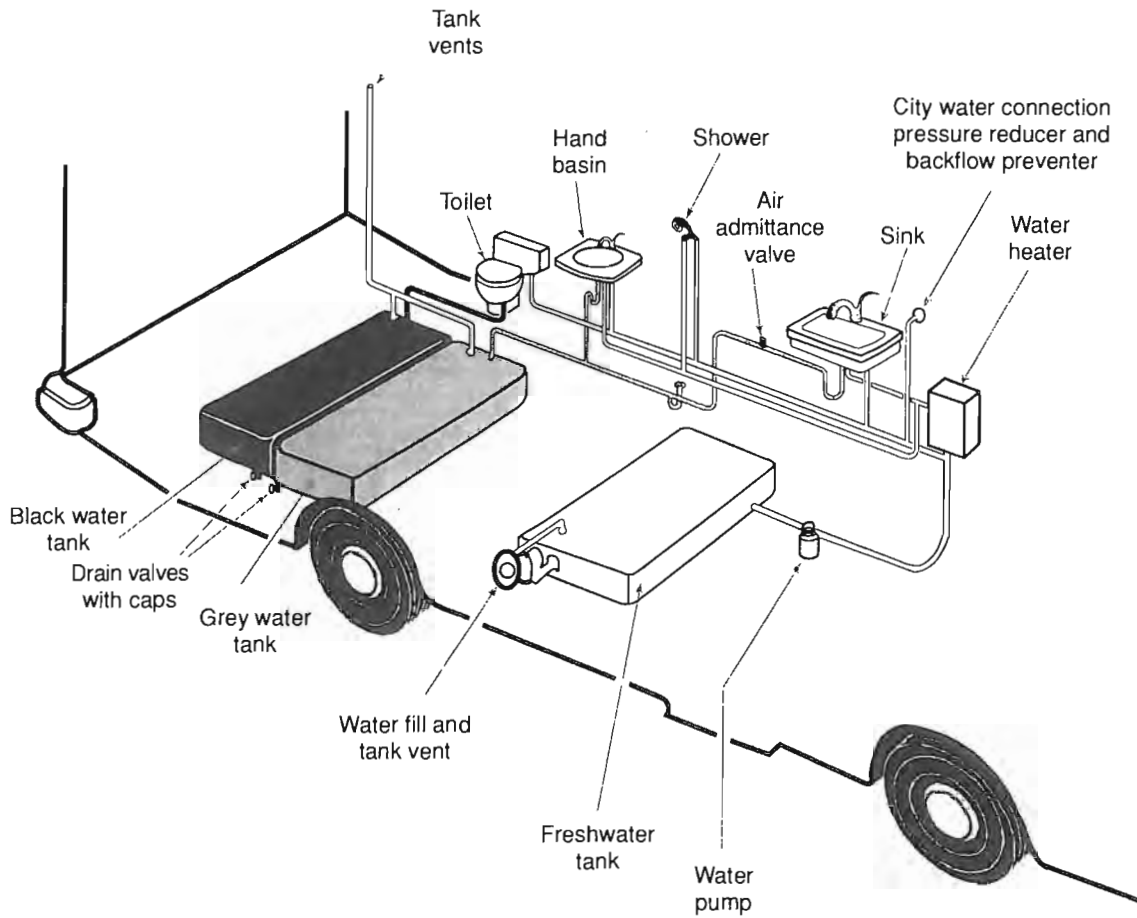


Figure 1 - Typical plumbing layout for motor caravans and caravans – diagrammatic only

NOTE – With storage water heaters an inlet pressure regulator and a pressure relief valve will be necessary.

5 SANITARY FITTINGS

5.1 Minimum requirement

The motor caravan or caravan shall be equipped with a sink. Additional sanitary fittings, like a handbasin, shower etc. are optional.

5.2 Return water

Sanitary fittings shall be supplied from the water supply in such a way that the return of water by backflow or cross connection into the supply tank is prevented.

5.3 Water seal

5.3.1

Every waste pipe draining any sanitary fitting shall have a water seal located as close as practicable to the sanitary fixture that it serves. The total length of the pipe between the fixture and the seal shall not exceed one metre from the fitting being served.

5.3.2 *Depth of seal*

Every waste pipe shall have a seal that complies with the sanitary requirements of the NZBC.

C5.3.2

The water seal should never be less than 40 mm and it is recommended that it should be not less than 70 mm, and may include an automatic air admittance valve.

5.4 Waste pipe length

Where the length of the waste from any sanitary fitting to the waste tank:

- (a) Does not exceed 3 m, the diameter shall be not less than 18 mm;
- (b) Exceeds 3 m, the diameter of the pipe shall be not less than 25 mm and be vented or fitted with an automatic air admittance valve;
 - (i) Any vent shall be not less than 18 mm diameter and shall comply with clause 7.8.2
 - (ii) Any automatic air admittance valve shall terminate above the water seal. The branch to the air admittance valve shall be within 200 mm of the water seal.

C5.4

The vent pipe or air admittance valve is to ensure that the water seal is not lost when the handbasin or other fitting is emptied into the waste tank.

5.5 Recirculating toilets and showers

Where toilets and showers re-circulate, the outlet from the holding tank shall be mounted so that there is an air gap between the appliance inlet to prevent the back siphoning of soiled water.

The fresh water supplying the holding tank must have an air gap between the appliances.

C5.5

A tap close to these appliances facilitates recharging them with water.

6 TOILET

6.1 Minimum requirements

The motor caravan, or caravan shall be equipped with a toilet. Permanent toilets are to be installed in accordance with the manufacturer's instructions or to comply with the sanitary requirements of the NZBC.

6.2 Efficiency flushing toilets

Where an efficiency flushing toilet is permanently installed it shall be connected to the waste tank by an evacuation pipe, preferably of flexible material or with flexible joints. Where evacuation is by gravity, the pipe shall be not less than 75 mm in diameter and not deviate from the vertical by more than 30°.

6.3 Toilets

All toilet systems shall provide sufficient waste holding capacity for the occupants of the motor caravan or caravan for a minimum of three days. The waste holding capacity shall be the net capacity after deducting the initial charge, or the internal flushing water. The minimum capacity required per person, per day, shall be one litre.

C6.3

One litre per day is a minimum and requires careful management to ensure that emptying is not required in less than three days.

Example:

A manufacturer states for a portable toilet – capacity of waste water is 20 L.

Less initial charge, say 1 L, remaining capacity 19 L.

6 people @ 1 L for 3 days = 18 L.

The waste holding capacity is satisfactory for 6 people.

6.4 Marine type toilets

Under no circumstances shall a marine type toilet, used in a motor caravan or caravan draw its flushing water from the drinking water supply.

C6.4

The barrel of a marine toilet pump is used for pumping both the waste to the waste tank, and drawing in the flushing water. It is therefore unavoidable that contamination will travel from the waste to the clean water supply. To use marine toilets in mobile installations, the following options are available:

- (a) Have a separate tank with flushing water available;*
- (b) Use the re-circulating system, by drawing filtered water out of the waste tank.*

6.5 Self composting toilets

Self composting toilets shall comply with the sanitary requirements of the NZBC.

7 WASTE TANK OR TANKS

7.1 Minimum requirement

7.1.1

The motor caravan or caravan shall be provided with a waste tank or tanks to receive all the waste water from all permanently installed fixtures. The capacity of the waste tank shall not be less than, and preferably larger than, the minimum water supply as per 4.1.1.

7.1.2

A motor caravan or caravan may have a removable grey water tank provided the waste pipe that feeds the tank has a shut-off valve and cap. There shall be a watertight seal between the grey water tank and the connecting pipe of the vehicle. The tank outlets and orifices shall be fitted with caps and shall be vented as per 7.8.

C7.1.2

Recommend maximum size of portable tanks is 20 L as lifting a larger tank is difficult. 1 L is equal to 1 kg.

The caps are intended to stop leakage when the tank is removed.

7.1.3

Storage of the portable tank or tanks whilst travelling shall be such that the restraints shall be able to withstand a load equal to 4 times the mass of the waste tank and contents.

C7.1.3

All tanks, especially the large ones should have baffles fitted to enhance the rigidity of the tank and prevent surging that may affect vehicle stability.

7.2 Level indicators

Where the capacity of the supply tanks is greater than the waste tanks there shall be a functioning level indicator fitted to each waste tank. The level indicator shall be clearly visible while conducting normal activities within or around the vehicle (e.g. without needing to look beneath the vehicle).

7.3 Material

The waste tank shall be constructed of a non-corrodible material.

C7.3

Tanks, especially the larger ones should have baffles fitted to enhance the rigidity of the tank and prevent surging that may affect vehicle stability.

7.4 Location of discharge

In a motor caravan or caravan installation the outlet pipe should be located as close as practicable to the lowest point of any fixed tanks.

7.5 Discharge valves

For a black water tank a quick acting valve is mandatory. For grey water tanks a gate valve is acceptable. The valve shall not be capable of operation from inside the vehicle. The outlet shall have a cap fitted when not in use.

C7.5

The flow should be established quickly to maximize the discharge from the waste tank, and ensure that the maximum amount of waste is removed.

7.6 Evacuation of tanks

7.6.1

For grey water tanks or combinations of grey water tanks connected together:

- (a) Tanks up to 200 L shall have a discharge pipe and valve with a minimum diameter of 25 mm;
- (b) Tanks over 200 L shall have a discharge pipe and valve with a minimum diameter of 32 mm.

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7.6.2

Black water tanks, or combinations of black water tanks that are connected together and contain waste that has not been macerated with a macerator pump, shall have a discharge pipe and valve with a minimum diameter of 75 mm.

7.6.3

For black water tanks or combinations of tanks that are connected together and contain waste fed from a macerating marine toilet, or via a stand alone macerator pump, the discharge pipe and valve shall have a minimum diameter of 32 mm.

7.6.4

Waste macerated on evacuation shall have a minimum pipe and valve diameter of 18 mm, unless 18 mm is less than the diameter of the discharge from macerator pump, or the size of the macerator pump openings in which case the pipe and valve diameter shall not be less than that of the opening to which it is connected.

7.6.5

Each discharge pipe on waste tanks shall be fitted with a sealing cap.

7.7 Macerator pumps

Where a motorised macerator pump is fitted for evacuating a waste water tank it shall be connected to the lowest point of the tank. The pump shall be installed in accordance with the manufacturer's instructions and fully protected from stones and obstructions on the roadway.

7.8 Waste tank vents

7.8.1

Every waste tank shall be vented. The minimum size of such a vent shall be 10 mm. The preferred size is 25 mm.

7.8.2

The vent shall terminate outside the vehicle (preferably through the roof or near the roof line) away from any door, window or opening, and extend above the flood level (overflow) of the lowest sanitary fitting.

7.8.3

Where a macerator pump or waste evacuation hose larger than 50 mm diameter is used to empty a waste tank(s) the system shall be fitted with an automatic air admittance valve or a vent of not less than 32 mm diameter. (This is not a requirement where there are no traps emptying into the tank.)

C7.8

The vent pipe or air admittance valve is to prevent water traps losing their water seal or the tanks imploding during tank evacuation.

7.9 Attachment

All tanks shall be adequately secured while the motor caravan or caravan is in motion. The evacuation valve or macerator pump shall be mounted to prevent accidental damage.

8 EVACUATION HOSE

8.1 Minimum requirements

8.1.1

Any vehicle fitted with a waste tank shall be supplied with an evacuation hose. The hose shall have a leak-proof coupling for attaching it to the holding tank evacuation valve. For a 75 mm black water connection, a bayonet coupling to connect to a dump point is required (see Appendix B and figure 2).

8.1.2

The hose diameter shall not be less than the minimum valve size appropriate for the tank (7.6.1, 7.6.2, 7.6.3), have a minimum length of 3 m and be carried in a separate container.

C8.1.2

A separate container is required for the hose to contain any bacteria that may be left on the hose after evacuating the tanks. A strong sealable plastic container is sufficient or a separate locker.

9 WASTE WATER TREATMENTS

Chemical or biological treatments should be used in a waste tank.

C9

All waste water should be treated with a biodegradable product in the quantities specified by the manufacturer of the product.

The purpose of chemical or biological treatments used in a waste tank is to:

- (a) Deodorize the waste;*
- (b) Disintegrate the solids;*
- (c) Be bio-degradable;*
- (d) Eliminate coliform bacteria;*
- (e) Prevent foaming at pumping stations;*
- (f) Avoid interference with the safe operation of a septic tank or other sewage treatment; and*
- (g) Avoid affecting component parts of the sanitation system.*

The manufacturer's instructions should be followed as to correct use and dosage.

All waste water should be disposed of in an approved waste disposal dump point or sewerage drain.

The unauthorized discharge of effluent from motor caravans or caravans onto land, or directly into waterways, is an offence under the Resource Management Act 1991, and may be subject to prosecution.

The Resource Management (Infringement Offences) Regulations 1999 provide for infringement notices that can be issued by Regional Councils if a person is caught indiscriminately dumping waste. Travelling with waste tank valves open could fall into this category. Infringement notices are similar to instant fines, and the penalties are \$300 for discharging onto land or \$750 for discharging into water or onto land where it can reach water.

Section 42 of the Land Transport Act 1998 provides that a person operating a motor vehicle on a road commits an offence if the person fails to ensure that any load carried in or on the vehicle, or in or on a vehicle being towed by a vehicle driven by the operator, is secured and contained in such a manner that it cannot fall or escape from the vehicle. If a person is convicted of an offence against this section the maximum fine for an individual is \$2000 and the court may disqualify the person from holding a driver's licence for such period as the court thinks fit.

10 SOLID WASTE CONTAINMENT

The motor caravan or caravan shall have a sealable solid waste container for rubbish.

11 ADMINISTERING AUTHORITY

The Ministry for the Environment is the administering authority.

12 ISSUING AUTHORITY

12.1 Who may act

A self containment issuing authority shall be one of the following:

- (a) A plumber registered under the Plumbers, Gasfitters, and Drainlayers Act 1976; or
- (b) A suitably qualified person, registered under the Plumbers, Gasfitters, and Drainlayers Act 1976; or
- (c) Any organization appointed by the administering authority under section 11.

12.2 Appointed organizations

In the case of appointed organizations that are self containment issuing authorities, they shall operate a scheme of qualification for testing officers who shall be members of the organization concerned.

13 TESTING OFFICERS

13.1 Persons registered under the Act

Any registered plumber or suitably qualified person, registered under the Plumbers, Gasfitters, and Drainlayers Act 1976 may act as a testing officer under this Standard.

13.2 Testing officers approved by appointed organization

For a person who does not satisfy 13.1, to qualify as a testing officer, they shall:

- (a) Be a member of an organization that is an issuing authority in accordance with 12.1;
- (b) Be duly nominated by that organization;
- (c) Have attended a course of instruction, and be tested to prove their competence to ensure the uniform interpretation of this Standard.

14 ISSUE OF SELF CONTAINMENT CERTIFICATE

14.1 Initial self containment certification

A self containment certificate may be obtained by:

- (a) Payment of the appropriate fee; and
- (b) Presenting the vehicle to two testing officers, or one testing officer where that testing officer meets the requirements of 12.1(a) or 12.1(b); and
- (c) Being certified as complying with this Standard by two testing officers, or one testing officer where that testing officer meets the requirements of 12.1(a) or 12.1(b).

14.2 Renewal of self containment certificate and warrant

Renewal of a self containment certificate may be obtained by:

- (a) Payment of the appropriate fee; and
- (b) Presenting the vehicle to a testing officer; and
- (c) Presenting the testing officer with a previous copy of the self containment certificate; and
- (d) Being certified by the testing officer as complying with this Standard.

14.3 Modifications or alterations

A renewal self containment certificate is required following any modifications or alterations to any item covered by the self containment certificate.

14.4 Issue of self containment certificates

Self containment certificates shall be issued only by an issuing authority.

15 SELF CONTAINMENT CERTIFICATE AND WARRANT

15.1 Form of self containment certificate

A self containment certificate shall list the equipment fitted and the number of people the vehicle's fresh and waste containment system is capable of supporting. The self containment certificate shall be of the form given in Appendix A .

15.2 Self containment warrant

On the completion of obtaining a self containment certificate a self containment warrant shall be issued.

The warrant shall clearly state:

- (a) The registration number of the vehicle;
- (b) The date of issue;
- (c) The issuing authority;
- (d) The maximum number of people for which the vehicle is self contained; and
- (e) The expiry date (being 48 months from date of issue if no alterations are made to the vehicle).

Such warrants shall be affixed to the inside of the left front window, or the inside of the left windshield.

15.3 Term of validity

No self containment certificate shall be valid for more than forty-eight months.

16 DISPUTES

Any disputes arising from the administration and interpretation of this Standard shall be referred to the administering authority, whose decision shall be final.

17 DUMP STATIONS

Dump stations that comply with Appendix B are suitable for receiving the discharge of waste water from vehicles that have a self containment certificate.

**APPENDIX A
SELF CONTAINMENT CERTIFICATE**

This certificate is issued under NZS 5465:2001, *Self Containment of Motor Caravans and Caravans*

Name of Owner

Postal Address

Reg. No. Year of Vehicle Make of Vehicle

Previous Certificate issued on/...../..... (If this is a renewal).

SINK Waste dia:mm Length: mm Air Admittance valve: Y/N Water seal: Y/N

HANDBASIN Waste dia:mm Length: mm Air Admittance valve: Y/N Water seal: Y/N

SHOWER Waste dia:mm Length: mm Air Admittance valve: Y/N Water seal: Y/N
(NB: an air admittance valve or 18 mm back vent is required on any waste over 3 m in length)

TOILET Type: Portable/Cassette/Fixed Make: Model:

If fixed: Waste dia: mm Pump installed: Y/N Type of pump: Manual / Macerator
(must be 75 mm unless pump is installed)

If portable or cassette: Holding tank capacity: litres (refer to 6.3)

FRESH WATER TANK 1 litres Monitor: Y/N Inlet: mm Vent: mm

Material: Type of Support:

FRESH WATER TANK 2 litres Monitor: Y/N Inlet: mm Vent: mm

Material: Type of Support:

WASTE TANK 1 Grey/Black litres Monitor: Y/N Vent: mm

Material: Type of Support:

Release valve dia: mm Evac. hose dia: mm

Evac. hose length: metres

WASTE TANK 2 Grey/Black litres Monitor: Y/N Vent: mm

Material: Type of support:

Release valve dia: mm Evac. hose dia: mm

Evac. hose length: metres

Separate hose container: Y/N

Sealable solid waste container: Y/N

Caps on waste valves: Y/N

Maximum number of occupants allowed under this certificate:

Signed Signed

Date Date

Testing Officer Reg. No. Testing Officer Reg. No.

ISSUING AUTHORITY

Alterations to any of the above items require renewal of the certificate. Renewal needs only 1 testing officer.

**APPENDIX B
DUMP STATION INSTALLATIONS**

B1

Dump stations for the disposal of waste water from the waste tanks of motor caravans and caravans having self containment certificates in accordance with this Standard shall comply with the following minimum requirements.

B2

The station shall be on an unfordable level site with a good vehicular access and egress and should be clearly marked with signs complying with figure B1.

B3

The station shall consist of:

- (a) A self cleansing unit of at least 600 mm x 500 mm with an upstand surround of not less than 100 mm, or on sealed surfaces 25 mm with a gradient to the outlet of at least 1 in 60.

NOTE – For current drainage regulations refer to Acceptable Solution G13/AS2.

- (b) The following shall be mounted in the base:

- (i) A 75 mm diameter bayonet coupling
- (ii) A 75 mm diameter cap to seal the bayonet coupling
- (iii) A 100 mm N.B. floor waste outlet with protective grate; or
- (iv) A 100 mm N.B. sewer pipe with a water seal.

- (c) Mounted over the base shall be:

- (i) A water standpipe with the tap, and backflow prevention device as approved by the local authority consent not less than 450 mm above the base;
- (ii) A flexible hose of not more than 300 mm length attached to the tap.

B4

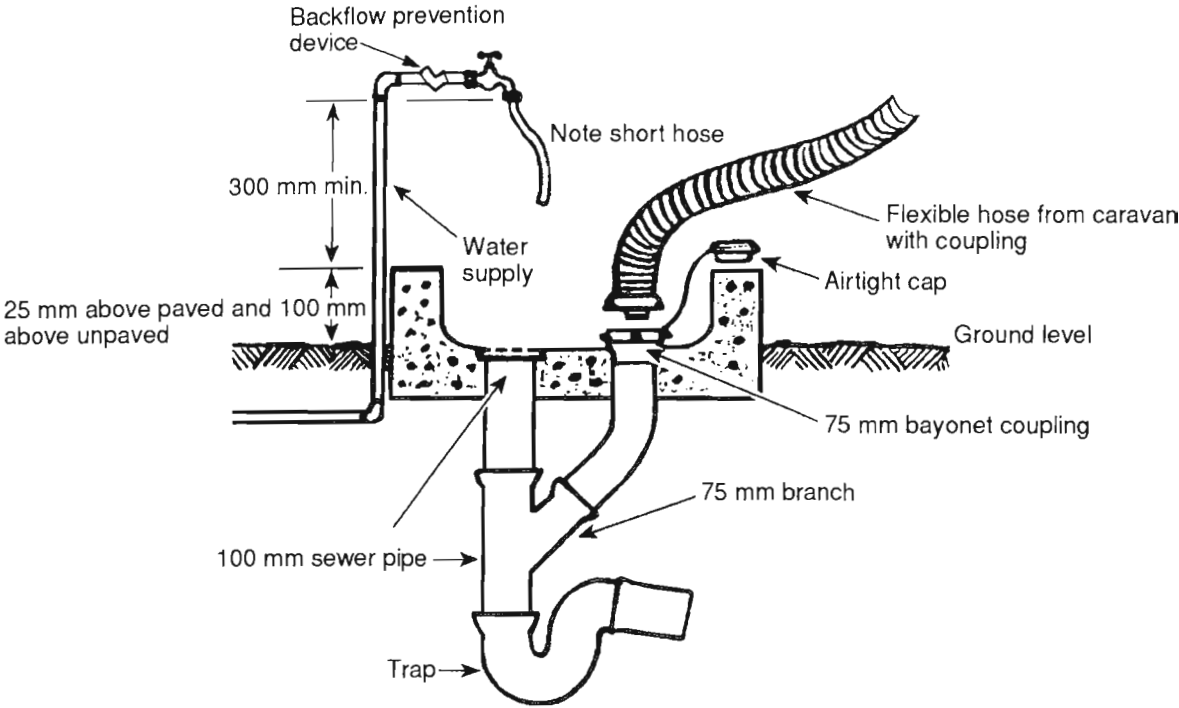
The installation shall be connected to a waste water treatment system and shall comply with all appropriate regulatory and bylaw requirements.

B5

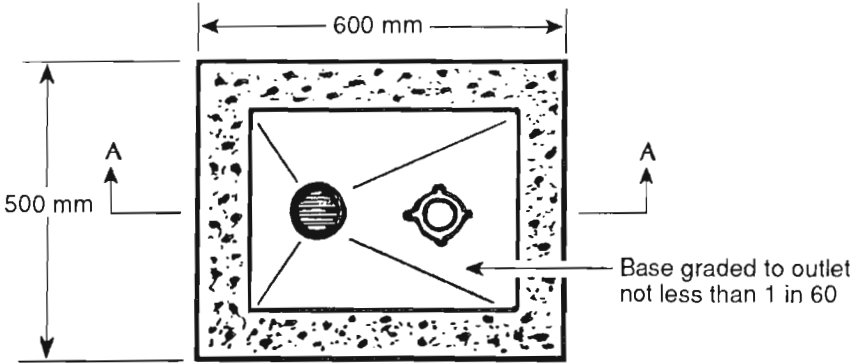
A typical dump station is illustrated in figure B2.



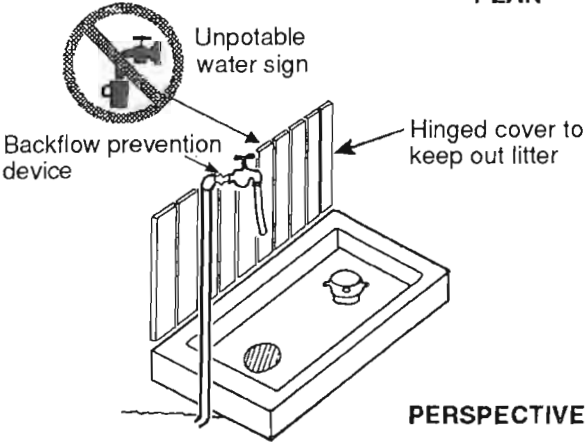
Figure B1 - Dump point sign



SECTION A - A



PLAN



PERSPECTIVE

Figure B2 - Typical dump station installation

NOTES

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