CERTIFIED SELF-CONTAINED VEHICLES

NZMCA TECHNICAL GUIDE

VERSION 1.0

August 2024

Document Change Log Table

Any amendment(s) made to this technical guidance document must be approved by the National Manager – Property & Policy before the amendment(s) comes into effect.

Rev No.	Sec/page	Description of change	Approved by	Effective date

Acknowledgement & Disclaimer

Special thanks to the NZMCA's volunteer technical advisors and staff for the countless hours spent preparing this guidance document. This guide is designed to encourage best practice and help the NZMCA's vehicle inspectors, members, and commercial partners determine how the requirements in the Self-contained Motor Vehicles Legislation Act 2023 and the Plumbers, Gasfitters, and Drainlayers (Self-Contained Vehicles) Regulations 2023 can be met.

Importantly, this guide does not supersede the Act, Regulations, or any information, guidance or subsequent determinations issued by the Regulator (Plumbers, Gasfitters, and Drainlayers Board) or Ministry for Business, Innovation and Employment.

Introduction

In June 2023, Parliament enacted the Self-contained Motor Vehicles Legislation Act 2023 (**the Act**) following calls from local authorities and their communities to address the negative impacts of freedom camping across New Zealand. Freedom camping is an important pastime for many kiwi families, however, to protect communities and our natural environment the new law introduced some significant changes that primarily affect vehicle-based freedom camping. Specifically, new rules were introduced under the Plumbers, Gasfitters, and Drainlayers (Self-Contained Vehicles) Regulations 2023 (**the Regulations**).

The Regulations outline the minimum requirements a vehicle must achieve before it can be certified as self-contained for the purposes of freedom camping. The Regulations differ slightly to the technical requirements set out under NZS 5465:2001 (blue warrant cards). They also introduce a $120 levy per vehicle and stipulate the responsibilities that the NZMCA (and other certification authorities) must accept if we want to continue certifying vehicles that belong to members and our commercial partners.

The NZMCA has introduced a parallel certification programme to ensure its members with portable toilets, or those members with fixed toilets who are unable to pay the $120 government levy, can continue to remain members of the NZMCA by certifying their vehicles under a private scheme. In effect, the NZMCA's self-containment programme gives members the option of certifying their vehicles under the government's green warrant card (valid for 4-years) or the NZMCA's yellow warrant card (valid for 10-years). NZMCA vehicle inspectors will inspect members' vehicles under the new Regulations and if a vehicle has a portable toilet, this will be noted on the inspection form and the vehicle will be issued a yellow warrant card. If a members' vehicle has a fixed toilet the owner can also choose between a green or yellow warrant card. There is no levy attached to yellow warrant cards, but they cannot be relied on for freedom camping in public areas that are restricted to certified self-contained vehicles only.

This guide is designed to provide NZMCA vehicle inspectors and other stakeholders with information on how the NZMCA's self-containment system works. This guide is designed to complement (not supersede) guidance prepared by the Plumbers, Gasfitters and Drainlayers Board (**the PGDB**). Other stakeholders are welcome to use this document as a guide to understand how the Regulations may affect them.

If NZMCA members are making important decisions around modifying or changing their vehicles to comply with the Regulations, they are encouraged to seek initial practical advice from the NZMCA, particularly if they are unsure about the correct interpretation of this guide. This guide covers three elements of the new self-containment regulatory system.

- **System guidance** which provides an overview to how the new regulatory system works and what this requires from those working in it, e.g. NZMCA Vehicle Inspectors and members.
- **Inspection guidance** which offers NZMCA Vehicle Inspectors direction on their roles and how they should undertake vehicle inspections.
- **Technical guidance** which offers detailed explanations and examples of the design and installation of self-containment systems in vehicles, and what is required to comply with the Regulations.

The Regulations provide less scope for people to undermine the self-containment system. This should increase public confidence in vehicle-based camping, safeguarding the environments we enjoy and protecting the opportunity to freedom camp for future generations of campers.

System guidance

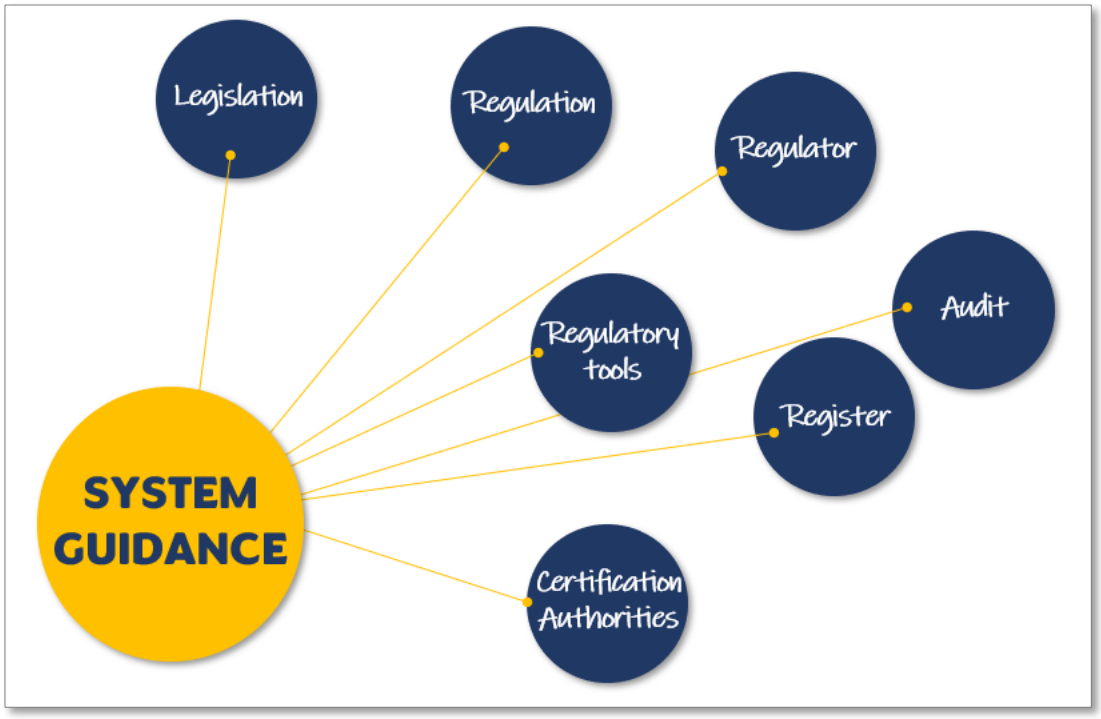
To comply with the NZMCA's Constitution and Bylaws, members must meet one of these options:

- Rely on their blue warrant card issued under NZS 5465:2001 until it expires, or
- Certify their vehicle under the government's 'green warrant card' system, or
- Certify their vehicle under the NZMCA's 'yellow warrant card' system.

The yellow card option is designed for NZMCA members' vehicles with portable/waterless toilets that cannot met the Regulations, or for those members who wish to forego the opportunities for freedom camping in restricted areas, which the green card offers. The green and yellow card systems follow the same inspection process under the Regulations, save for the toilet fixings. The NZMCA's yellow card system exists outside of the Regulations and is strictly a private system involving the Association and its members.

The government's new self-containment system has several components that control how vehicles are certified as being self-contained (see *Figure 1* below). There is a hierarchy in these components from the legislation which legally mandates everything, to regulation and regulatory tools which determine much of the detail of what and how things are done, down to certifying authorities and their role and responsibilities. The NZMCA is a certification authority.

Figure 1: Overview of self-containment regulatory system



Legislation

Vehicle self-containment is governed by the Freedom Camping Act 2011 (**the FC Act**) and the Plumbers, Gasfitters and Drainlayers Act 2006 (**the PGD Act**).

In 2023, changes made to the FC Act gave local authorities more power to restrict freedom camping throughout their cities and districts, including only allowing freedom camping in vehicles certified under the Regulations with a green warrant card, or designating freedom camping areas for vehicles that do not have a green warrant card. These changes also gave local authorities greater ability to enforce rules that

apply to freedom camping. For example, the infringement fee has increased from $200 to $400 for a basic offence under the FC Act.

The law mandating the government's self-containment system is mainly provided in the PGD Act and in particular Part 2A of this Act, found here. Part 2A deals with the following key topics:

- Appointing certification authorities by the PGDB.
- Appointing vehicle inspectors by certification authorities.
- Minimum requirements for vehicle inspections.
- Certifying vehicles.
- Registering certified self-contained vehicles in a public vehicle register.

Self-containment Regulations

The Regulations are mandated by section 172 (1A) of the PGD Act and deal with four key topics:

- How **certification authorities** and **vehicle inspectors** are appointed.
- The **content and specifications** of a certified vehicle's self-containment system.
- The content and format for the **self-containment certificate** and **green warrant card** and the display of the warrant card on vehicles.
- Requirements of **fees** for certification authorities and **levies** for vehicle owners.

From a vehicle inspection perspective, Regulations 13 to 20 are the most relevant. These set out the required components of a vehicle's self-containment system, the standards of installation these should meet and their expected performance. In specifying these, the Regulations follow a similar approach taken in the Building Code which is focused on how a component or part of the system is expected to function or perform. Greater direction of what to do comes into the system in the Plumbers, Gasfitters, and Drainlayers Board (Motor Vehicle Inspections) Notice 2023 (**the Notice**). The Notice has more influence on the content of the vehicle inspection process than the Regulations.

The Regulator

The PGDB is responsible for regulating the government's self-containment scheme. The NZMCA effectively regulates its own 'yellow warrant card' scheme which sits outside of the government programme.

The PGDB's regulatory powers and duties are primarily derived from the PGD Act although some also come from the Regulations. These powers and duties fall into four categories:

- **Regulatory tools** which include the Notice of minimum requirements, the self-containment certificate, and the vehicle warrant.
- **Approval of certification authorities** which includes individuals, e.g. plumbers, and organisations (such as the NZMCA) who inspect vehicles and issue self-containment documents.
- **A self-contained vehicle register** is established and maintained by the PGDB and made accessible to the public – this register can be accessed here.
- **Auditing** of certification authorities' activities including considering complaints and taking enforcement action against errant authorities.

Regulatory tools

The main regulatory instruments used in the government's self-containment system are:

- **Gazette notice** issued by the PGDB which sets out the minimum inspection and record requirements for all vehicle inspections. The Notice forms the basis of NZMCA's 4-page inspection form and is critical to the Association's approach to vehicle inspections and certification.
- **Self-containment certificate** which is provided to every owner of a certified self-contained vehicle recording its inspection and relevant details of the vehicle. Members who opt for a yellow warrant card will also receive a certificate.
- **Vehicle warrant** which is the green warrant card providing proof that the vehicle is certified as self-contained under the government scheme – this connects the self-containment regulatory system to freedom camping.
- **Infringement fees and fines** for those found breaching freedom camping rules and which act as a deterrent. These are administered by local authorities and the Department of Conservation. While they fall outside of the self-containment system, they rely entirely on self-containment certificates and vehicle warrants for enforcement.

Auditing

The PGDB have oversight and review functions in respect of certifications authorities. This includes:

- Review of background information provided by certification authorities in support of their appointment/reappointment as authorities.
- Investigation of complaints or evidence which suggests a certification authority is negligent, acting improperly or is not competent in carrying out one or more of its core functions under the PGD Act.
- Inspection of a certification authority's premises and records as part of any investigation.

The PGDB has no audit or enforcement powers against vehicle inspectors. Instead, vehicle inspectors are accountable to the certification authority they are associated with. It is the responsibility of a certifying authority to ensure its vehicle inspectors are adequately trained, supported and monitored/audited in their inspection work so that their inspections consistently meet the requirements set out in the Regulations and Notice. A certification authority's measures to provide this training, support and monitoring are considered by the PGDB in applications for appointment/re-appointment as authorities. Visit the NZMCA website (www.nzmca.org.nz) for further information on its training, support and monitoring of vehicle inspectors.

Self-contained vehicle register

The PGDB has a statutory responsibility under the PGD Act to establish and maintain a public database of all vehicles with current self-containment certificates issued under the government's system. Certification authorities have a responsibility to upload relevant information on the vehicles they certify (for green warrant cards) to this database. National Office staff receive and process vehicle inspection forms and ensure the data is uploaded correctly into the vehicle register.

Access to information held in the vehicle register is different for members of the public, certification authorities, enforcement officers and the PGDB. Members of the public can only gain information on a self-contained motor vehicle which confirms whether it holds a green warrant card, whether it ever has had one and the expiry dates of any current, expired or revoked warrant cards. Certification authorities, such as the NZMCA, can access this information as well as details of self-containment certificates it has

issued and details of any inspection it or other certification authorities have undertaken. Vehicle inspections carried out by NZMCA vehicle inspectors will also be retained in our own database.

Certification Authorities

The NZMCA is a certification authority. Under the PGD Act, certifying plumbers registered with the PGBD are deemed to be to be a certification authority although they must still enrol with the PGDB and issue their own documents. A list of certification authorities can be found here.

Certification authorities have four main roles under the PGD Act and Regulations:

- **Vehicle inspectors** – appoint, supervise and support vehicle inspectors undertaking inspections on behalf of the certification authority.
- **Vehicle inspections** – arrange vehicles to be inspected or allow vehicle inspectors to arrange inspections. The NZMCA allows its vehicle inspectors to arrange inspections.
- **Certification** – issue vehicle owners with a certificate of self-containment and a warrant card once the certification authority is confident a vehicle complies with the Regulations.
- **Levy** – collect the government's certification levy ($120 including GST) from vehicle owners that want a green warrant card and pass this payment directly on to the PGDB. Importantly, NZMCA vehicle inspectors do not collect this levy. Following receipt of a completed inspection form for a vehicle that requires a green warrant card, the National Office will send an electronic invoice to the vehicle owner to collect payment of the levy, prior to uploading the vehicle details into the vehicle register.

Inspection guidance

Vehicle inspections are at the core of the new system. These inspections are critically important to the NZMCA because the integrity of the system and the Association's reputation rest on them.

The vehicle inspection process

- **Become a vehicle inspector for the NZMCA:** Only vehicle inspectors appointed by the NZMCA can inspect vehicles under the NZMCA's system. Appointments are based on vehicle inspectors having sufficient training and experience to undertake vehicle inspections competently, ongoing supervision and oversight of inspectors in their work, and vehicle inspectors agreeing to comply with NZMCA's instructions and guidance around the inspection process. Visit the NZMCA website (www.nzmca.org.nz) or email selfcontainment@nzmca.org.nz for further information on how to become a vehicle inspector for the NZMCA.
- **Inspect a vehicle using the NZMCA's vehicle inspection form:** The NZMCA requires its vehicle inspectors to physically examine a vehicle. In special circumstances, an inspection can be completed remotely using a real-time video link between the vehicle inspector and owner. The NZMCA can provide additional guidance on remote inspections, if required. The Notice makes it clear that vehicle inspectors are expected to exercise their judgement as to whether a vehicle should be certified.
- **Submit a completed vehicle inspection form to the National Office for processing:** The NZMCA's vehicle inspection process is built around the Notice. The NZMCA's vehicle inspection form is designed to help NZMCA vehicle inspectors compile the necessary information for them to systematically make an overall assessment of a vehicle's compliance with the Regulations. This approach offers more flexibility to vehicle inspectors compared to NZS 5465:2001 inspections.

- **National Office staff process completed inspection forms and post documents to vehicle owners:** at this point vehicle inspectors have no other role to play, unless the office requests further information to process an inspection form. The office also collects the levy from owners who are eligible for and clearly request a green warrant card on the form.

NZMCA Vehicle Inspection Form

The NZMCA's 4-page vehicle inspection form contains just over 100 questions and takes a similar amount of time to complete as the NZS 5465:2001 two-page check sheet. Almost all questions need to be answered to pass a vehicle for certification. While the inspection form belongs to the NZMCA, by legal necessity it is based on the Notice. The relationship between the Notice, the NZMCA's form, the self-containment certificate, and the warrant card are shown in *Figure 2* below.

Some of the information provided on the inspection form is input into the NZMCA's self-containment database by trained NZMCA staff. Some of this information is subsequently saved into the vehicle register. Database information is also used to fill in the self-containment certificate and the vehicle's warrant card. All vehicle inspection forms are saved by the NZMCA so that the information on can be retrieved for review.

Figure 2: The role of NZMCA's Vehicle Inspection Form

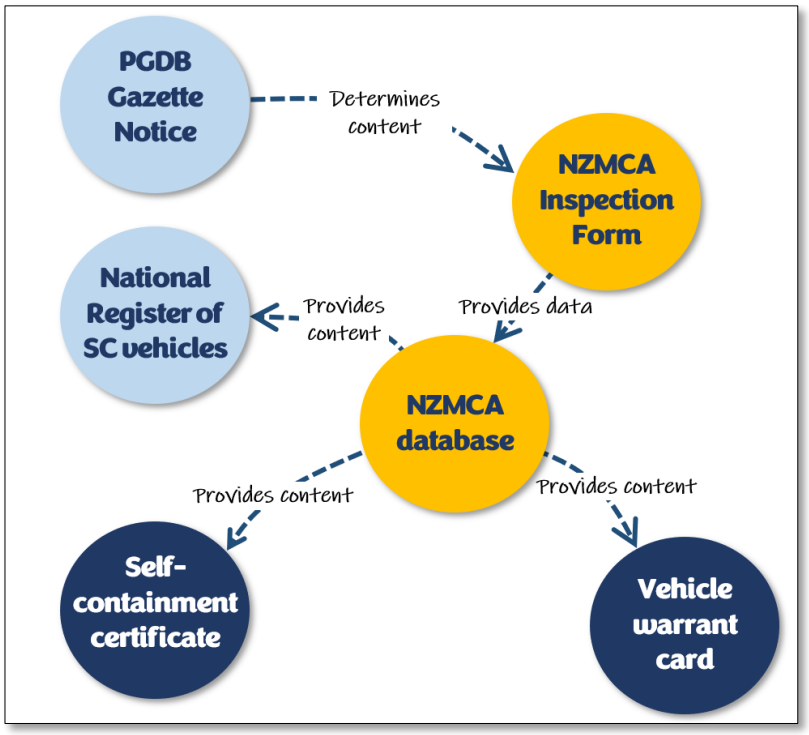
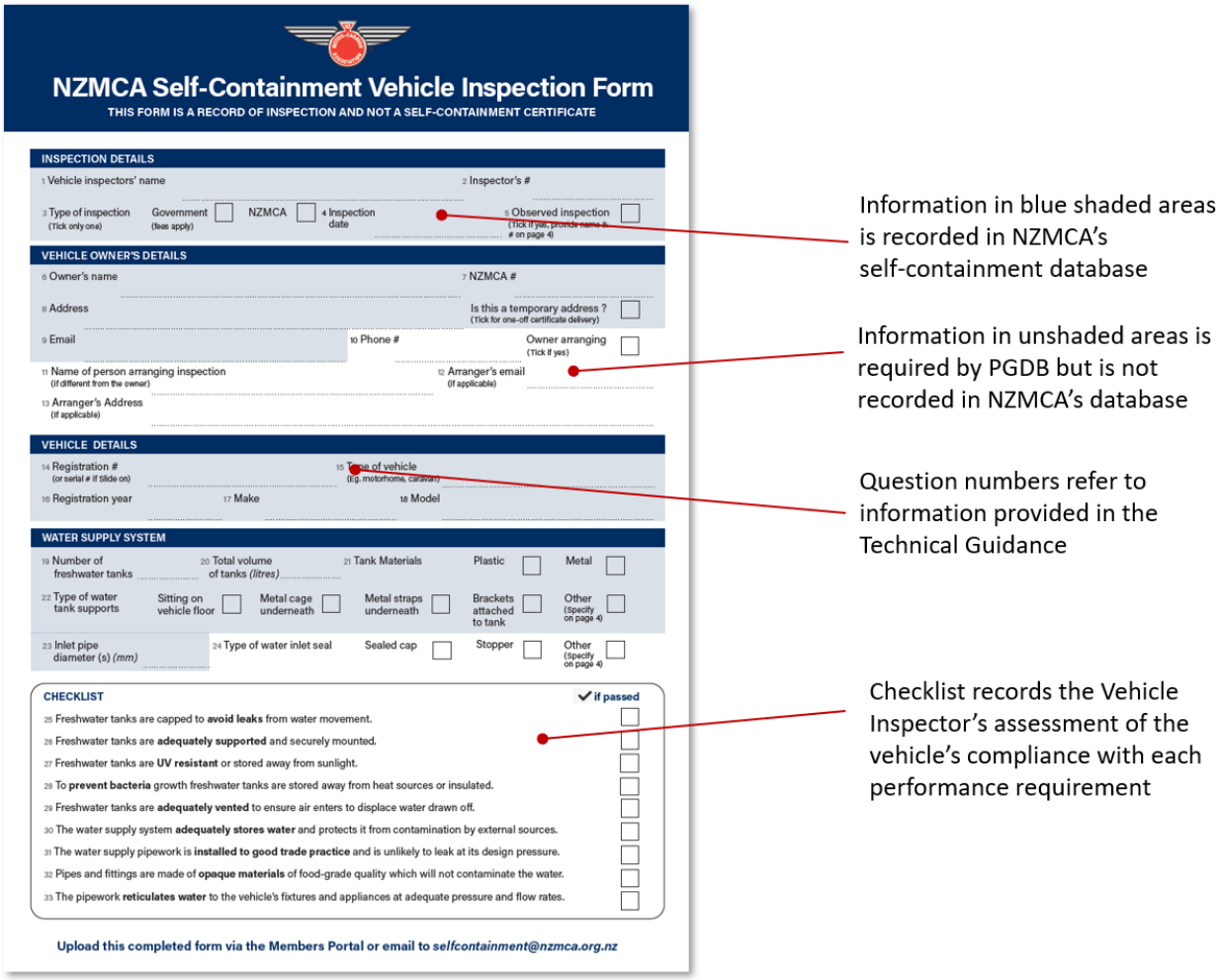


Figure 3 below is the first page of the NZMCA's vehicle inspection form. This provides an overview of the sorts of information required from vehicle inspections and how this information will be used. Essentially three sorts of information are gathered from inspections:

- **Database information** about the vehicle inspector, vehicle owner or the vehicle which will be entered into NZMCA's self-containment database – some of this information will be shared with PGDB to be able certify the vehicle as self-contained[1].
- **Information not held in the database** which is mainly on technical details of a vehicle's self-containment system which must be legally recorded but not shared with PGDB.
- **Assessment prompts** which are a series of questions about a vehicle's self-containment system which vehicle inspectors should consider as they undertake their overall assessment of the vehicle for certification.

Figure 3: Outline of the format of the NZMCA Vehicle Inspection Form



Filling in the vehicle inspection form

This section explains some of the fields in more detail to help vehicle inspectors gain a better appreciation of the intention behind each question.

The emphasis in the whole of NZMCA's inspection system is to ensure that vehicles meet the requirements of the Regulations as easily as possible. The NZMCA wants to avoid an unnecessarily strict compliance-type mentality in our inspection system, which focuses on failing vehicles for non-compliance. Rather the

[1] See a discussion on page 16 which reports which information must be shared with PGDB and the treatment of privacy around other information not shared but held in NZMCA's database.

intention is to identify relevant shortcomings and work with vehicle owners to remedy these, so that the vehicle can be certified self-contained and issued a green or yellow warrant card.

Type of inspection - *#3*

NZMCA's vehicle inspection programme certifies vehicles as self-contained under both the government's 'green warrant' system and the NZMCA's 'yellow warrant' system. Again, the only difference between the two systems in terms of vehicle inspections is around fixed and portable toilets. To receive a green warrant card, the vehicle must have a fixed toilet and the owner must pay a $120 levy to the NZMCA before the vehicle is loaded into the vehicle register and the certification documents are posted out. There is no levy to pay for those who choose the yellow warrant card option. **At the time of inspection, please ensure the vehicle's owner is clear about which warrant card option they want their vehicle certified under.**

Observed inspection - *#5*

The inspection form is also used by NZMCA to record information on the support and direction offered to Vehicle Inspectors as they undertake inspections. From time to time a second NZMCA vehicle inspector will oversee a vehicle inspection as part of a monitoring/audit programme which NZMCA is required to have as a certifying authority. Question 5 records when this happens and who the second vehicle inspector is. That second inspector must also sign-off the inspection on page 4 of the form.

Address and temporary address - *#8*

The address written on the inspection form will be where the certificate and warrant card are sent to. This address will normally be the address the NZMCA member has listed with the Association. The address written on the inspection form will be used to update the member's contact details unless this is clearly a temporary address. If the recorded address is a temporary one – perhaps because the vehicle owner is on the road travelling, please tick the temporary address box.

Arrangers – *#11 to 13*

Where a person other than the vehicle's owner is arranging the inspection, this person's name and contact details must be recorded on the form. This is a requirement of the Notice. An example of an Arranger coming into the picture could be a vehicle manufacturer arranging an inspection for a vehicle which has already been sold onto an NZMCA member. The information provided in these questions is not recorded in the NZMCA database so will only be stored on the saved copy of the inspection form. This should minimise any privacy concerns for the 'arranger'. **If the 'arranger' is not prepared to give you this information, then the inspection cannot proceed.**

Registration number – *#14*

Normally this will be the motor caravan's number plate number (not the tow vehicle). The most common exception will be with slide-on campers which can transfer from one vehicle to another. If there is no licence number plate, please record the manufacturer's serial number.

Type of vehicle – *#15*

This question refers to whether the vehicle being inspected is a motorhome, caravan, bus or some other form of camping vehicle. This information is required by PGDB but will not be recorded on the self-containment certificate or warrant card. Our expectation is for vehicle inspectors to make their own judgement call on the type of vehicle being inspected. If in doubt, please contact the National Office.

Freshwater tanks – *#19 to 30*

These questions relate to all freshwater tanks making up the vehicle's freshwater storage at the time of its inspection. This includes portable as well as fixed storage tanks. Answers to questions 21 to 24 must cover

the details for each tank so multiple answers are okay. The secure in-vehicle storage of portable freshwater tanks is covered in the technical guidance chapter but in ticking off question 26 as a pass, vehicle inspectors must be sure that such tanks cannot dangerously move in the event of a quick stop or accident.

'Other' responses – see #22, 23, 35, 39, 40, 49, 55, 66, 89

Several questions require a box to be ticked and some of these questions have an 'Other' option which requires a written response. Please write these responses in the 'ADDITIONAL COMMENTS' section at the bottom of page 4 of the inspection form. Please also write down the question number to which the comments relate.

Checklist questions – *#25 to 33, 41 to 45, 56 to 65, 71 to 77, 91 and 92 and 95 to 99.*

Checklist questions make up 40% of all the questions in the inspection form. These are qualitative type questions which require vehicle inspectors to make an assessment on whether the vehicle passes the requirement identified in each question. Answers to checklist questions should form the basis of the overall judgement by an inspector that the vehicle meets the requirements set down in the Regulations. Inspectors have discretion over the extent to which a vehicle's self-containment system meets these requirements especially around judgements over 'fit for purpose'. In the Regulations fit for purpose

> *'means the element has been designed for the purpose or function for which it has been used, and it has been installed and is being used in a way that ensures it remains functional at least for the period of certification'* (Regulation 14(2)).

If a vehicle' self-containment system does not meet the grade to pass one of the checklist questions, vehicle inspectors should leave that box unmarked until the vehicle is re-inspected and compliant.

Fixed and portable toilets – *#34 and 38 and 41 to 45*

A vehicle cannot be certified under the government 'green warrant card' system unless it has a compliant fixed toilet. Members' vehicles can be certified under the NZMCA's 'yellow warrant card' system with a portable or fixed toilet. The technical guidance provided in the next chapter offers examples of which toilets and toilet fitting arrangements comply with the Regulations and can be certified under the government programme. Some members may try to adapt portable toilets to be 'fixed' and this may be a challenge to vehicle inspectors interpreting the guidance and Regulations. The Regulations are clear that fixed toilets are

> *'fixed to the motor vehicle with the base of the toilet rigidly mounted in position and do not require removal in order to empty human waste;'* (Regulation 17(1)(b))

Portable toilets fixed to the vehicle still that require the base to be removed for the waste tank to be emptied do not comply. They will, however, be eligible for a yellow warrant card under the NZMCA system, provided they can still be used in the vehicle as required by the Regulations. See the technical guidance further on for information on this along with waterless/compositing toilets.

Toilet capacity – *#37*

In most cases the vehicle's toilet capacity (recorded in litres) is either:

- The volume of the black water waste tank if this is collected separately from the grey water waste, or
- The volume of the wastewater tank(s) if black and grey wastewater are collected in the same tank(s). In such cases the minimum volumes for black and grey water shown in the table on page 4 need to be added together and the volume of the wastewater tank(s) assessed against this minimum, or
- The volume of cassette tanks if the toilet is a cassette type one. A vehicle can have more than one cassette on board which can be counted in this total volume. To be counted, extra cassettes must be stored safely and securely within the vehicle being certified.

For waterless/composting toilets, record the capacity of the urine container. Note, that if urine waste discharges into a grey wastewater tank, this tank becomes a black wastewater tank.

Toilet is useable – *#41*

Vehicle inspectors should assess the convenience of use of the toilet. The technical guidance below outlines how this can be assessed. In considering this requirement as an overall question, vehicle inspectors should ask themselves about the likelihood that the toilet in question will be used by occupants or if it is more for show. The benefit of doubt should be given, where practicable, to the proposition that the toilet in its configuration is a legitimate attempt to meet the requirements of the Regulations.

Grey water waste – *#46 to 65*

These questions also cover any separate black water tank a vehicle may have but excludes toilet cassettes which are included in question #37. Question #47 requires the total volume of all the tanks including any separate black water tanks but does not include the volume of the solids chamber in waterless or composting toilets. If a vehicle has two or more tanks, please record all the details even if that requires multiple answers to some questions. The checklist questions apply to all the grey water or black water tanks in a vehicle.

Ventilation systems – *#66-77*

A vehicle's ventilation system includes water traps, vents and pipes. Water traps prevent odours escaping wastewater tanks and entering the vehicle. Vents and pipes allow these tanks to breath and avoid unequal air pressures as tanks fill or empty. It is the total performance of the ventilation system which matters most so an inspector's overall assessment based on the checklist questions (#72-78) is the thing to concentrate on the most. Wastewater storage tanks must, however, be vented to the outside of the vehicle and vent pipes must be installed so as to prevent leakage of wastewater and be away from doors or windows.

Long wastewater pipes – *#88*

The Notice requires inspectors to note if wastepipes are longer than 3.5 metres, however it does not require these pipes to be measured with a tape. Exercise your good judgement.

Safety features

These features are not required for a vehicle to be certified as self-contained; however, they are useful safety prompts for the vehicle owner. If it is appropriate, use the opportunity of the inspection to remind vehicle owners of the importance of having these safety features in their vehicles.

Possible conflict of interest – *#93*

The Regulations require vehicle inspectors to report any interest or financial stake in the inspection of the vehicle, either as the vehicle owner or as an employee of the owner. An interest does not extend to inspecting a friend's or relation's vehicle or receiving some sort of recognition for doing the inspection. It does require an inspector to report when he/she is inspecting a vehicle they own. No further action is required of vehicle inspectors beyond acknowledging this interest although NZMCA as a certifying authority is required to manage any substantial conflicts of interest on case-by-case basis.

Checklist of overall assessment – *#94-99*

Vehicle inspectors must consider the overall performance of the vehicle's self-containment system before signing it off (or not). These questions are based on judgements around various parts of the self-containment system being fit for purpose. As noted above this means that the various parts of the system 'will remain functional at least for the period of certification'. If the inspector believes this is not the case,

then they should decline to approve the vehicle for certification. The reasons for doing this, and what steps can be taken to remedy any shortcomings, should be discussed with the vehicle owner first. Ideally, the inspection ends at this point rather than the vehicle being 'failed' as with WoF and CoF inspections. The NZMCA does not require its vehicle inspectors to submit inspection forms for vehicles that do not pass the inspection, as this information is not recorded in our database or system.

Vehicle capacity – #100

Assuming that the vehicle is recommended for certification, the last task is to assess how many people the vehicle can accommodate for a minimum period of three consecutive days. This recommendation is based on the vehicle inspector's discretion and common sense. The NZMCA recommends using the table in the middle of page 4 of the inspection form for calculating this occupancy figure. Unless the calculation shows a near miss, an occupancy of more than these standards provide for should not be recommended. At the top end it may be the case that a vehicle with large storage tanks can (under the standards in the table) accommodate more people than can comfortably sleep in the vehicle. The inspector should exercise common sense and not, for example, suggest the vehicle can be certified for 16 people simply because it has 200L tanks.

Related to this question is how many berths are within the vehicle and whether it is sensible to recommend an occupancy higher than the berth numbers just because tank sizes allow for this. A further related question is the usability of the toilet if the vehicle is fully occupied according to tank sizes. If vehicle inspectors have some concern about setting an occupancy figure too high, they can be guided by the past certified occupancy figure and the views of the vehicle owner.

Sign-off

The vehicle inspector must sign the form on page 4 if they are happy for the NZMCA to certify the vehicle. The arranger or vehicle owner must also sign the form as acknowledgement that they have arranged the inspection and agree to the type of warrant card to be issued (green or yellow). If a second vehicle inspector has observed the inspection for monitoring purposes, or as part of their training process, they must also sign the inspection form before submitting it to the NZMCA for processing.

Following a successful vehicle inspection

The vehicle inspector, arranger, or vehicle owner must send the completed and signed inspection form to the NZMCA for processing, preferably immediately after the completion of the vehicle inspection. Depending on the time of year and how long it takes to receive the levy payment, it may take 5 to 10 working days for the NZMCA to process forms and send out the certification documents. Forms can be sent by post or scanned/photographed on both sides laid out flat and uploaded through the NZMCA Portal or emailed to selfcontainment@nzmca.org.nz.

Vehicle inspectors should explain the certification process to vehicle owners, particularly if they request a green warrant card which requires them to pay NZMCA the government's $120 levy on receipt of an electronic invoice from the national office. Vehicle owners must provide you with a clear email address (question 9 on the form) for the office to send the invoice to.

If the vehicle does not pass the inspection the owner needs to be advised of the vehicle's shortcomings and possible remedies. These remedies may be offered on the NZMCA's website and vehicle owners can be referred to this site for some assistance. Ideally the inspection form should be kept by the vehicle inspector and a copy of it taken by the owner – perhaps with a phone camera. This will allow for the almost complete form to be completed on the vehicle's re-inspection.

Under the government's self-containment programme there are five steps between the vehicle inspection and the issuing of a certificate and green warrant card:

1. A vehicle passes an inspection and by signing off the form the vehicle inspector recommends it for certification under the green or yellow warrant card system.
2. The form is sent to NZMCA's National Office by the Vehicle Inspector or vehicle owner – details of how and where to send it are provided at the bottom of each page of the form.
3. The NZMCA National Office enters the form into its database. Assuming the form is correct, the NZMCA generates an invoice for the government's green warrant card levy, and this is sent to the vehicle owner for payment at the email address given on the form. If the vehicle belongs to a NZMCA member and the form is for a yellow warrant card, a self-containment certificate and yellow warrant card is sent by post to the member.
4. The vehicle owner pays NZMCA the levy fee for a green warrant card.
5. On receipt of this payment NZMCA National Office enters the details of the vehicle into the National Vehicle Register, pays the levy to PGDB, and mails the self-containment certificate and green warrant card to the vehicle owner.

At this point, the PGDB enters the details of the vehicle and some of its self-containment information into the vehicle register. The NZMCA National Office sends (by post) the self-containment certificate and warrant card to the vehicle owner.

Privacy questions

Under the new rules, vehicle owners are obliged to provide certain information about themselves before a vehicle can be certified. This is not an issue for vehicle inspectors to deal with although they should understand the extent of private information required and how this information may be used.

Vehicle owners must provide their name, contact details and various details of their vehicle including its registration plate number. The same information is required of a person who is arranging a vehicle inspection. In the case of NZMCA's inspection programme contact details include the owner's address (home or postal) and their email address. An inspection cannot proceed if this information is not provided.

The NZMCA is governed by the principles of the Privacy Act 2020. The principles cover the collection, storage and use of personal information. The NZMCA seeks to uphold these principles and our Privacy Policy published on the Association's website shows how we do that.

The Regulations require NZMCA to publish the vehicle owner's name and details which identify the certified vehicle (such as its registration number) on the self-containment certificate. These details must be shared with the PGDB and will be recorded in the vehicle register. The self-containment certificate is also kept by the vehicle owner.

Only information on a motor vehicle is available publicly which confirms whether a vehicle holds a current self-containment certificate, whether it ever has had one, and the expiry dates of any current, expired or revoked certificates. No personal information about the vehicle owner is publicly available through the register and those with access to personal information in the Register are governed by the Privacy Act.

Technical Guidance

This section provides NZMCA vehicle inspectors with guidance on how to undertake a vehicle inspection, based on the following sources of information along with its internal expertise:

- The Self-contained Vehicles Regulations – available here.
- The Plumbers, Gasfitters and Drainlayers Board Gazette Notice – available here.
- The Plumbers, Gasfitters and Drainlayers Board Vehicle Inspection Guidance – available here.

This technical guidance offers explanations and inspection tips as a vehicle inspector runs through an inspection. It also offers advice on how an inspector might approach various assessments and judgements in the inspection process.

The technical guidance is broken into sections – each dealing with an element of a vehicle's self-containment system. Each section has several topics which are aligned to questions in the NZMCA vehicle inspection form.

	Guidance topic	Inspection form questions covered	Cross references
A	**Water Supply System**		
A1	Tank materials	21,27,28	30,94
A2	Water tanks' volumes	20	30
A3	Water tanks' support	22,26	
A4	Water inlet pipes	23	
A5	Water tank capping	24,25	
A6	Protection of freshwater in storage	27,28,32	
A7	Venting of water tanks	29	
A8	Installation of pipework	31	
A9	Overall assessment of water supply system	30, 33,94	31, 94
B	**Fixed toilets**		
B1	Toilet type, make and model	34,35,36	38,65
B2	Toilet capacity	37	
B3	Toilet fixing	38,42,43,44	
B4	Toilet ventilation	40	66,71,97
B5	Usability of the toilet	41	
B6	Overall assessment of the toilet	45 and 95	B1 to B5
B7	Assessment of waterless toilets	44 and 65	38
C	**Wastewater System**		
C1	Volume of wastewater tanks	47	
C2	Wastewater tanks' support	49,57,58,59	
C3	Wastewater pipework	50,60,61,88	
C4	Wastewater system's outlet	51,54	
C5	Wastewater disposal hoses	52,55,63,64	
C6	Wastewater tanks' capping	56	
C7	Overall assessment of wastewater system	61,62,96	C1 to C5

D	**Ventilation system**		
D1	Scope and description of the ventilation system	66	
D2	Vent pipes	67,68,72,73,74,75	97
D3	Water traps and valves	69,70,76,88	97
D4	Overall assessment of ventilation system	71,72,76,77,97	D2 & D3
E	**Other Elements**		
E1	Sink	78,79,80,81,92,98	
E2	Hand basin	82,83,84	
E3	Shower	85,86,87	
E4	Rubbish storage	89,90,91,98	
E5	In-vehicle safety features	Other	
F	**Overall Assessment**		
F1	Final assessment of the self-containment system	94 to 99	A9, B6, C7, D4
F2	Assessment of vehicle's occupancy capacity	100	Occupancy table

Inspection form question	Question topic	Guidance references
INSPECTION DETAILS		
1	Vehicle inspector's name	Not covered
2	Inspection date	Not covered
3	Inspector's NZMCA VI number	Not covered
4	Inspection type – Govt or NZMCA	Covered in Inspection Guidance section
5	Observed inspection	Covered in Inspection Guidance section
VEHICLE OWNER DETAILS		
6	Vehicle owner's name	Not covered
7	Owner's membership #	Not covered
8	Owner's email address	Not covered
9	Owner's address	Not covered
10	Phone number	Not covered
11	Name of inspection arranger	Covered in Inspection Guidance section
12	Arranger's email	Covered in Inspection Guidance section
13	Arrangers address	Covered in Inspection Guidance section
VEHICLE DETAILS		
14	Vehicle registration # or unique ID	Covered in Inspection Guidance section
15	Type of vehicle	Covered in Inspection Guidance section
16	Year of vehicle's first registration	Not covered
17	Vehicle make	Not covered
18	Vehicle model	Not covered
WATER SUPPLY SYSTEM		
19	Number of water storage tanks	Not covered
20	Total volume of water storage tanks	A2
21	Tank materials	A1

22	Type of water tank support	A3
23	Inlet pipe diameter	A4
24	Type of inlet seal	A5
25	Capped to avoid links	A5
26	Tank adequately supported	A3
27	UV resistant tanks	A1 and A6
28	Prevention of bacteria in tank	A1 and A6
29	Tanks adequately vented	A7
30	System adequately stores water	A9
31	Pipework to good trade practice	A8
32	Pipes in opaque materials	A6
33	Pipework reticulates water	A9
FIXED TOILETS		
34	Toilet type	B1
35	Toilet make	B1

Inspection form question	Question topic	Guidance references
FIXED TOILETS - continued		
36	Toilet model	B1
37	Toilet capacity	B2
38	Toilet fixing	B3
39	Toilet materials	Not covered
40	Type of ventilation	B4
41	Toilet is usable	B5
42	Toilet permanent fixed	B3
43	Toilet base rigidly mounted	B3
44	Toilet does not require removal	B3 and B7
45	Toilet drains/flushes to tanks	B6
WASTEWATER SYSTEM		
46	Number of wastewater tanks	Not covered
47	Total volume of wastewater tanks	C1
48	Tank materials	Not covered
49	Type of tank supports	C2
50	Waste pipe diameter	C3
51	Wastepipe outlet diameter	C4
52	Wastewater disposal hose length	C5
53	Vent outlet diameter	D2
54	Isolating value diameter	C4
55	Storage of disposal hose	C5
56	Tanks capped to avoid leaks	C6
57	Tanks adequately supported	C2
58	Greywater tanks adequately secure	C2
59	Blackwater tanks adequately secure	C2
60	Waste pipe right size and gradient	C3

61	System soundly installed	C3
62	System's material appropriate	C7
63	Discharge hose adequate for purpose	C5
64	Discharge hose safely stored	C5
65	Waterless toilets safely offloaded	B7
VENTILATION SYSTEM		
66	Ventilation system description	D1
67	Height of vent pipe	D2
68	Location of vent pipe	D2
69	Number of water traps fitted	D3
70	Number of waterless valve	D3
71	Odours can easily escape	D4
72	Wastewater tanks vented to outside	D2 and D4
73	Vent height adequate	D2
74	Vents away from doors & windows	D2

Inspection form question	Question topic	Guidance references
VENTILATION SYSTEM -continued		
75	Birds & vermin unable to enter	D2
76	Traps fitted	D3 and D4
77	Installed to good trade practice	D4
OTHER ELEMENTS		
78	Sink capacity	E1
79	Sink waste diameter	E1
80	Sink waste pipe length	E1
81	Sink water seal type	E1
82	Hand basin waste diameter	E2
83	Hand basin waste pipe length	E2
84	Hand basin seal type	E2
85	Shower waste diameter	E3
86	Shower waste pipe length	E3
87	Shower water seal type	E3
88	Are AAVs fitted to pipes >3.5m?	C3 and D3
89	Rubbish storage type	E4
90	Rubbish storage capacity	E4
91	Secureness of storage bin	E4
92	Quality of sink installation	E1
OVERALL ASSESSMENT		
93	Inspector's interest in vehicle	Covered in Inspection Guidance section
94	Water supply system fit for purpose	A9 and F1
95	Toilet fit for purpose	B6 and F1
96	Wastewater system fit for purpose	C7 and F1
97	Ventilation system fit for purpose	D4 and F1
98	Rubbish disposal fit for purpose	E4 and F1

99	Systems will remain functional	F1
100	Vehicle capacity	F2
Other	Safety features	E5

A1 Tank materials

Relevant inspection sheet questions 21, 27 and 28

Purpose of these questions?

These questions relate to the type and nature of the materials the freshwater tank is made of. This information is reported on the self-containment certificate.

Performance measure

Freshwater tanks should be made of materials which are strong and flexible, of food grade quality, sufficiently opaque, and be resistant to UV related contamination.

Technical explanation

Most freshwater tanks used in camping vehicles are made of Polyethylene (PE) or Polypropylene (PP) and are either moulded or fabricated and seam welded. These are designed and made for the purpose of storing water, so can be deemed to be fit for purpose.

Less common are metal water tanks which are normally stainless steel.

The Regulations reference the risks of water contamination from exposure to sunlight and heat sources and from this the potential for algae growth in stored water. These risks are more related to where the water storage tank is located than to the material it is made of. Ideally all freshwater storage tanks should be made of opaque materials but if they are not they should be stored away from sunlight such as in a cupboard – see **Guidance A6** for more details

Practical inspection tips

Ideally tanks should be inspected when they are full to make it easier to spot leaks.

If the tank is fabricated and seam welded check for welds splitting. This may be due to insufficient support under the tank and/or the weight of the water distorting the tank causing it to split. Alternatively, the tank may be somewhat pressurised from filling at town supply pressures.

Look for wet spots or drips from the lowest points.

If a vehicle has both plastic & metal tanks, tick both boxes on the inspection form.

Collapsable flexible bladders are not advised unless securely contained and restrained during transit.

Pressurised metal tanks with no venting but fitted with a pressure relief valve are acceptable.

Links to useful resources

None at this stage.

A2 Water tanks' volume

Relevant inspection sheet questions 20 and 100

Purpose of these questions?

The volume of storage of freshwater helps determine the number of occupants a camping vehicle can accommodate. This volume measurement is reported on the self-containment certificate. Question 100 requires the Vehicle Inspector to make a judgement on how many people the vehicle can accommodate for a minimum period of three days. This number is a function of the volume of freshwater stored in the vehicle as shown in the 'NZMCA Standards' table on page 4 of the Vehicle Inspection Form.

Performance measure

The Regulations require a vehicle's freshwater storage to be of sufficient size, volume, and durability to be able to operate for a minimum of 3 days for the maximum number of occupants for which the vehicle is certified. This volume measure is provided in the 'NZMCA Standards' table on page 4 of the Vehicle Inspection Form and can be applied to individual vehicles to at least 95% of these figures.

Technical explanation

Freshwater can be stored in fitted onboard tanks or portable tanks. These tanks must be suitably supported (see **Guidance A3**) and capped (see **Guidance A5**). The volume of stored freshwater is the sum of all tanks in or on the vehicle which are dedicated solely to contain freshwater. This volume is recorded as an answer to Question 20.

Practical inspection tips

Freshwater is commonly stored either in tanks fitted to the vehicle (beneath the floor or in a cupboard) or in portable tanks which are stored outside the vehicle when it is being used for camping. Some vehicles have a combination of both options.

The volume of onboard tanks may be recorded on a name plate in the vehicle or on the tank (US and Canadian vehicles have this). This volume may be reported in gallons. Examples of converting gallons to litres are provided below.

The volume of onboard tanks may also have been recorded in certificates issued under NZS 5465:2001. Vehicle Inspectors should check that the tanks have not been changed since this previous inspection. A new volume measure should be done if there is some doubt. Here is a worked example of a volume measure

Worked example of volume measurement

Length = 0.56m, Width = 0.43m, Depth = 0.21m

Multiply 0.56 x 0.43 x 0.21 = 0.5057 x 1000 = 50.57 litres round down to 50 litres.

(There are 1000 litres in 1 cubic metre)

Portable freshwater tanks commonly come with wheels and vary in size from 20 litres to 50 litres. The volumes may be recorded on the tanks or can be determined by searching the tank model on the manufacturer's website. Examples of these tanks are provided here and links to some manufacturers' sites are provided below.

Portable freshwater tanks

Aqua Roll Fresh Water Tank – 40 litres

Fiamma Fresh Water Roll Tank – 40 litres

Freshwater tanks stored in/on tow vehicles are not counted in the inspected vehicle's tank volume. This is because there is no guarantee the tanks will be available when the camping vehicle is occupied, or if the tow vehicle is not with the camping vehicle.

Conversions from gallons to litres

Tank volumes may be reported in UK or US gallons rather than litres. The conversions are as follows:

UK gallons to litres - multiply by 4.55 | 8 (UK) gallons x 4.55 = 36.4 litres – round down to 36 litres.

US gallons to litres - multiply by 3.79 | 10 (US) gallons x 3.79 = 37.9 litres – round up to 38 litres.

Links to useful resources

None at this stage.

A3 Tanks support

Relevant inspection sheet questions 22 and 26

Purpose of these questions?

How freshwater tanks are supported and secured in a vehicle is reported in the self-containment certificate. A tank's support and fixing are important for the safety of the vehicle and for protection of the tank during transit. Question 26 is an assessment question which requires the Vehicle Inspector to make a judgement call on the safety and reliability of freshwater tanks' fixing and support.

Performance measure

Freshwater tanks (whether fixed or portable) must be sufficiently secured to or in the vehicle so that they cannot move or break free from restraints whilst the vehicle is moving.

Technical explanation

Fixed freshwater tanks may be stored snugly in a cupboard (usually under the sink) or supported under the floor of the vehicle. Such supports can be a metal cage, metal straps or brackets attached to both the tank and the vehicle chassis. Sometimes there may be a combination of these support/fixing methods. Whatever support/fixing method is used it should be free of rust or corrosion and clearly strong enough to bear the weight of the tank full. Larger tanks (+50 litres) should have built-in baffles to limit movement of water in transit.

Portable tanks will most often be stored inside the vehicle, but they must be able to be adequately secured during transit at their full weight – see inspection tips below

Practical inspection tips

Most vehicles will have a mixture of tank support methods so tick whatever boxes in Question 22 apply.

In general, onboard freshwater tanks are restrained under a seat, or in a locker – so tick *Sitting on Floor* as the type of support.

For portable wastewater tanks (such as rolling barrels) tick the 'Other (Specify on page 4)' option and describe on page 4 how the vehicle owner restrains this type of tank when it is full and in transit. An assessment under conditions of a full tank is required because it cannot be assumed that a vehicle user is travelling to a place which has a source of freshwater.

Floor anchors and tie down straps are a useful way of restraining full portable tanks in transit – see link below. A full 40 litre tank weighs approximately 42kg static but can gain an equivalent force of more than 200kg under severe braking.

Storage of portable tanks in a shower cubicle is not recommended as these cannot be safely tied down in the shower, as has previously been done.

An acceptable solution is the storage of a portable tank in a study cupboard with packing around it if necessary.

Links to useful resources

For information on floor anchors see https://www.retwine.co.nz/product/1580/lashing-ring-stainless-steel-small-single-recessed/

A4 Water inlet pipes

Relevant inspection sheet question 23

Purpose of this question?

The diameter of the inlet pipe for a freshwater storage tank is published on the self-containment certificate.

Technical explanation

The pipe size required to be recorded on the form is the pipe's internal diameter or bore size. The appropriate size for this pipe depends on whether the water is loaded under pressure or not. A minimum bore size for an inlet arrangement relying on gravity feeding is 25mm. The minimum bore size for a system feed under pressure (at typical town supply pressures of approximately 200kPa) is 12mm.

Practical inspection tips

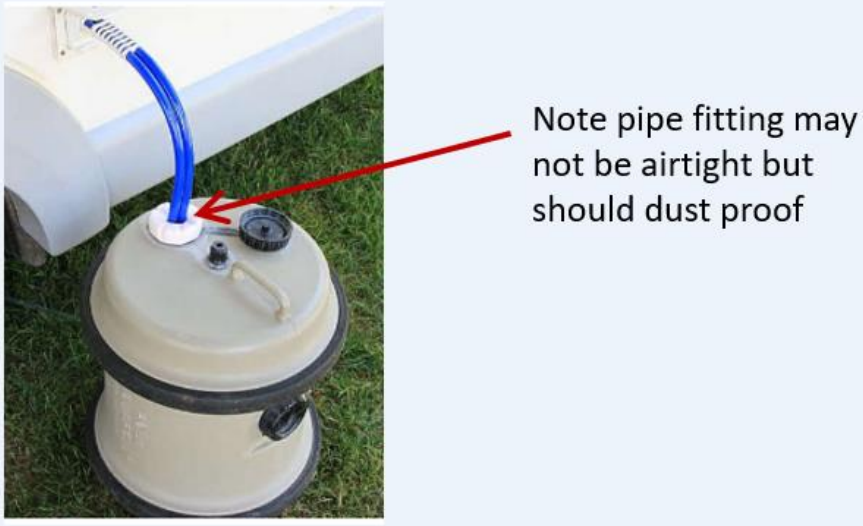
Vehicles with flush mounted lockable caps or lockers generally have 25 or 32mm bore pipe fitted.

Portable water barrels/carts are typically connected to the vehicle with a 10mm hose/pipe – see photo below.

Generally, if a vehicle has dual tanks the inlet pipe will be the same.

In answering Question 23 record inlet pipe sizes for both fixed and portable tanks.

The sizes of vent pipe or pressure reducing valve are no longer recorded.



Portable tank attached to vehicle

Links to useful resources

None at this stage.

A5 Water tank capping

Relevant inspection sheet question 24 and 25

Purpose of this question?

The Notice requires NZMCA to record the type of freshwater inlet seal in a vehicle. Question 25 is an assessment question which requires the Vehicle Inspector to make a judgement on the suitability and reliability of the freshwater tanks' inlet seals.

Performance measure

Any freshwater storage tank inlet seal should be capable of preventing water contamination through the entry of foreign material into the tank.

Technical explanation

All freshwater inlets must have a water inlet seal to prevent contamination from foreign materials, especially from roads, animals, dust and other foreign material.

Practical inspection tips

Lockable cap type fillers are sealed automatically when cap is tightened – tick 'Sealed cap'.

Portable water barrels/tanks have both a sealing cap and an inlet cap into which the inlet pipes to the vehicle fit snugly – see photo below. If this inlet cap is a loose fit on the barrel/tank it should be replaced.

Very few vehicles now have stoppers and are usually seen as a temporary measure.

Record the details of other methods of sealing water inlets should be noted on the Additional Comments section on page 4 of the Inspection Form.

Examples of water tank caps

Lockable screw cap

Recessed screw cap on vehicle wall

Female screw cap fitted under the vehicle

Note pipe fitting may not be airtight but should dust proof

Portable tank attached to vehicle

A6 Protection of freshwater in storage

Relevant inspection sheet questions 21, 27, 28 and 32

Purpose of these questions?

Freshwater is at risk of algal and bacterial contamination if it is stored in inappropriate containers or conditions. These questions are to check that a vehicle's water storage is adequately protected from such contamination. Questions 27,28 and 32 are assessment questions which require the Vehicle Inspector to make a judgement on how well freshwater is stored to avoid contamination by algae or bacteria.

Performance measure

Materials used for freshwater tanks and pipes should be of food-grade quality and UV resistant. Freshwater should be stored away from sunlight and heat sources.

Technical explanation

If freshwater is exposed to direct sunlight, it is at risk of algal contamination and if exposed to sources of heat such as a flue or exhaust pipe, it may be at risk of bacterial (legionella) contamination. The Regulations require water to be stored and conveyed in opaque materials to avoid contamination and away from or insulated from heat sources which increase the risks of bacterial contamination.

Practical inspection tips

Using a visual inspection, check that the onboard freshwater tank(s) are not close to a heating source. If necessary, the fitting of heat shields and insulation will be necessary.

This includes under the vehicle by exhausts and braking systems.

The use of opaque food-grade plastics for water tanks and pipes will avoid the risk of algal contamination from the exposure of water to sunlight. If clear or non-opaque materials are used tanks and pipes should not be in direct sunlight. This is especially so for portable water barrels and carts stored outside in summer. These should be covered - a wet sack works wonders.

Links to useful resources

None at this stage.

A7 Venting water tanks

Relevant inspection sheet question 29

Purpose of this question?

This is an assessment question which requires the Vehicle Inspector to make a judgement call on how well freshwater storage tanks can breathe as water is loaded or unloaded.

Performance measure

Freshwater storage tanks should be adequately vented to allow the equalisation of air pressures as water is loaded or drained from them.

Technical explanation

Freshwater tanks need to be adequately vented to prevent negative pressures forming in the tank as water is drawn out and so risking damage to the tank and inversely when the tank is filled.

Practical inspection tips

Check that onboard tanks have a suitable breather pipe.

With portable tanks generally there is sufficient clearance for the air to enter around the sealing cap.

Measurement and recording of the vent pipe diameter are not required.

Links to useful resources

None at this stage.

A8 Installation of pipework

Relevant inspection sheet questions 31 and 33

Purpose of these questions?

These questions seek to confirm the vehicle's water pipes are soundly installed and will provide reliable service. They are assessment questions which require the Vehicle Inspector to make a judgement call on the quality of pipe installation.

Performance measure

A vehicle's water supply pipework should reliably reticulate water to its sanitary fixtures and appliances at adequate pressure and flow rates and free of leaks.

Technical explanation

The purpose of water supply pipework and the need for its reliability is easily apparent and the requirements and context in camping vehicles is the same as that for residential buildings.

Practical inspection tips

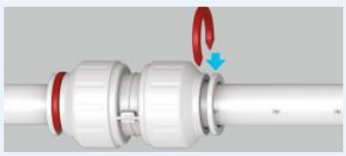
The reliability and quality of installation are not normally an issue in camping vehicles.

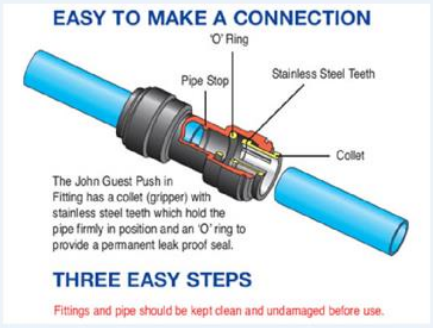
The flowrates and water pressures in camping vehicles are considerably lower than in residential dwellings. Due to an emphasis on water conservation in vehicles normally 10mm bore pipes are used instead of 12mm to 20mm pipes used in houses.

If unsure pressurise the system and check each joint for leakage – this would be a last resort as on inspection any weeping will be seen with the naked eye. Another indicator is if the water pump momentarily comes on to builds up pressure suggesting a gradual loss of pressure somewhere in the system

Most RV water pipe fittings are John Guest refer to Hyper-link for fitting process.

John Guest Speedfit plumbing system





Links to useful resources

See the technical details for John Guest pipework at these links

https://www.johnguest.com/gb/en/resources/installation-manuals-user-guides

https://www.johnguest.com/sites/jg/files/2023-10/JG%20Speedfit%20Technical%20Specs%20Guide%20Sep%202023%20Digital.pdf

A9 Overall assessment of water supply system

Relevant inspection sheet questions 30, 33 and 94

Purpose of these questions?

These are assessment questions which require the Vehicle Inspector to make a judgement on the overall quality and reliability of the vehicle's freshwater supply system and the extent to which it meets the various requirements of the Self-contained Vehicles Regulations.

Performance measure

For a vehicle's water supply system to meet the requirements of the Self-contained Vehicle Regulations

- it must be permanently and soundly fitted in the vehicle
- all fixed tanks are securely fitted into the vehicle and well supported at their full weight,
- portable tanks able to be adequately secured when full and when in transit,
- has pipework which reticulates water to the vehicles sanitary fittings and appliances at adequate pressures and flow rates,
- is protected from contamination, and insulated from heat sources, and
- will remain functional at least for the certification period of four years.

Technical explanation

Technical explanations to consider these questions are offered above in **Guidance's A1 to A8**

Practical inspection tips

If the answers to the questions posed in **Guidance's A1 to A8** have been yes, there should be few if any reasons to conclude that the freshwater supply system does not meet the requirements of the Self-contained Vehicles Regulations.

If there are two or more conditional answers to these questions, there may be grounds to consider if the water supply overall meets the Regulation's requirement. The two questions most likely to compromise the use of non-opaque materials for tanks and pipes and the securing of portable tanks in transit.

Generally, the balance of any assessment should be to accept that that element of the self-containment system meets the requirements of the Regulations unless there is firm evidence to the contrary.

Links to useful resources

None at this stage.

B1 Toilet type, make and model

Relevant inspection sheet questions 34, 35, 36 and 45.

Purpose of this question?

Details of a vehicle's toilet are required to be recorded on the self-containment certificate. Although the required information is straightforward these details are critical to whether a vehicle can be certified under the government's self-containment programme, or the NZMCA's internal scheme.

Technical explanation

Vehicle toilets can either be fixed or portable. Fixed toilets can either be fitted to a holding tank (known as a blackwater tank) or have a built-in but removable cassette for containing toilet wastes. All portable toilets have removable cassettes. Some toilets are said to be waterless which include composting, organic and incinerating toilets. Waterless toilets are dealt with in more details in **Guidance B7.**

Fixed with a blackwater tank – this type of toilet is most often referred to as a marine toilet where the human waste is flushed into a tank fitted beneath the floor. Water is sometimes drawn from the vehicle's freshwater supply for flushing (e.g. Thetford Aqua Magic – marine toilets) and these should be fitted with a backflow prevention device.

Fixed with cassette – this type of toilet is designed to be fixed to the floor of the vehicle and has a removal cassette above floor level. Common models are the Thetford C range. See **Guidance B3** for details of compliant toilet fixing.

Fixed and waterless toilets may be referred to as compositing, organic or incinerating type toilets. Most toilets in this range have a removable cassette or container above floor level although one brand (Clivus) has a composting chamber beneath the floor. The performance and level of compliance of waterless toilets are discussed in **Guidance B7**.

Portable toilets do not meet the Regulations and vehicles reliant on them cannot be certified with a green warrant card. These vehicles can still be certified under NZMCA's yellow warrant card system.

Practical inspection tips

Toilet type – the type of toilet is easily identified and will be one of the four categories listed in the tick box for Question 34. There may be a question over whether a cassette type toilet is fixed or portable. Some vehicle owners may have done a DIY alteration to a portable toilet or porta-pottie to meet the Regulation's requirements for a fixed toilet. This question is dealt with in **Guidance B3**. If a portable toilet is not fixed in accordance with the requirements in Guidance B3 it cannot be defined as a fixed cassette toilet. Examples of toilet types are provided below.

Toilet make – most of the toilets in vehicles are either Thetford or Dometic makes. Numerous unbranded models started to appear following the Christchurch earthquakes and most likely have been manufactured in China. Other off-shelf brands available in New Zealand include TMC, Clivus, Sunmar, Cinderella, Seperatt. Burnsco have a range of self-branded portable toilets. If the toilet-make is recorded as "Other" on the inspection form remember to record the make in the comments section on page 4.

Toilet models – virtually all toilet brands have a model number or identifier. Identifying the model of the toilet may be important for confirming its specifications and from this the volume of its cassette/container and the extent to which it meets the Regulation's requirements. If the toilet model is not easy to identify ask the owner to remove the cassette as the model number may be on the cassette or cassette cavity – see illustration below

Examples of common types of toilets found in camping vehicles

Fixed blackwater toilets

Jabsco Manual Toilet

Jabsco Compact Electric Toilet 12V

Fixed cassette toilets

Thetford 402 Cassette Toilet

Dometic Cassette Swiveling Toilet

Portable cassette toilets

Thetford 165 Qube portable toilet

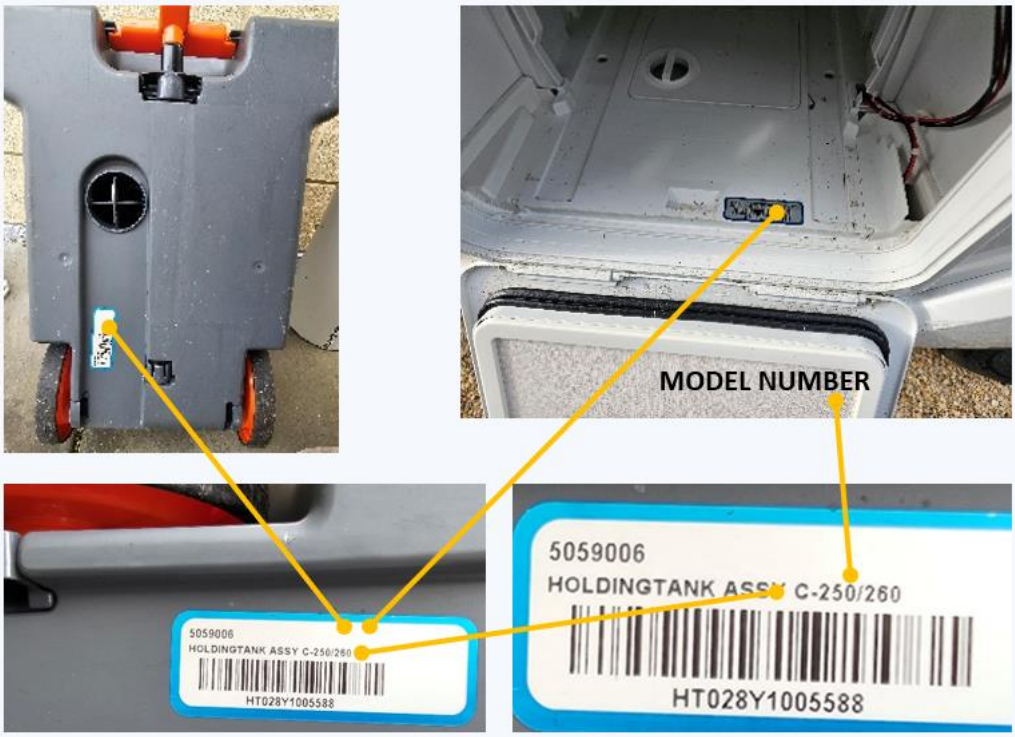
Burnsco 10 litre portable cassette toilet

Waterless toilets

Nature's Head Weekender composting toilet

Cinderella Comfort incinerating toilet

Identifying a toilet's model number on a Thetford C256/260 series cassette toilet



Links to useful resources

Thetford's range of toilets https://www.thetford.com.au/shop/product-category/toilets/
Burnsco's range of toilets https://www.burnsco.co.nz/boating/plumbing/toilets-sanitation

B2 Toilet capacity

Relevant inspection sheet questions 37 and 100

Purpose of this question?

The capacity of the toilet holding tank is critical for determining how many people can be accommodated in a camping vehicle compliant with the Regulations.

Technical explanation

While the Regulations and PGDB vehicle inspector guidelines do not specify the daily per-person requirement for a toilet in a self-contained vehicle, the NZMCA insists that the standards set out in the table on page 4 of our inspection form is followed. This requires a minimum of one litre per person per day of storage capacity for human waste in a certified vehicle. For the required minimum of three days use this is three litres per person.

Blackwater tanks – vehicles with marine toilets may combine toilet waste and greywater waste into one blackwater tank. Such tanks are most often around 100 litres in capacity. The total capacity of the blackwater tank(s) should be recorded in the answer to question #37 of the Inspection Form.

Cassette and chambers – the volumes of cassettes and chambers (for waterless toilets) are reported in the specification of the toilet's model. Some cassettes are as small as 10 litres, but most are between 17 litres and 23 litres. In recording the capacity of a vehicle's toilets add in the capacity of any cassettes kept on board the vehicle. As noted below in **Guidance C2** these additional cassettes should be able to be firmly secured in the vehicle during travel.

Practical inspection tips

A blackwater tank's may be reported by the manufacturer on a name plate on the tank or somewhere in the vehicle perhaps on a bulkhead or locker. Alternatively, a vehicle's tank's capacity may be shown on a previous inspection form but make sure that tanks have not been changed since that inspection

If the capacity is unknown measure the tank dimensions in metres, then calculate the tank's capacity – either using the hyper-link below or by following this worked example

Worked example

Length = 1.20m, Width = 0.55m, Depth = 0.15m

Multiply 1.20 x 0.55 x 0.15 = 0.99 x 1000 = 99.0 litres.

Conversions from gallons to litres

Reported tank volumes may be given in UK or US gallons rather than litres. The conversions are:

UK gallons to litres - multiply by 4.55 | 20 (UK) gallons x 4.55 = 91 litres.

US gallons to litres - multiply by 3.79 | 25 (US) gallons x 3.79 = 94.75 litres – round to 95 litres.

Cassette's volumes are contained within the toilet's specifications. If the toilet has not been changed since the last inspection it can safely be assumed that the cassette volume is the same as that reported in the previous inspection form. To confirm cassette volumes, refer to the toilet's specifications on-line at the links provided in **Guidance B1**.

Links to useful resources

Converting gallons to litres https://www.calculator.net/volume-calculator.html

B3 Toilet fixing

Relevant inspection sheet questions 38, 42, 43 and 44

Purpose of this question?

The Regulations require toilets to be 'rigidly mounted in position' and 'not require removal in order to empty human waste' (Reg 17(1)(b). Assessing compliance with this requirement requires Vehicle Inspectors to make judgements calls on the permanence of any fixing and the way in which any cassette is removed from the toilet.

Technical explanation

To comply with Regulation 17(1)(b) a vehicle's toilet can be fixed in one of four ways:

Secured directly to the floor with screws or bolts attaching the body of the toilet to the vehicle – most types of fixed toilet fall into this category.

Secured to a plate which itself is fixed to the floor – some waterless toilets are fixed in this way, but portable cassette toilets attached in this way do not comply with the Regulations.

Moulded into or fixed to the walls as a type of integrated toilet / shower cubicle. This arrangement is often found in hire/ex-hire vehicles which have been purposely fitted out with this feature.

Secured to sliding arms which are either attached to the floor or the sides of a storage cupboard or drawer. This approach is common in customised small van campers (e.g. Toyota HiAce) and some camping trailers (e.g. Avan and Jayco).

Practical inspection tips

Fixing of portable toilets – currently there are no known compliant ways in which a portable cassette toilet can be fixed to the body of a vehicle without needing to substantially disassemble it in order to empty the cassette. However, this may change overtime.

Yellow Warrant Cards – if an NZMCA member requests a yellow warrant card and their vehicle has a portable toilet, the toilet must be usable within the vehicle, including sufficient head and elbow room whenever required, even with the bed made up. The toilet must also be adequately restrained and secured when the vehicle is in motion. The portable toilet can be used externally if it can first be used internally.

Demountable plates fixing a toilet to the floor of a vehicle but require most of the toilet to be detached from the plate for the purpose of emptying and cleaning out the toilet, do not comply with the Regulations.

Toilets in cupboards and drawers which are mounted on heavy duty rails with drawer runners comply with the requirement that a toilet must be rigidly mounted in the vehicle. These toilets must however be fixed cassette toilets not portable ones. See below example.

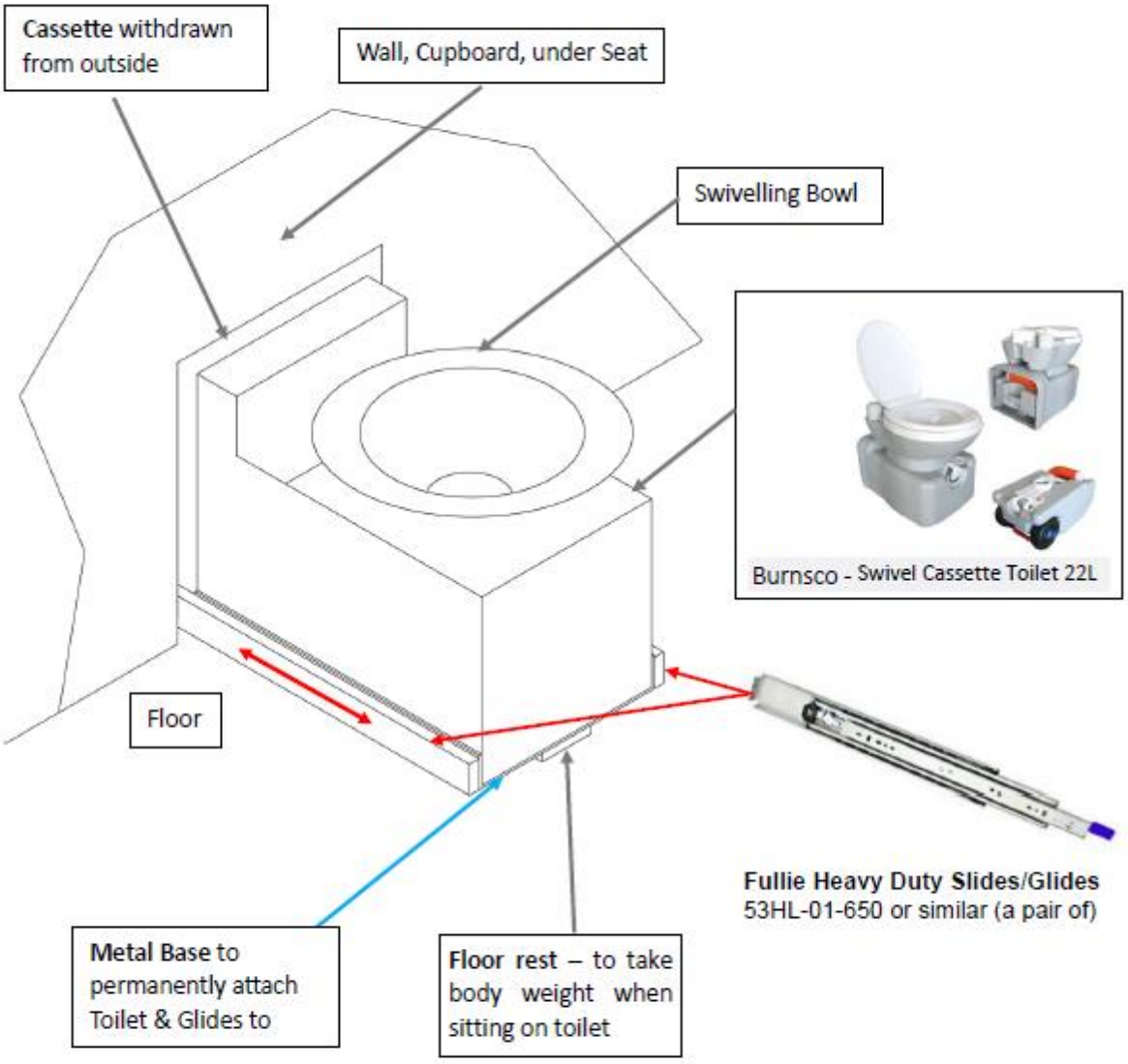
Usability – regardless of how a toilet is mounted it must be in a position which is comfortable and convenient to use at any time – including when the beds are in use – see **Guidance B5**.

Removing Cassettes - cassettes can be removed either externally or internally to the vehicle

Links to useful resources

None at this stage.

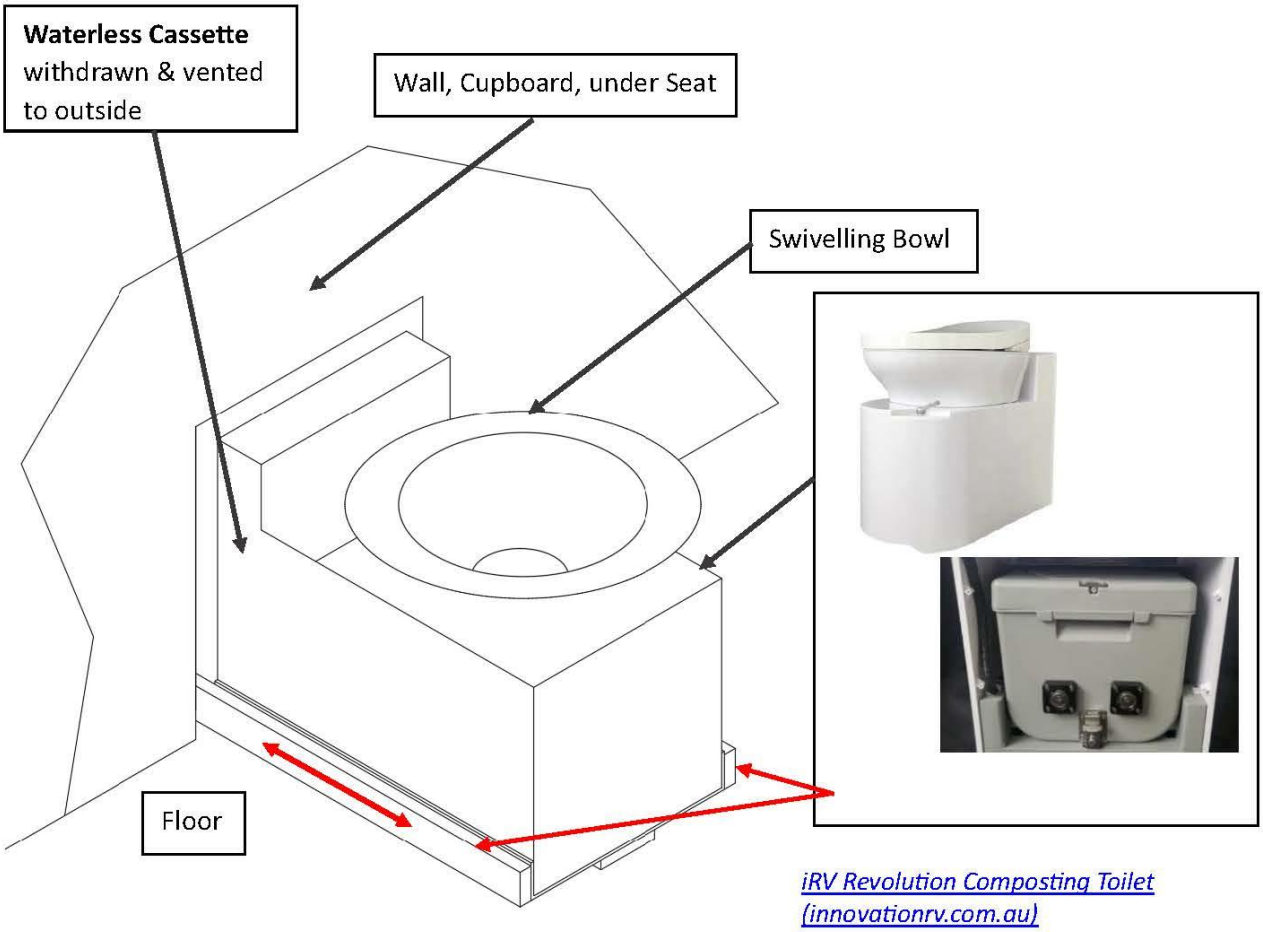
A. Cassette withdrawn from outside – normal Cassette type toilet



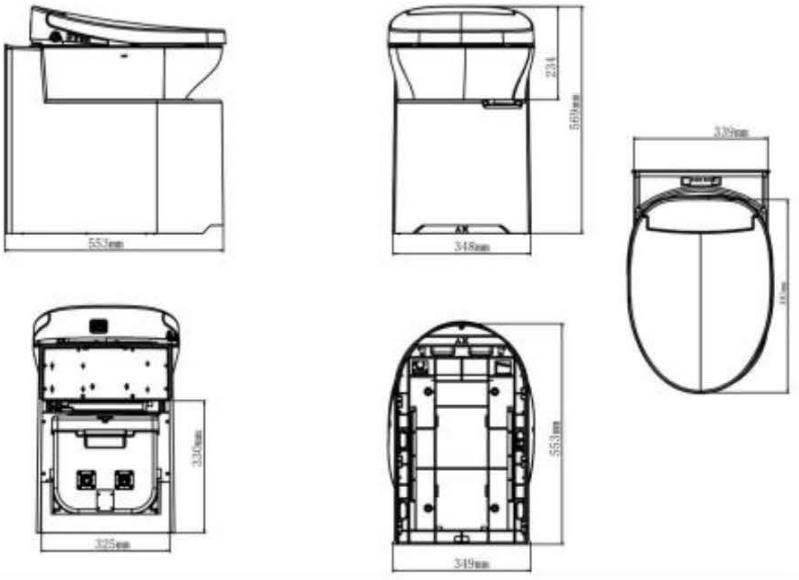
Similar setup to this Chilly Bin

B. Cassette withdrawn from outside – Waterless Cassette type toilet

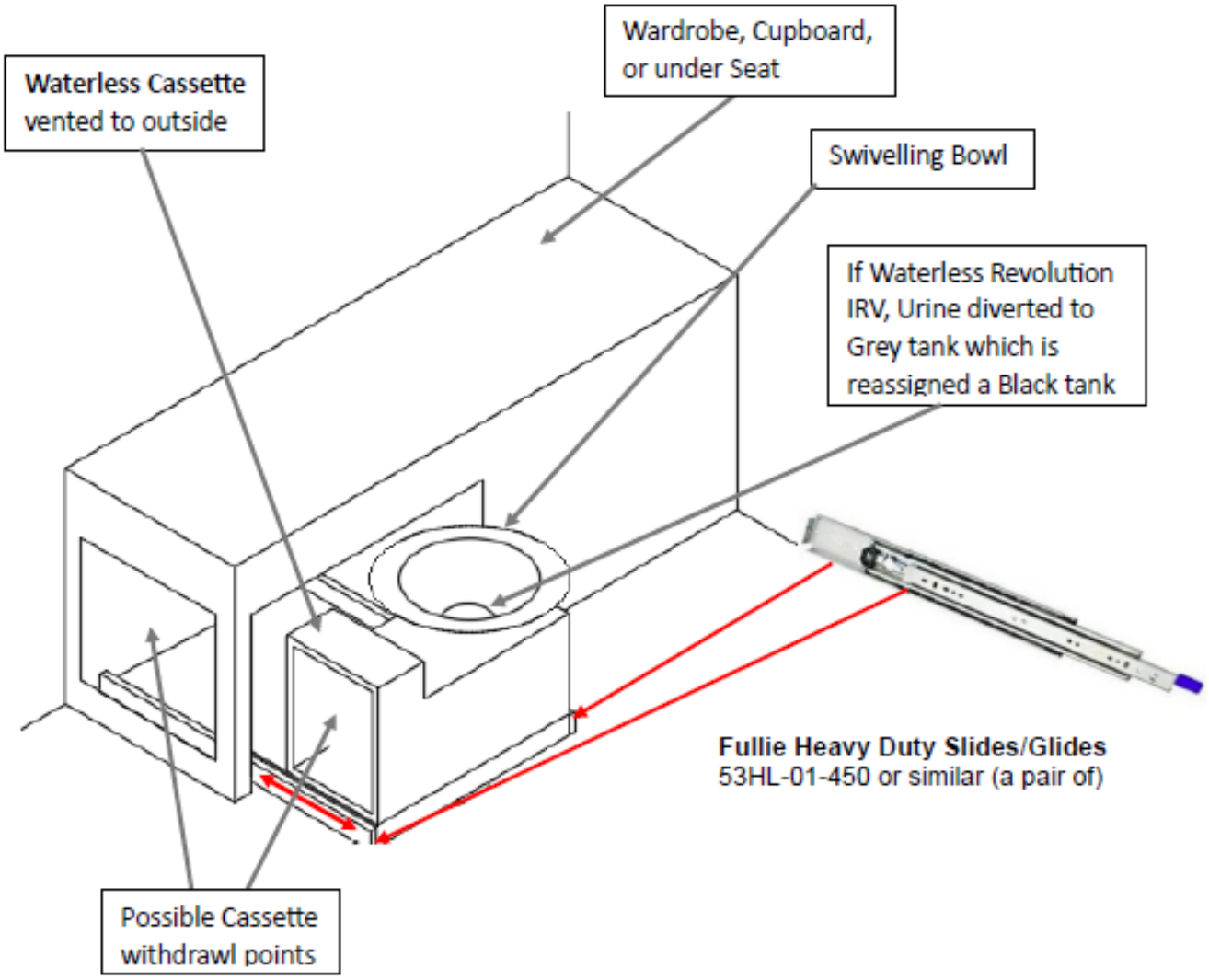
All features as in A but using the **Revolution Composting Toilet from Innovation RV** - Australia



iRV Revolution Composting Toilet (innovationrv.com.au)



C. **Cassette withdrawn from inside – normal Cassette or Waterless toilet** *(as specified in A & B)*



NOTE: the PGDB's vehicle inspector guidance (Version 1: 7 December 2023) advises that a swivel-type toilet or a toilet appropriately fixed to the vehicle using heavy duty rails as illustrated above may comply with the regulations if it is permanently fixed to the vehicle with the base rigidly mounted in position and does not require removal to empty human waste. These arrangements must also comply with all other toilet requirements outlined in the regulations.

B4 Toilet ventilation

Relevant inspection sheet questions 40 and 97

Purpose of this question?

Ventilation is a critical aspect of the Regulations. Vehicles with a fixed toilet plumbed directly into a black tank must have *'a ventilation system that removes odours from the motor vehicle and minimises the extent to which foul air and gases can enter the motor'*. (Reg 13(h)). This includes extracting unpleasant odours from the use of the vehicle's toilet. Question 40 seeks to identify these ways of extracting unpleasant odours associated with the toilet.
This requirement does not apply to removable cassettes for cassette type toilets, or removable chambers for waterless toilets. However, where the manufacturer's instructions for a waterless toilet requires external venting, then this must be followed in order to meet the requirement in regulation 17(1)(a), which comes into effect on 29 August 2024 – The toilet must be fit for purpose and installed in accordance with their design and specifications.

Technical explanation

A vehicle's ventilation system has the means to limit foul odours from entering a vehicle and mechanisms for extracting unpleasant odours from the vehicle. Section D of this technical guidance deals with means to limiting odour entry through tank vents, water traps and air valves. This guidance deals only with the ways in which toilet related odours can escape to outside of the vehicle.

Unpleasant and/or unhealthy odours can be emitted from a vehicle through passive or active means.

Passive means may include a window near the toilet to allow odours to dissipate to the outside or small vents in the walls and/or ceiling of a vehicle which allow cross-ventilation.

Active venting requires mechanical ventilation such as a powered extractor fan.

Practical inspection tips

The question requires Vehicle Inspectors to simply identify what type of vehicle ventilation system is available to extract toilet odours from the vehicle. This is a tick box exercise, and several extraction systems may be present – such as any extractor fan and window.

If another form of ventilation is present which is not in the tick box options tick 'Other' and note what this mechanism in the comments section on page 4 of the inspection form.

Where the vehicle has a canopy/awning, the vent should terminate away from the canopy (preferably the opposite side of the vehicle) to prevent foul smells from entering.

Any ventilation fans should be designed and installed to operate under the expected conditions at least for the self-containment period. For fans expected to run continuously this may be a hurdle.

Where possible, vent outlets should terminate either through the roof or near the roofline, away from doors, windows or other openings (skyline vents etc).

Ensure external vent has a hooded cowl fitted to prevent entry of birds, vermin or rainwater.

Examples of meshed and hooded cowls



Links to useful resources

None at this stage.

B5 Usability of the toilet

Relevant inspection sheet questions 41

Purpose of this question?

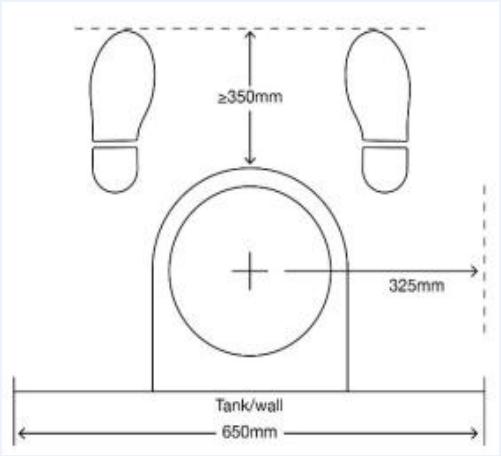
This is an assessment question which requires the inspector to make a judgement call on whether the toilet meets an acceptable level of performance.

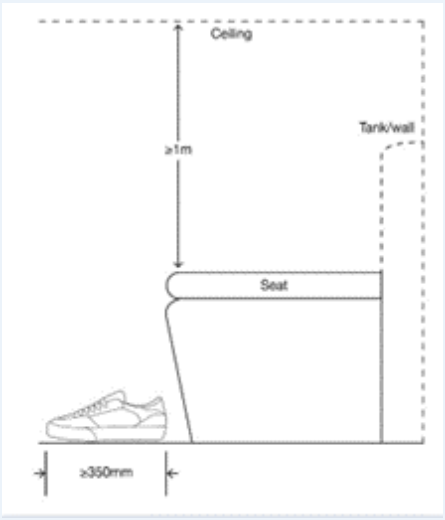
Performance measure

A vehicle's toilet should be in a position and mounted in a way which makes it convenient and comfortable for the vehicle's occupants to use at any time it is required, day or night.

Technical explanation

The dimensions in the diagrams below are the minimum recommended by PGDB for a toilet to be practically usable within a vehicle.





Practical inspection tips

The toilet does not need to be in a separate room or compartment to meet this performance measure. It can be in an open spaced area.

The head height in the vehicle may not be sufficient to allow someone to stand up fully. This will mean that men will have to sit down to urinate but that is acceptable for the sake of this performance measure.

A tolerance of ±25mm on these dimensions is acceptable. Spaces smaller than these minimums and tolerances should not be passed on the inspection form, unless the inspector has good reason to pass. In these circumstances, please make a note on the comments section on page 4 of the inspection form and include photos for evidence and record keeping.

For the NZMCA, the performance measure is not met if the toilet cannot be practically used inside the vehicle when the beds are down.

Links to useful resources

None at this stage.

B6 Overall assessment of the toilet

Relevant inspection sheet questions 45 and 95

Purpose of these questions?

These are assessment questions which require the Vehicle Inspector to make a judgement call on whether the vehicle meets an acceptable level of performance against the question. Here the question covers the overall performance of the toilet as it is set up in the vehicle.

Performance measure

For a toilet to meet the requirements of the Self-containment Regulations

- it must be permanently and soundly fitted in the vehicle,
- must drain into a tank, cassette or container,
- able to be emptied without disassembly or substantial dismantling,
- unlikely to be removed after the inspection,
- convenient and comfortable to use at all times, and
- for all the intended occupants of the vehicle for at least three days.

Technical explanation

Technical explanations to consider the question are offered above in Guidance's B1 to B5.

Practical inspection tips

If the answers to the questions posed in Guidance's B1 to B5 have been yes, there should be few if any reasons to conclude that the toilet does not meet the requirements of the Self-containment Regulations.

If there are two or more conditional answers to these questions, there may be grounds to consider if the toilet is up to scratch. The two questions most likely to not meet the above performance measures by an acceptable margin are the disassembly of the toilet to empty out waste and possibility that the toilet may at some time during the certification period be removed from the vehicle.

Generally, the balance of any assessment should be to accept that that element of the self-containment system meets the requirements of the Regulations unless there is clear evidence to the contrary.

Links to useful resources

None at this stage.

B7 Assessments of waterless toilets

Relevant inspection sheet questions 44 and 65

Purpose of these questions?

These questions relate to the degree of compliance of some models of waterless toilets to the definition of a fixed toilet.

Performance measure

Waste from a vehicle's toilet should be able to be offloaded safely without risk of pollution or vehicle contamination.

Technical explanation

Some waterless toilets require disassembly to remove the residual waste. This amounts to the same operational feature of portable cassette toilets which are not compliant with the Regulations requirements for fixed toilets. Importers of some waterless toilets promote their products as being compliant with the Regulations when this may not be the case.

This guidance is offered to assist Vehicle Inspectors to understand the variety of waterless toilets on the market and the features of some models which make them non-compliant with the Regulations.

Practical inspection tips

The following information is required for the NZMCA administration team to process the certification:

- The capacity noted needs to be the total urine container capacity only.
- The minimum recommended capacity is 3L per person.
- If the base is fixed to the floor of the vehicle, but the urine container is removed to be emptied, note this as a cassette.
- If there is more than one urine container, make a note in the comments section, and write the TOTAL amount in the toilet capacity.
- If the base is fixed to the floor and the urine waste is plumbed into the grey tank, this must be marked as a fixed toilet, and the grey tank will need to be noted instead as a black tank.
- If the toilet is plumbed in, make sure to write down the mm size of the pipe from the toilet to the tank.
- Sometimes the urine compartment in a waterless toilet is plumbed directly into a grey waste tank. In which case, the tank will become a black waste tank. The owner will also need to ensure there is sufficient capacity in the blank tank to take wastewater from the toilet and any other plumbed in fixtures, e.g. sinks and showers.
- If the manufacturer's instructions include external venting for a waterless toilet, there must be a toilet ventilation system installed for the vehicle to comply.
- It is recommended the toilet has a lid to help prevent the spread of bacteria throughout the vehicle.
- Please ensure to note the toilet brand, and if it does not have one note the toilet model as Composting/Waterless. If the toilet is not branded, it helps to send images of the toilet set up so the administration team can see that it does comply.

Please note that only the urine container is able to be emptied at a dump station. Solid waste cannot be disposed of in a dump station, it is advised that composting toilet solid waste be disposed of responsibly on private property.

When inspecting a vehicle with a waterless toilet, it is recommended that the seat opening size be no more than 190mm along the horizontal plane as per the below image.

Links to useful resources

Air Head Home - Air Head Composting Toilet | For Boats, RVs & Cabins (airheadtoilet.com)
Natures Head Extra Liquids Bottle | Nature's Head Australia (natureshead.com.au)
EcoAsh - ECOASH | incineration toilet | New Zealand
Cinderella = Cinderella Comfort - Incinerating Toilet – Off-grid Collective (offgridcollective.co.nz)
Clivus - Clivus Multrum, Inc.: Manufacturer of Composting Toilets and Greywater Systems since 1973
OGO - OGO™ Origin (ogotoilet.com)
Sun-Mar - Central Composting Toilets – Sun-Mar
Separett - Separett Tiny- Waterless Toilet – Off-grid Collective (offgridcollective.co.nz)

C1 Volume of wastewater tanks

Relevant inspection sheet questions 47

Purpose of this question?

The volume of storage of wastewater helps to determine the number of occupants a camping vehicle can accommodate. This volume measurement is reported on the self-containment certificate.

Technical explanation

Wastewater can be stored in fitted onboard or portable tanks. These tanks must be suitably vented (see **Guidance D2**) and capped (see **Guidance C6**). Wastewater may be stored separately as greywater and blackwater or combined as blackwater. For the sake of recording a vehicle's wastewater storage, the capacity of toilet cassettes or containers in the case of waterless toilets is not included. The volume of separate blackwater tanks recorded in Question 37 (see **Guidance B2**) should also be included in the reported wastewater tank volumes in Question 47.

The Regulations require a vehicle's wastewater storage to be of sufficient size, volume, and durability to be able to operate for a minimum of 3 days for the maximum number of occupants for which the vehicle is certified. This volume measure is provided in the 'NZMCA Standards' table on page 4 of the Vehicle Inspection Form and can be applied to individual vehicles to at least 95% of these figures.

The PGDB recommends the wastewater tank(s) should:

- have a capacity of not less than the capacity of the water supply tank(s) i.e. a minimum of 12 litres per person
- be durable enough to be able to withstand wear from normal use of the tank(s).

Greywater tank capacity needs to be sufficient to handle the flow of water (it could overflow with a small tank). Note: a monitor, gauge (or eyeglass) can be fitted to the greywater tank to monitor and prevent overflow into the vehicle.

Practical inspection tips

Wastewater is commonly stored either in tanks attached to the vehicle beneath the floor or in portable tanks which are stored outside the vehicle when it is being used for camping. Some vehicles have a combination of these.

The volume of onboard tanks may be recorded on a name plate in the vehicle or on the tank. This volume may be reported in gallons. Examples of converting gallons to litres are provided below.

The volume of onboard tanks may also have been recorded in pervious inspection sheets. Vehicle Inspectors should check that the tanks have not been changed since this previous inspection and a new volume measure should be undertaken if there is some doubt. Here is a worked example of a volume measure.

Worked example of volume measurement

Length = 1.20m, Width = 0.55, Depth = 0.15m

Multiply 1.20 x 0.55 x 0.15 = 0.99 x 1000 = 99 litres.

Portable wastewater tanks usually come with wheels and may vary in capacity from 23 to 75 litres. The volumes may be recorded on the tanks or can be determined by searching the tank model on the manufacturer's website. Examples of these tanks are provided here and links to some manufacturers' sites are provided below.

Portable wastewater storage tanks

75 litres Roll Tank with monitor

Fiamma Waste Water Roll Tank 40 litres

Wastemaster 38 litres rollaway tank

Thetford SmartTote portable waste holding tank – 54 litres

Wastewater tanks stored in tow vehicles are not counted in the inspected vehicle's tank volume. This is because there is no guarantee that they will be available when the camping vehicle is occupied.

Conversions from gallons to litres

Tank volumes may be reported in UK or US gallons rather than litres. The conversions are as follows:

UK gallons to litres - multiply by 4.55 | 20 (UK) gallons x 4.55 = 91 litres

US gallons to litres - multiply by 3.79 | 25 (US) gallons x 3.79 = 94.75 litres – round down to 94 litres

Links to useful resources

Converting gallons to litres

https://www.calculator.net/volume-calculator.html

https://kiwitanks.co.nz/collections/caravan-motor-home-tanks/

https://www.herculestanks.co.nz/motorhome-tanks/

https://www.burnsco.co.nz/rv/plumbing/water-systems/water-tanks-containers

Waste & Water Containers (& Caps) - Affordable Caravans

C2 Wastewater tanks' support

Relevant inspection sheet questions 49, 57,58 and 59

Purpose of these questions?

How wastewater tanks are supported and secured in a vehicle must be recorded on the self-containment certificate. Tank support and fixings are important for the safety of the vehicle and for protection of the tank during transit. Questions 57 to 59 are assessment questions which require a Vehicle Inspector to make a judgement call on the safety and reliability of wastewater tanks' fixing and support.

Technical explanation

Fixed tanks are normally supported under the floor of the vehicle in a metal cage, by metal straps or with brackets attached to both the tank and the vehicle chassis. Sometimes there may be a combination of these methods. Whatever support/fixing method is used it should be free of rust or corrosion and clearly strong enough to bear the weight of the tank full.

Portable tanks will most often be stored inside the vehicle, but they must be able to be adequately secured during transit at their full weight – see inspection tips below.

Practical inspection tips

Most vehicles will have a mixture of tank support methods so tick whatever boxes in Question 49 that apply.

In general, onboard wastewater tanks in motorhomes and some buses are restrained under a seat, or in a locker – so tick *Sitting on Floor* as the type of support.

For portable wastewater tanks (such as 'rollaways') tick the 'Other (Specify on page 4)' option and describe on page 4 of the form how the vehicle owner restrains this type of tank when it is full and in transit. Assessment under conditions of a full tank is recommended because it cannot be assumed that a vehicle user can legally dispose of wastewater at a campsite before driving off.

Floor anchors and tie down straps are a useful way of restraining full portable tanks in transit – see link below. A full 50 litre tanks weight is approximately 52kg static but can gain an equivalent force of more than 260kg under severe braking.

Storage of portable tanks in the shower is not recommended as these cannot be adequately tied down in the shower as has been the practice occasionally.

An acceptable solution is the storage of a portable tank in a study cupboard with packing around it if necessary.

Links to useful resources

For information on floor anchors see https://www.retwine.co.nz/product/1580/lashing-ring-stainless-steel-small-single-recessed/

C3 Wastewater pipework

Relevant inspection sheet questions 50, 60, 61 and 88

Purpose of these questions?

Question 50 records the diameter(s) of wastewater pipes as a requirement of the Notice. Questions 60, 61 and 88 are assessment questions which require a Vehicle Inspector to make a judgement call on the adequacy of a vehicle's wastewater pipes to drain water from a vehicle's sanitary fixtures to the wastewater storage tanks.

Technical explanation

Wastewater pipes are required to reliably convey water from sanitary fixtures such as a sink or shower to the vehicle's wastewater storage tank. To do this they must have sufficient size and gradient and be securely fitted allowing for the movement and vibration of the vehicle. The diameter of a wastepipe is its internal diameter or bore size.

Practical inspection tips

Standard sizes for wastepipes are 75mm, 50mm, 40mm, 32mm, 25mm and 20mm bore sizes. Many imported camping vehicles have wastepipes of 25mm or 20mm which are uncommon in New Zealand where a minimum standard wastepipe in residential building is 32mm.

The PGDB recommends for grey tanks, a minimum waste pipe size of 20mm while NZMCA recommends a minimum of 25mm. Either size is acceptable. Blackwater tank outlets should have a minimum diameter of 25mm, and if they rely on gravity emptying a minimum diameter of 40mm.

The PGDB recommends for black tanks, the Wastewater pipes and valves from the toilet to the blackwater tank should have a minimum diameter of 75mm, or where a macerator pump is used, a minimum diameter of the discharge pipe and valve should be 32mm.
The Regulations and PGDB vehicle inspector guidance do not mention a minimum gradient for wastepipes. The PGDB recommends pipes should be laid at a gradient which avoids pipes slumping causing blockages. Ideally pipes should be laid at a minimum gradient of 1 in 40.

Pipework should be installed in such a way that it is unlikely to be damaged either by people using the vehicle or its movement in transit. Specifically, pipes should not be installed beneath the vehicle's chassis where they may be damaged by speed bumps or road debris.

Links to useful resources

None at this stage.

C4 Wastewater system's outlet

Relevant inspection sheet questions 51 and 54

Purpose of these questions?

The evacuation of wastewater tanks presents risks of spillage and potential pollution or exposure of foul water to humans. This makes the efficient and reliable off-loading of wastewater an important feature of a vehicle's self-containment system. The self-containment certificate reports the diameter of the pipe from the wastewater tank.

Technical explanations

The safe and convenient off-loading of wastewater relies on an outlet of sufficient size to quickly drain wastewater storage tanks. Some vehicles use pumps to offload wastewater, but most rely on gravity. To avoid the creation of vacuum as wastewater is offloaded tanks must be adequately vented. This requirement is covered in Section D of the technical guidelines and specifically in **Guideline D2**. The integrity of the offloading proves that the system relies on having a robust sufficiently sized isolating value.

Practical inspection tips

Blackwater tank outlets should have a minimum diameter of 25mm, and non-pumped a minimum diameter of 40mm.

Links to useful resources

None at this stage.

C5 Wastewater disposal hoses

Relevant inspection sheet questions 52, 55, 63 and 64

Purpose of these questions?

The self-containment certificate reports the length of the disposal hose. Questions 63 and 64 are assessment questions which require the Vehicle Inspector to make a judgement call on the performance and reliability of the means of transferring wastewater from the vehicle to a dump station or other suitable disposal facility.

Performance measure

The offloading wastewater from a vehicle shall be able to be done in a clean, safe and convenient manner. The use and storage of offloading equipment pose minimal health risks.

Technical explanation

Wastewater will be offloaded from a vehicle's fixed wastewater storage tanks or from portable wastewater tanks. The requirements for hoses for these two formats are different. Offloading from a vehicle's fixed tanks requires a hose at least 3 metres long to avoid the vehicle needing to park too close to a wastewater dump station. Because portable tanks can be taken closer to dump stations the hose is not required for emptying.

The separate and preferably outside storage of discharge hoses will prevent cross-contamination of the vehicle's freshwater supply by residual contaminants from wastewater.

Practical inspection tips

While a 3-metre discharge hose standard is recommended, many ex-hire vehicles will have shorter hoses – perhaps only 2 metres long. Regardless of the length, disposal hoses should be long enough to practically reach any dump station.

The diameter of the discharge hose should at least be the same diameter as the isolating valve. Hoses with an internal diameter of less than 25mm which empty blackwater tanks should not be passed.

The discharge hose should be stored well clear of any freshwater filling point or hose. Storage in a seal container within the vehicle is adequate if the container itself is stored in a secure cupboard.

The acceptability of hose storage other than in an outside compartment or a sealed container will need to be based on how the risk of cross-contamination can be minimised.

Links to useful resources

None at this stage.

C6 Wastewater tanks' capping

Relevant inspection sheet question 56

Purpose of this question?

This is an assessment question which requires the Vehicle Inspector to determine whether the vehicle's wastewater storage tanks are adequately capped.

Performance measure

All tanks should be adequately capped to avoid leaks from water movement when the vehicle is moving

Technical explanation

The necessity for a cap is straightforward.

Removable wastewater tanks are required to have an isolating valve installed between the wastewater trap and the tank cap – this is to avoid spillage.

Practical inspection tips

An appropriate cap should have a bayonet or screw fitting and a rubber seal at the top

Ensure all holes – inlets and outlets, in portable tanks have sturdy secure caps fitted

Examples of tank caps

Screw cap

Bayonet type cap fitted to isolating valve

Male and female fittings with bayonet type cap

Links to useful resources

None at this stage.

C7 Overall assessments of wastewater system

Relevant inspection sheet questions 61, 62 and 96

Purpose of these questions?

This is an assessment question which requires the Vehicle Inspector to make a judgement call on whether the vehicle's wastewater system – in total, meets an acceptable level of performance against the Regulations.

Performance measure

For a vehicle's wastewater system to meet the requirements of the Regulations:

- it must be permanently and soundly fitted in the vehicle,
- all fixed tanks are securely fitted into the vehicle and well supported at their full weight,
- portable tanks able to be adequately secured when full and when in transit,
- has pipework which connects all sanitary fittings to wastewater tanks,
- can be emptied at approved disposal points safely, cleanly and conveniently, and
- will remain functional at least for the certification period of four years.

Technical explanation

Technical explanations to consider the question are offered above in Guidance's C1 to C5.

Practical inspection tips

If the answers to the questions posed in Guidance's C1 to C5 have been yes, there should be few if any reasons to conclude that the wastewater system does not meet the requirements of the Self-containment Regulations.

If there are two or more conditional answers to these questions, there may be grounds to consider if the wastewater system overall meets the Regulation's requirement. The two questions most likely to compromise the above performance measures are the means of support for fitted wastewater tanks and the securing of portable tanks in transit.

Generally, the balance of any assessment should be to accept that that element of the self-containment system meets the requirements of the Regulations unless there is firm evidence to the contrary.

Links to useful resources

None at this stage.

D1 Scope and description of the ventilation system

Relevant inspection sheet question 66

Purpose of this question?

This question asks for a basic description of the ventilation system and this description is recorded on the self-containment certificate. The NZMCA has interpreted this reference to the ventilation system to only refer to venting of wastewater tanks and toilets. Question 66 offers a tick box option where tanks are vented to the exterior of the vehicle and if this is not the case an option of describing the system in more detail on page 4 of the Inspection Sheet.

Technical explanation

The Regulations require a vehicle's ventilation system to remove odours from the vehicle and to minimise the extent to which foul air and gases can enter it (Reg13(h)). To achieve this, Regulation 18 requires a vehicle to have three types of measures:

- a means for unpleasant or unhealthy odours to escape to the outside of the vehicle such an opening window or extractor fan,
- venting of wastewater tanks to the exterior of the vehicle to ensure that foul air or noxious gases do not collect in them,
- traps or valves beneath sanitary fittings such as sinks, basins and showers to limit the entry of foul air from the wastewater tanks into the vehicle.

Guidance D2 deals with venting of wastewater tanks while **Guidance D3** covers traps and valves for sanitary fittings.

Practical inspection tips

This are included in Guidance D2 and D3

Links to useful resources

See PGDB's gazette notice at this link – clauses 8 and 9 refer to the ventilation system
https://gazette.govt.nz/notice/id/2023-sl5545

D2 Vent pipes

Relevant inspection sheet questions 67, 68, 72, 73, 74, 75 and 97

Purpose of these questions?

Questions 67 and 68 describe the height and location of vent pipes where the location response is recorded on the Self-containment certificate Questions 72 to 75 are assessment questions which require a Vehicle Inspector to make a judgement that the various parts of the vehicle's ventilation system are sufficient, reliable, and soundly installed. This judgement is also relevant to responses to Question 97

Performance measure

For an installed vent pipe to meet the requirements of the Self-containment Regulations it must:

- terminate outside the vehicle and away from its doors, windows or vents,
- be higher than the flood level of the lowest sanitary fitting,
- be protected against entry by birds or vermin.

Technical explanation

Vehicle inspectors are required to measure the height of the vent pipe and record this on the Vehicle Inspection Form. How this height is determined is described in inspection tips below. The accuracy of any measurement is expected to be ±50mm.

Every wastewater storage tank in a vehicle should be separately vented to the outside. This includes portable wastewater tanks such as 'rollaways'.

Venting requirements also apply to the waste containers found in waterless toilets – the Regulations define wastewater as blackwater, greywater and 'solid waste material from a waterless toilet'.

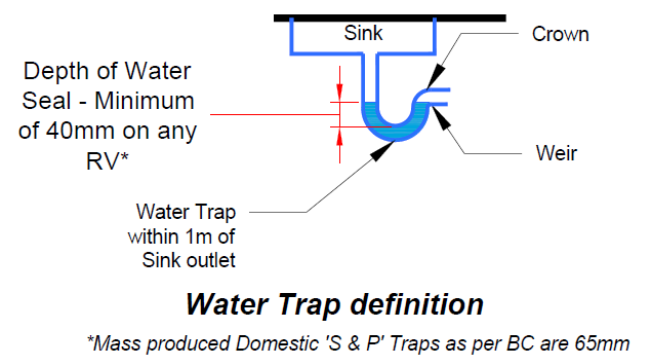
The vent outlet diameter is recommended to be a minimum of 12mm and should be suitable for the fixtures attached to it.

Practical inspection tips

Four scenarios are likely to arise in inspecting wastewater vent pipes:

- the vent pipe(s) go through the roof,
- the pipe is an inverted U which terminates under the vehicle's floor,
- some cassette toilets have an in-built carbon filter which is vented by a short pipe through the vehicle's wall (see photos below as an example),
- a retractable stand pipe attached to a portable tank when it is being used outside the vehicle.

Apart from in-built carbon filters, vent pipes need to be higher than the flood level of the highest sanitary fitting. The flood level is the level of the water held in a water trap and is generally the invert of the outlet pipe from the trap – see diagram below.

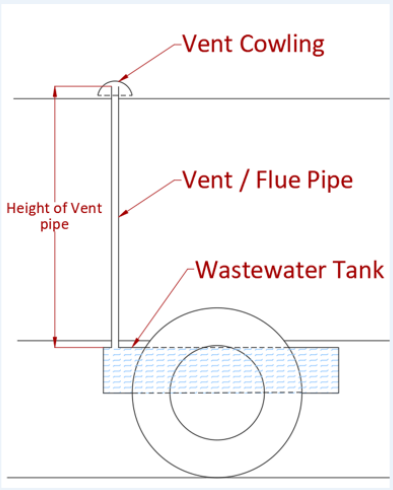


Defining and measuring the height of the vent pipe under these scenarios is complicated somewhat if a vehicle has a waterless trap such as Hepvo Valve. These do not rely on a water trap to block odours coming back through a waste pipe so have no water level to measure a height against. These guidelines offered below address this complication as well.

Vent pipe through the roof

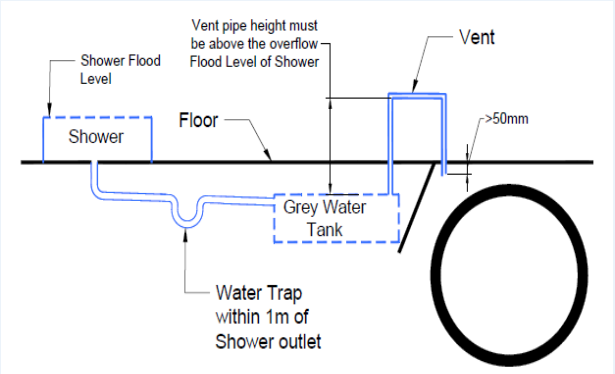
The scenario where a vent pipe exits the vehicle through the roof is straightforward. In such case the vent height is simple the distance between the top of the wastewater storage tanks and the top of the pipe which most likely is shrouded with a cowling to make bird/vermin proof. This height is illustrated in the following diagram

Vent pipe height with venting through roof



Inverted U with water trap on the shower – onboard tank

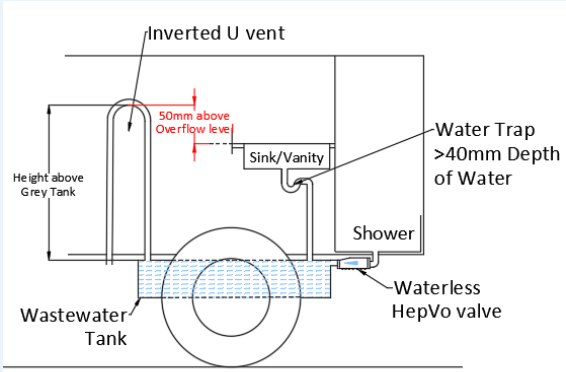
In this scenario the shower has an underfloor water trap which flows into the wastewater tank. The vent pipe is an inverted U terminating under the vehicle. The vent pipe height is distance from the top of the tank to the top of the inverted U. In this case the inverted U must be 50mm higher than the overflow level (the flood level) of the sink.



Inverted U with water trap and waterless valve

This scenario has a waterless HepVo valve under the shower and a standard water trap beneath the sink. The vent height is the distance from the top of the wastewater tank to the top of the inverted U. In this case the inverted U must be higher than the seal of the water trap (the flood level) beneath the sink.

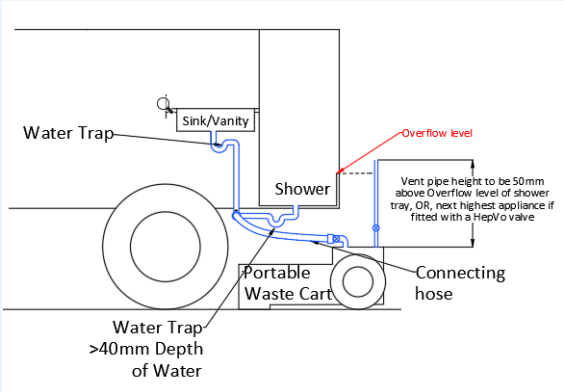
Inverted U with water trap and waterless valve



Portable tank with water trap

Portable tanks are required to have a retractable vent pipe. The vent pipe needs to be higher than the lowest waste trap in the vehicle which in this case is the trap beneath the shower. In this situation if the portable tank becomes full wastewater will back up into the shower tray.

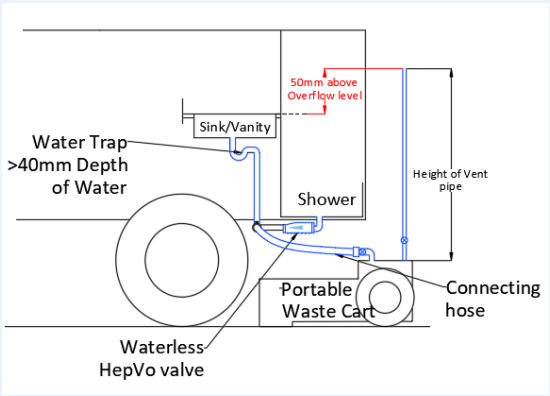
Portable tank with water trap



Portable tank with water trap and waterless valve

In this scenario there is a waterless valve on the shower and a water trap on the sink. The height of the water trap seal becomes the required minimum height for the vent pipe on the portable tank. If the tank were to become full the water would back up to the sink waste due to the way the waterless valve will prevent any backflow into the shower.

Portable tank with water trap and waterless valve



Example of a carbon filter vent on a cassette toilet

Links to useful resources

None at this stage.

D3 Water traps and valves

Relevant inspection sheet questions 69, 70, 76 and 88

Purpose of these questions?

This question records the number and types of traps and valves a vehicle has to prevent odours entering the vehicle from wastewater tanks. This is required to be recorded in the vehicle's inspection details held by NZMCA but is not published on the self-containment certificate. Water traps and waterless valves need to be counted and recorded separately.

Technical explanation

To prevent odours or foul air rising from a vehicle's wastewater storage tank, a trap or value is fitted to the wastepipe preferably immediately below a sanitary fitting such as a sink, basin or shower. This trap/valve must be fitted within 1.0 metre of a sanitary fitting. Compliant fittings include water traps, smell traps and waterless valves.

Water traps and smell traps work by having a water seal in a wastepipe normally close to the outlet of the sanitary fitting. This seal is maintained by having two or more bends in the line of flow. Waterless valves use a membrane to prevent odours moving up a waste pipe.

For longer waste pipes (>3.5m) there is a risk that the exit of water from the water trap sucks out or siphons off the water contained in the trap breaking the seal. This is overcome by having an air admittance valve (AAV) installed above the water seal or open-ended vent pipe as shown below.

Practical inspection tips

A variety of compliant options exist to provide an effective odour barrier between a sanitary fitting and the wastewater tank. Some of the options for these are provided below.

Water traps or waterless valves should be fitted as near as possible to the sanitary fitting and preferably not more than one metre from it.

A minimum water seal depth of 40mm is recommended. Some European models of camping vehicles have traps which only provide a water depth of 18mm. While they are acceptable, it is worth advising the vehicle owner that shallow traps may fail to prevent wastewater odours from entering the interior of a vehicle as the water seal is more likely to break due to evaporation or water displacement when the vehicle is in transit. Shallow traps can easily be replaced with larger/deeper water traps although this decision should be left up to the vehicle owner. See the link below for easy fixes to this problem.

Ideally for waste pipes longer than 3.5 metres (from the sanitary fittings outlet to the wastewater tank) an air admittance valve (AAV) should be fitted above the water seal. This is to avoid water being siphoned out of the trap due to negative pressures behind the exiting water. See **Guidance E1** for measuring the wastepipe length.

A waterless valve can be used as an AAV although if it is used in this way it cannot be counted as a waterless valve in response to Question 70.

The inclusion of AAVs is a good practice guide not a requirement of the Self-containment Regulations or PGDB Gazette Notice. If AAVs have not been fitted as noted in Question 88, it should not necessarily be the case that the vehicle's ventilation system does not meet the standards expected in the Regulations.

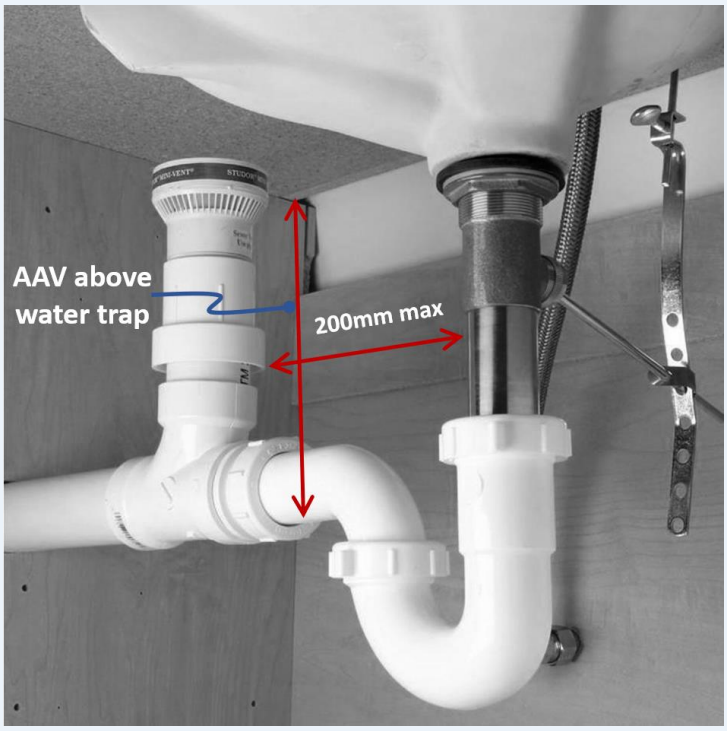
Examples of AAV and their installation are provided below.

Examples of air admittance valves

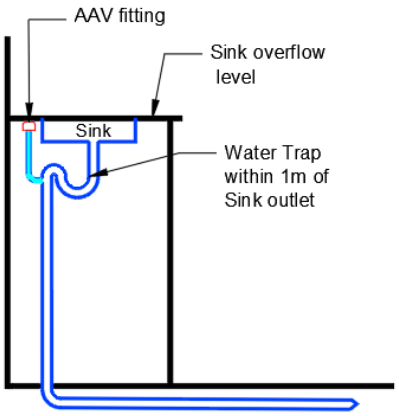
Air admittance valve (AAV)

AAV integrated into a S Trap

Fitting of an air admittance valve to a sink

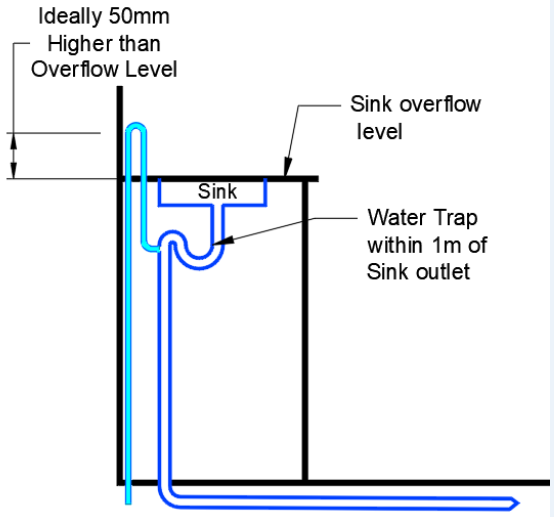


AAV installed as close to overflow level as possible - This system will assist the venting of the grey tank if the waste pipe exceeds 3.5m



If Air Admittance Valve (AAV) fitted, in cases where not practical to go above Overflow level, AAV fitted hard up on underside of bench top is acceptable.

Open Ended Vent Pipe - This system will assist the venting of the grey tank if the waste pipe exceeds 3.5m



***Open ended** - preferred method if possible - it will assist venting of the Grey Tank, & also smell removal!*

Links to useful resources

None at this stage.

D4 Overall assessments of ventilation system

Relevant inspection sheet questions 71,72,76,77 and 97

Purpose of these questions?

These are assessment questions which require the Vehicle Inspector to make a judgement on whether the vehicle's ventilation system – in total, meets an acceptable level of performance against the Regulations.

Performance measure

For a vehicle's ventilation system to meet the requirements of the Self-containment Regulations

- unpleasant or unhealthy odours are largely prevented from entering the vehicle from the vehicle's toilets and wastewater storage,
- unpleasant or unhealthy odours which do arise in the vehicle can easily escape to the outside,
- the system is well installed and will remain functional for at least the four years of the certification period.

Technical explanation

Technical explanations to consider the question are offered above in Guidance's D1 to D3

Practical inspection tips

If the answers to the questions posed in Guidance's D1 to D5 have been yes, there should be few if any reasons to conclude that the wastewater system does not meet the requirements of the Self-containment Regulations.

If there are two or more conditional answers to these questions, there may be grounds to consider if the wastewater system overall meets the Regulation's requirement. The two questions most likely to compromise the above performance measures are performance of water traps and the venting of wastewater storage tanks.

Generally, the balance of any assessment should be to accept that that element of the self-containment system meets the requirements of the Regulations unless there is firm evidence to the contrary.

Links to useful resources

None at this stage.

E1 Sink

Relevant inspection sheet questions 78, 79, 80, 81, 82, 88 and 98

Purpose of these questions?

The self-containment certificate reports the diameter and length of the sink waste pipe. The Notice requires NZMCA to also record the sink's capacity and type of water seal it is attached to.

Technical explanation

The Regulations require a certified vehicle to have a sink which 'is installed safely and drains to the wastewater system's tank'. The technical requirements for this are more or less the same as those for residential dwellings although the expected water flows will be lower.

Practical inspection tips

Because water conservation is important in camping vehicles most sinks are just 15 litres in size or even less. If the sink is larger than 15 litres measure its dimensions and tick the box in Question 78 nearest this measured volume.

Sinks must be permanently fitted into a bench within the vehicle and served by a freshwater tap.

The sink waste pipe diameter should be measured under the sink not at the sink waste itself. This diameter is the bore size (internal diameter) not the external diameter. This bore size will almost certainly be one of the sizes listed in Question 79.

Sink waste pipes less than 20mm diameter should probably be replaced with a larger pipe although if the sink drains adequately this should be okay to pass.

The waste pipe length is the total running pipe length from the sink outlet to the inlet of the wastewater tank. Measurement accuracy to ±50mm is acceptable and ignore the running length of the water trap in this measurement.

If the sink waste pipe is longer than 3.5 metres it ideally should have an air admittance valve (AAV) to prevent the water seal being syphoned off. Record if an AAV is fitted in response to Question 88. An absence of an AAV should not stop the vehicle being certified.

Record the type of water seal (i.e. a water trap or waterless valve) attached to the sink. For more details on these refer to **Guidance D3**.

Links to useful resources

None at this stage.

E2 Hand basin

Relevant inspection sheet questions 82, 83, 84 and 88

Purpose of these questions?

A hand basin is not a required under the Regulations. Therefore, these questions are not relevant to the certification process. Information on the hand basin is collected by NZMCA to provide a more compete record of the sanitary fixtures in each vehicle it certifies. This information will be retained in NZMCA's self-containment database only.

Technical explanation

Although a hand basin is not required for certification, if one is installed it must be installed to good trade practice and include some type of water seal (water trap or waterless valve). The technical requirements for this are more or less the same as those for residential dwellings although the expected water flows will be lower.

Practical inspection tips

The hand basin waste pipe diameter should be measured under the hand basin not at the basin waste itself. This diameter is the bore size (internal diameter) not the external diameter. This bore size will almost certainly be one of the sizes listed in Question 82.

The waste pipe length is the total running pipe length from the hand basin outlet to the inlet of the wastewater tank. Measurement accuracy to ±50mm is acceptable and ignore the running length of the water trap in this measurement.

If the hand basin waste pipe is longer than 3.5 metres it ideally should have an air admittance valve (AAV) to prevent the water seal being syphoned off. Record if an AAV is fitted in response to Question 88. An absence of an AAV should not stop the vehicle being certified.

In response to Question 84 record the type of water seal (i.e. a water trap or waterless valve) attached to the hand basin. For more details on these refer to **Guidance D3**

Links to useful resources

None at this stage.

E3 Shower

Relevant inspection sheet questions 85, 86, 87 and 88

Purpose of these questions?

A shower is not a required feature in the Regulations. Therefore, these questions are not relevant to the certification process. Information on the shower is collected by NZMCA to provide a more compete record of the sanitary fixtures in each vehicle it certifies. This information will be retained in NZMCA's self-containment database only.

Technical explanation

Although a shower is not required for certification, if one is installed it must be installed to good trade practice and include some type of water seal (water trap or waterless valve). The technical requirements for this are more or less the same as those for residential dwellings although the expected water flows will be lower.

Practical inspection tips

The shower's waste pipe diameter should be measured under the shower not at the shower waste itself. This diameter is the bore size (internal diameter) not the external diameter. This bore size will almost certainly be one of the sizes listed in Question 82.

The waste pipe length is the total running pipe length from the shower outlet to the inlet of the wastewater tank. Measurement accuracy to ±50mm is acceptable and ignore the running length of the water trap in this measurement.

If the shower waste pipe is longer than 3.5 metres it ideally should have an air admittance valve (AAV) to prevent the water seal being syphoned off. Record if an AAV is fitted in response to Question 88. An absence of an AAV should not stop the vehicle being certified.

In response to Question 84 record the type of water seal (i.e. a water trap or waterless valve) attached to the shower. For more details on these refer to **Guidance D3**.

Links to useful resources

None at this stage.

E4 Rubbish storage

Relevant inspection sheet questions 89, 90, 91 and 98

Purpose of these questions?

The self-containment certificate reports the type of rubbish storage and its capacity. Questions 91 and 98 are assessment questions which require the Vehicle Inspector to make a judgement call on the extent to which solid rubbish will be securely stored and appropriately managed in the vehicle.

Performance measure

The capacity of the available rubbish storage should be at least one litre per day for every person the vehicle is certified to accommodate. The storage should be secure during transit and have a lid to limit spread of unpleasant odour.

Technical explanation

Rubbish should be stored in a sealable container to prevent leaking, odours and spills.

Practical inspection tips

Check to ensure that the rubbish bin can be securely stowed during transit.

Links to useful resources

None at this stage.

E5 In-vehicle safety features

Relevant inspection sheet questions – none at these are outside of requirements of the Regulations.

Purpose of these questions?

These questions on the inspection form are not relevant to the Regulations. They are only included to encourage vehicle owners to maintain the listed safety features and to be away of their operational status at the time of inspection.

Technical explanation

None.

Practical inspection tips

During the inspection, discuss with the vehicle owner the operational status of the listed safety equipment. In particular, check the ease of access to the fire extinguisher and its expiry date. Ask about the battery life of any smoke detector. A vehicle will still pass its inspection regardless of whether or not these features are visible and in safe working order.

Links to useful resources

None at this stage.

F1 Final assessment of the self-containment system

Relevant inspection sheet questions 93, 94, 95, 96, 97, 98 and 99

Purpose of these questions?

This is an assessment question which requires the Vehicle Inspector to make an overall judgement call on whether the vehicle's self-containment – in total, meets an acceptable level of performance against the Regulations.

Performance measure

For a vehicle's self-containment system to meet the requirements of the Self-contained Vehicle Regulations

- all of its component systems should be fit for purpose and installed to good trade practice,
- the water supply system should reliably store and reticulate water within the vehicle,
- the toilet should be permanently fixed in the vehicle and usable at all times,
- the wastewater system should reliably and safely store and discharge wastewater,
- there should be few if any unpleasant and unhealthy odours in the vehicle,
- there is sufficient space to store solid rubbish, and
- the system will remain functional at least for the certification period of four years.

Technical explanation

Technical explanations to consider these questions are offered above in all the other Guidance's.

Practical inspection tips

If the answers to the questions posed in the other Guidance's have been yes, there should be few if any reasons to conclude that the self-containment system does not meet the requirements of the Self-contained Vehicles Regulations.

If there are two or more conditional answers to these questions, there may be grounds to consider if the self-containment system overall meets the Regulation's requirement. Questions which may possibly compromise the above performance measures are around

- the permanence of the toilet fixing and sink,
- the toilet's usability especially when the beds are down, and,
- the security of portable water and wastewater tanks in transit.

Generally, the balance of any assessment should be to accept that that element of the self-containment system meets the requirements of the Regulations unless there is firm evidence to the contrary.

Links to useful resources

None at this stage.

F2 Assessment of vehicle's occupancy capacity

Relevant inspection sheet question 100

Purpose of these questions?

This question requires the Vehicle Inspector to assess the number of people the vehicle being inspected can practically and comfortably accommodate for a minimum period of three days without needing to replenish water supplies or empty toilet cassettes and wastewater tanks. This occupancy number is recorded on the self-containment certificate and in information recorded against the vehicle in the NZMCA's self-contained vehicles database.

Performance measures

The key performance measures are provided in the NZMCA standards table on page 4 of the Vehicle Inspection Form and provided below for convenience of reference.

Technical explanation

The Regulations do not set minimum tank and storage capacity volumes to determine vehicle occupancy. The PGDB's vehicle inspection guidance offers some indications of what acceptable limits should be. The volumes provided in the table below (and on page 4 of the Inspection Form) are NZMCA's standards and we expect these to be applied in the assessment of a vehicle's occupancy capacity. A 5% allowance for under provision of these storage volumes is allowed for in NZMCA's process for signing off on a vehicle's certification and this lower limit will be strictly applied.

Practical inspection tips

The minimum required volumes for freshwater and wastewater storage apply to containers which are in or within close proximity of the vehicle. Tanks held in towing vehicles do not count.

A vehicle's occupancy capacity has no relevance to number of seat belts that vehicle is supplied with. There is nothing stated in the Regulations or elsewhere which requires those staying in a vehicle to travel in it.

Ensure that Inspection form is signed by the Vehicle Inspector and vehicle owner and by the Inspection Observer if he/she was present at the inspection.

It is a fineable offence under the FC Act (section 20(1)(d)) to freedom camp in an area set aside for certified self-contained vehicles (green warrant card) with more people than the vehicle is certified for.

NZMCA's standards for water and wastewater storage for self-containment

Number of people for three days occupancy of the vehicle

	1	2	3	4	5	6	7	8
TYPE OF STORAGE	Minimum recommended storage in litres							
Freshwater storage	12	24	36	48	60	72	84	96
Greywater storage	12	24	36	48	60	72	84	96
Blackwater or casette storage	3	6	9	12	15	18	21	24