

Gas Standard (AS/NZS 5601.2:2020) Gas Vapour Barriers Overview

19 October 2020



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The recent revision to AS/NZS 5601.2 introduced significant changes relating to the exclusion of potential ignition sources in the vicinity of externally mounted gas cylinders, with the introduction of a new “controlled area” to exclude potential ignition sources (full details of this are found in clause 3.1.8 of the standard and are summarised below).

The application of the controlled area extends to openable compartments which will result to exclusion of any ignition sources located within those compartments. This will introduce significant challenges for some current product vehicle layouts. Recognising these challenges, Caravan Industry Association of Australia, in cooperation with our member State Associations, undertook some strong lobbying with the standards committee that resulted in the introduction of gas vapour barriers as a potential solution.

The revised standard introduces gas vapour barriers as a technical solution to redirect LPG (in the event of a leak) away from ignition sources that may be located within the controlled area, consistent with similar provisions in other gas installation standards. This is a significant new addition to the standard that is expected to provide a practical solution for many current products. This bulletin explains the details of this change and will assist you to determine whether vapour barriers may be a suitable solution for your products as you transition to compliance with AS/NZS 5601.2:2020.

Background

The most significant change in this revised standard is the introduction of a “controlled area” around externally mounted gas cylinders on domestic caravans (and similar Recreational Vehicles), which is an exclusion area for any ignition sources that could present a risk of explosion in the event of a gas leak.

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Background continued

The new controlled area is similar to the cone-shaped hazardous zone that was in the previous version of this standard, but with some significant modifications such as:

- Reduced size & shape at the base of the cone.
- Some equipment is deemed NOT to be an ignition source, so is permitted to be installed within the controlled area. In particular, this allows essential functional and road safety equipment within the controlled area (e.g. trailer plugs, ESC equipment, break-away brake controllers).
- Electrical equipment that is fully encapsulated can be located within the zone providing it meets strict conditions to ensure there is no potential for ignition. There are clauses in the standard detailing the requirements for adequate encapsulation.
- The exclusion of ignition sources will apply to any openable compartments where the openings are within the controlled area. This may affect compartments such as front boots or equipment boxes that contain electrical equipment or appliances, or make provision for their later addition by consumers.

The controlled area is visually demonstrated in Figure 3.1.8(A) of the standard. The standard introduces new definitions to support and clarify the controlled area requirements. These are key to correctly understanding and applying the controlled area restrictions. In particular, the definition of “ignition source” is critical. This definition is applied to domestic caravans using a concept of equipment that is “sparking” or “non-sparking” by nature. Under this concept, any equipment that has electrical connections that move (ie “make” or “break”) during normal operation would be considered an ignition source. This includes devices such as switches, motors and relays and appliances such as fridges, generators or motorised accessories. Devices that do not “make” or “break” during operation may be considered not to be an ignition source, such as plugs or encapsulated shut-off valves.

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Vapour Barriers

A new inclusion in the standard allows the use of a vapour barrier as an acceptable technical solution to limit (reduce) the size of the controlled area. A vapour barrier is an impervious wall or barrier constructed and placed to divert gas vapour from a particular area. For the purposes of AS/NZS 5601.2 a vapour barrier must be impervious to LP gas, constructed of non-combustible material and be sufficiently durable for the installation conditions. Separation distances for the controlled area for ignition sources are measured in direct lines around the edges of a vapour barrier.

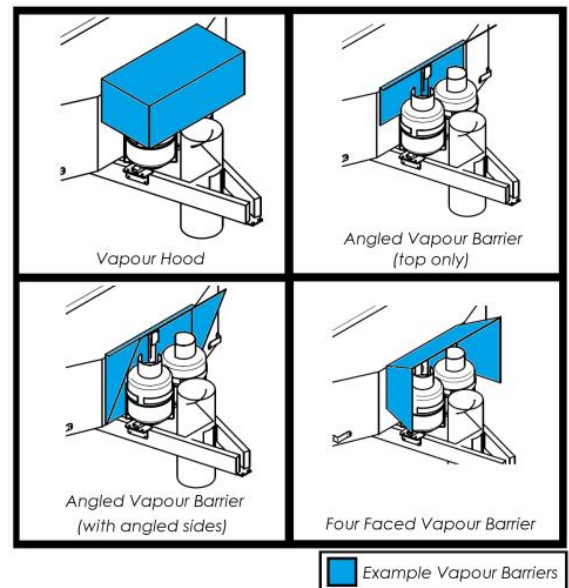
A vapour barrier is a recommended solution for ignition sources that cannot be relocated out of the controlled area. It is expected that this could be particularly relevant for current production models where the relocation of equipment may not be straightforward.

Do I need a Vapour Barrier?

Products that do not have an ignition source within the controlled area will not require a vapour barrier.

Note: Take care to consider any ignition sources (or expected consumer addition of ignition sources) that might be within compartments – if they fall within the controlled area when the compartment door is open, they will be considered to be within the controlled area for the purposes of compliance with this standard.

The flowchart on the following page may assist you to determine whether your product requires a vapour barrier.



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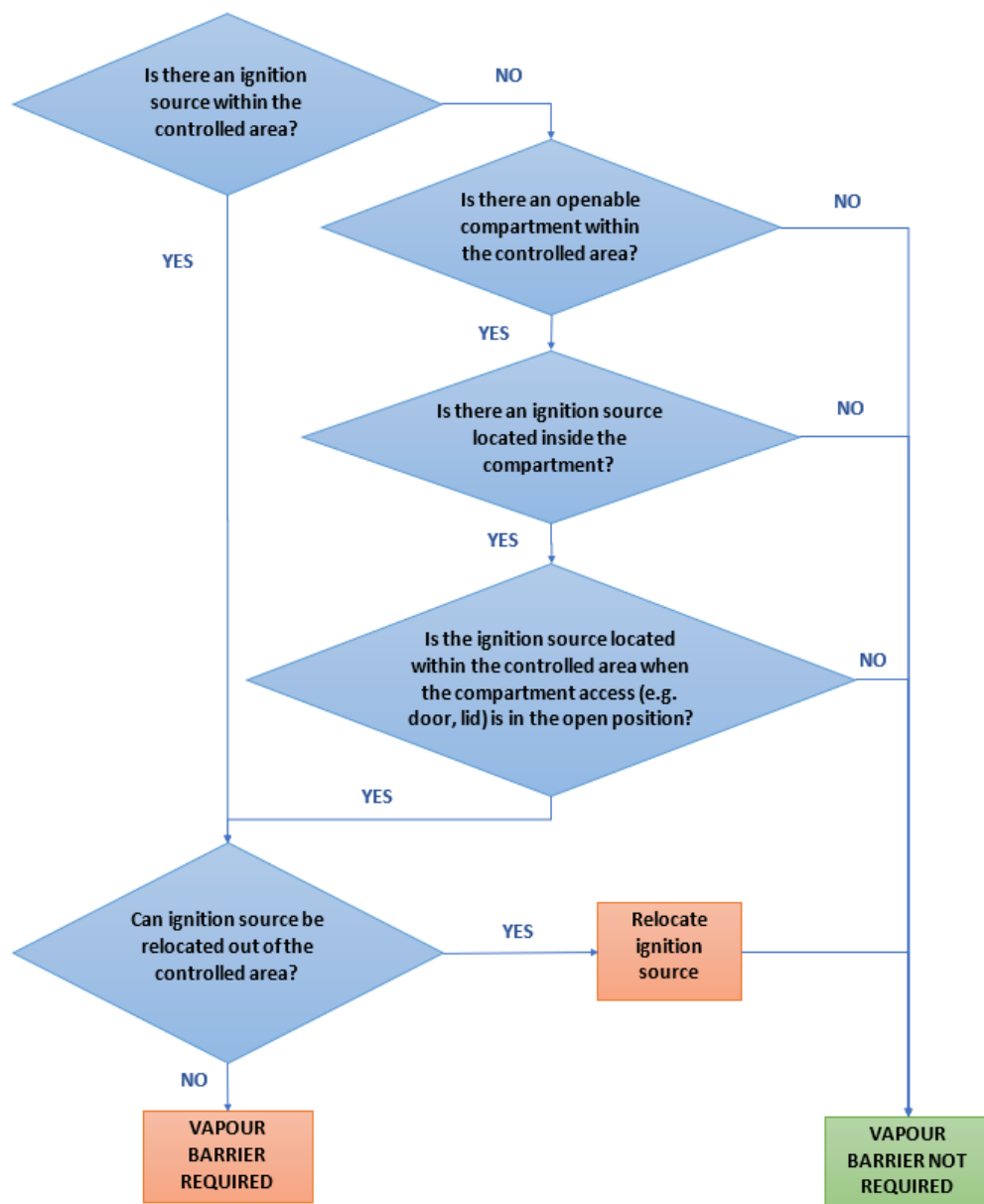
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Do I need a Vapour Barrier - Flowchart



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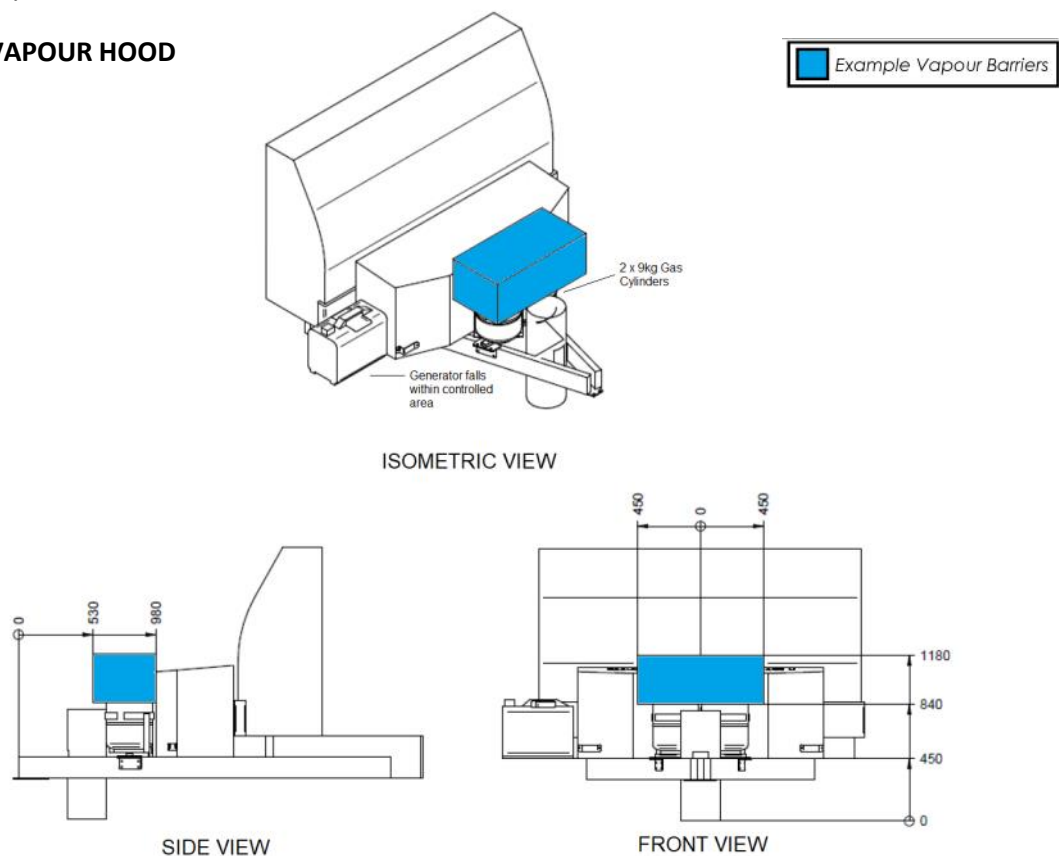


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What may a Vapour Barrier look like?

If a vapour barrier is required, the dimensions of the barrier will need to be designed to suit the specific situation. These will be variable due to factors such as the number, size and position of gas cylinders and the spacing to compartments and/or ignition sources. Some examples are shown below and on the following page, designed for use around 2 x 9kg gas cylinders.

EXAMPLE 1: GAS VAPOUR HOOD



NOTE: Each shield or hood design shown in these examples may equally be applied to different equipment scenarios (e.g. a front boot or generator/fridge slide-outs). **The equipment, dimensions and angles shown above are indicative only.**

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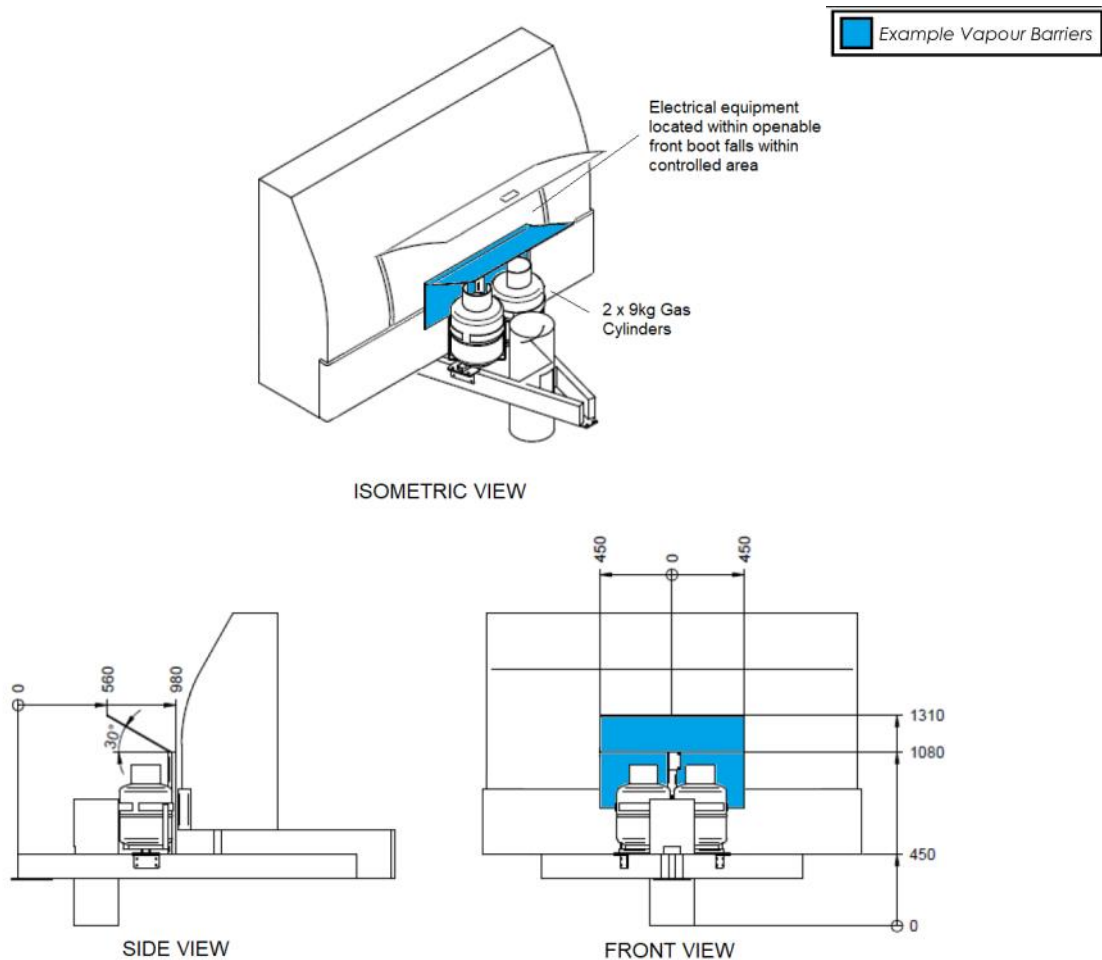
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What may a Vapour Barrier look like?

EXAMPLE 2: ANGLED VAPOUR BARRIER



NOTE: Each shield or hood design shown in these examples may equally be applied to different equipment scenarios (e.g. a front boot or generator/fridge slide-outs). **The equipment, dimensions and angles shown above are indicative only.**

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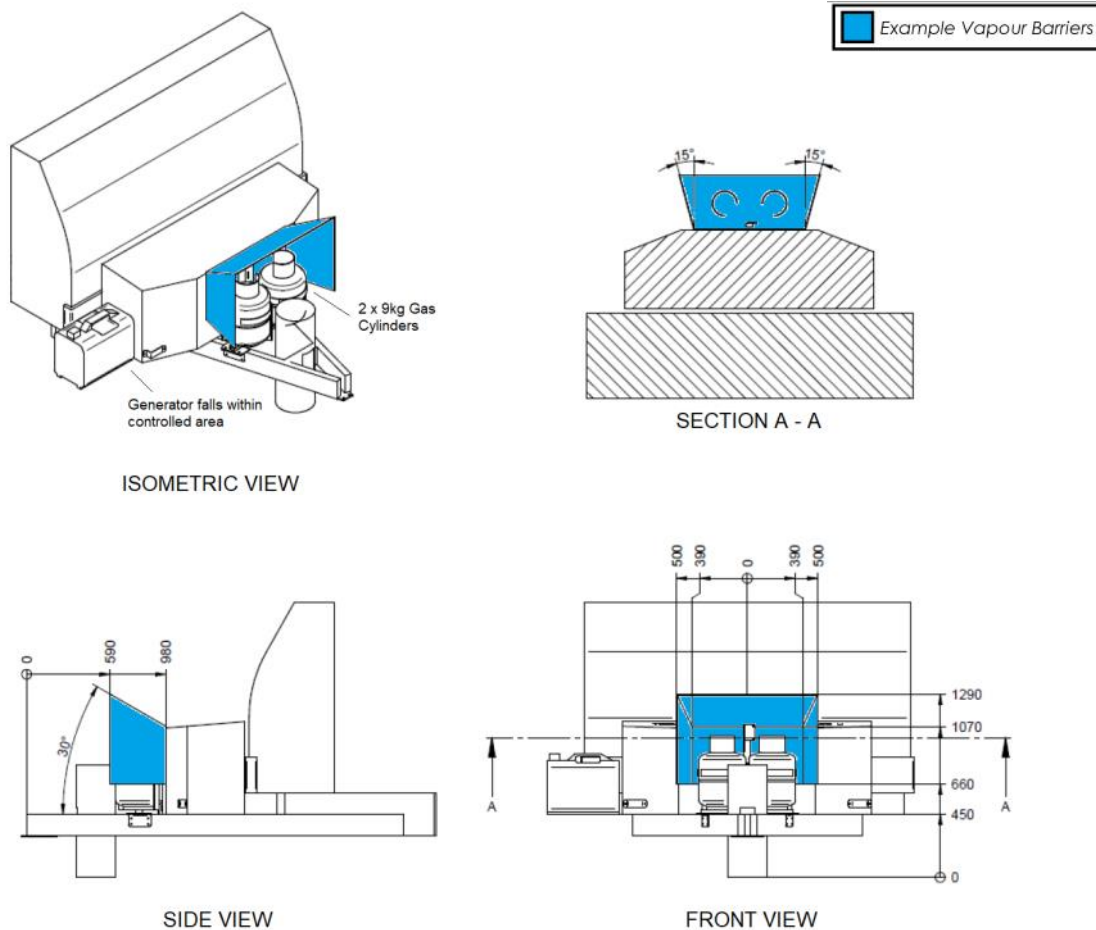
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What may a Vapour Barrier look like?

EXAMPLE 3: FOUR FACED VAPOUR BARRIER



NOTE: Each shield or hood design shown in these examples may equally be applied to different equipment scenarios (e.g. a front boot or generator/fridge slide-outs). **The equipment, dimensions and angles shown above are indicative only.**

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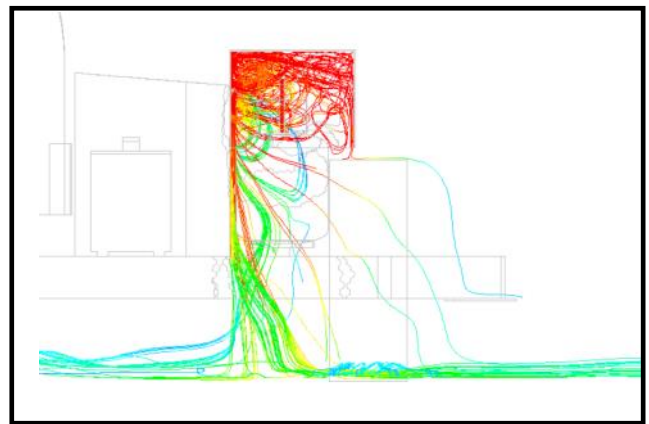
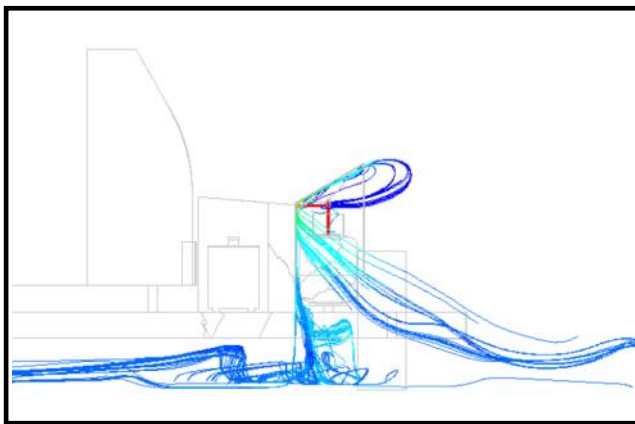
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What may a Vapour Barrier look like?

As mentioned on the previous pages, each shield or hood design may equally be applied to different equipment scenarios (e.g. a front boot or generator/fridge slide-outs). The equipment, dimensions and angles shown in those 3 examples are indicative only.

Gas cylinders may be placed into a gas cylinder compartment or locker as another alternative to the vapour barrier. Refer to AS/NZS 5601.2:2020 clause 3.3 for details of compartment design and ignition source clearances.

A hazardous areas expert was commissioned to verify whether these vapour barrier examples were effective and complied with the requirements in the standard. For thoroughness, these vapour barrier examples were modelled using the CAD model of a current product caravan with various software programs including PHAST and Fluent Computational Fluid Dynamics (CFD).



Gas Vapour Dispersal Modelling Examples

For more information on this process or how similar modelling may be applied to your particular vehicle layouts please contact rvmmap@caravanindustry.com.au.

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Implementation

It is understood that some of the changes outlined in this bulletin may require significant investigation and some lead time to implement, especially on existing models. Each of the State Caravanning Associations are working with their respective Gas Technical Regulators to confirm the details of transition arrangements. The following table outlines the transition plan in each jurisdiction:

State	Association	Transition Period (from 1 October 2020)	Contact
NSW	Caravan & Camping Industry Association NSW	6 Months 1 April 2021	Joe Taylor (Joe.Taylor@cciansw.com.au)
QLD	Caravan Trade & Industries Association of Queensland	6 Months 1 April 2021	Jason Plant (jason@caravanqld.com.au)
SA	Caravan & Camping Industries Association of South Australia	6 Months 1 April 2021	Stuart Livingstone (stuart@caravanandcampingsa.com.au)
VIC	Caravan Industry Victoria	6 Months 1 April 2021	Daniel Sahlberg (dsahlberg@ciavic.com.au)
WA	Caravan Industry Association Western Australia	TBC*	Brett Workman (brett.workman@dometic.com)

*as of 19 October 2020

Notwithstanding the individual implementation plans within state and territory jurisdictions, in the interests of improved safety all industry businesses are strongly encouraged to become familiar with the revised standard and to implement the new requirements as soon as is technically possible.

Any questions in relation to the standard itself can be emailed to rvmmap@caravanindustry.com.au. Questions with regards to the implementation (and enforcement) of this Standard in each State need to be directed to the relevant State Caravanning Association.

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Action Summary

- Become familiar with clause 3.1.8 of the standard AS/NZS 5601.2 (as well as the remainder of the standard).
- Assess each current model layout for any ignition sources that fall into the controlled area.
- Relocate ignition sources if possible.
- Design vapour barriers if needed.
- Consider any future model designs that you have under development. If possible, relocate ignition sources away from gas cylinders in compliance with the new standard, or design suitable gas vapour barriers.

Summary of Changes - AS/NZS 5601.2:2020

This bulletin addresses the details of gas vapour barriers and their use to achieve compliance with AS/NZS 5601.2:2020. However, this standard update also includes other changes that may be applicable to your business. A previous Technical Bulletin summarised the key changes in this revision – [CLICK HERE](#) to access.

Accessing AS/NZS 5601.2:2020

For RVMAP Businesses already accessing Standards through Caravan Industry Association of Australia and the i2i Platform, AS/NZS 5601.2:2020 is now available to view and download.

RVMAP Accredited businesses are reminded that as of 1 November 2019 they can gain access to more than 9000 Australian Standards (both current and historical) through the i2i Platform as part of their accreditation benefits.

If you are not yet utilising this service available to you please [CLICK HERE](#) and follow the prompts.

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Frequently Asked Questions (FAQ's)

QUESTION: *Do I need to fit a vapour barrier to every one of my models?*

ANSWER: A vapour barrier MAY be used to achieve compliance when an ignition source falls within the controlled area. Refer to the flowchart on page 4 to determine whether a vapour barrier is required.

QUESTION: *What should I make the vapour barrier out of?*

ANSWER: the vapour barrier needs to be impervious to LP gas, constructed of non-combustible material and be sufficiently durable for the installation conditions. With that in mind, manufacturers may look to construct the vapour from checkerplate, sheet metal or other suitable materials that fulfil these requirements.

QUESTION: *If I choose to design a vapour barrier to achieve compliance, can this be designed to be removed during transit?*

ANSWER: No – it is expected that the vapour barrier be a permanent fixture to ensure safety at all times in the event of a gas leak. To achieve compliance to the standard, the barrier must not be easily removable by the user (unless this is required solely to exchange empty cylinders).

QUESTION: *How long do I have to understand and implement this solution (if required)?*

ANSWER: Implementation information is detailed on page 9 of this bulletin.

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