

Australian Dangerous Goods Code Comprehensive Review

Working group paper #11



Draft tank and vehicle provisions for dangerous goods transport

March 2024

Prepared by: National Transport Commission
Tanks, vehicles and emergencies working group

Report outline

Title	Draft tank and vehicle provisions for dangerous goods transport
Type of report	Discussion paper
Purpose	For public consultation
Abstract	<p>In November 2020, transport and infrastructure ministers approved the NTC’s recommendation to conduct a comprehensive review of the Australian Code for the Transport of Dangerous Goods by Road & Rail (the Code)</p> <p>This paper is the 11th of a series of topic specific discussion papers.</p>
Submission details	<p>The NTC will accept submissions until TK 2024 online at www.ntc.gov.au or by email to: dkirk@ntc.gov.au</p>
Attribution	<p>This work should be attributed as follows, Source: National Transport Commission, Draft tank and vehicle provisions for dangerous goods transport – discussion paper #11.</p> <p>If you have adapted, modified or transformed this work in anyway, please use the following, Source: based on National Transport Commission, Draft tank and vehicle provisions for dangerous goods transport – discussion paper #11.</p>
Key words	Dangerous goods, ADG Code review, transport, ADR, tanks, bulk containers, vehicles, approvals
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Have your say

What to submit

We are seeking stakeholder views on the consultation questions in the Executive summary and throughout the document. We are also interested in any additional information submitters could provide to support their views.

When to submit

We are seeking submissions on this issues paper by Monday 29 April 2024.


How to submit

Any individual or organisation can make a submission to the NTC.

Making a submission

 Visit www.ntc.gov.au and select 'Engage NTC' on the homepage.

Or

 Email your submission to dkirk@ntc.gov.au

Where possible, you should provide evidence, such as data and documents, to support the views in your submission.

Publishing your submission

Unless you clearly ask us not to, we publish all the submissions we receive online. We will not publish submissions that contain defamatory or offensive content.

A deidentified list of responses to specific questions, and how these have been considered in the final drafts will be made publicly available.

The *Freedom of Information Act 1982* (Cwlth) applies to the NTC.

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Purpose of this paper

The National Transport Commission (NTC) is conducting a comprehensive review of the Australian Code for the Transport of Dangerous Goods by Road & Rail (the Code).

In conducting the review, the NTC will seek to achieve greater alignment with the internationally recognised land mode-specific requirements contained in the Agreement for the International Transport of Dangerous Goods by Road (ADR) and the Agreement for the International Transport of Dangerous Goods by Rail (RID).

The review is focused on outcomes that serve the best interest of all parties involved in the transport of dangerous goods. This includes those parties on which the requirements are imposed, those who regulate and administer the requirements, and those who must maintain them.

This paper is the 11th of a series of topic specific discussion papers. This paper should be read in conjunction with **Working Group Supplementary Paper #S1 – Tank provisions of the ADR - Terminology**.

The purpose of this paper is to examine the current requirements for tanks and bulk containers in the ADR and the current code, and how these requirements can be combined and carried forward into the future code.

Portable tanks and MEGCs that are designed to the requirements in the UN Model Regulations are out of scope for this paper.

This paper relates to:

the Code – Part No.	<input checked="" type="checkbox"/>	Working group	<input checked="" type="checkbox"/>	Discrete issue	<input type="checkbox"/>
Section 1.8.7 Chapters 4.3, 4.4, 4.5 Chapters 6.8, 6.9, 6.10, 6.11, 6.13 Part 9 (except explosives vehicles)		Tanks and Vehicles			

Executive summary

Context

A full review of the Australian Dangerous Goods Code (the Code) has not been conducted for over a decade.

The Code is applicable across Australia, and adherence to it by all relevant parties ensures specific risks posed through transport of dangerous goods by land are effectively managed.

In 2020, transport and infrastructure ministers agreed for the NTC to conduct a full review of the Code. The NTC's responsibility for the Code's content and stakeholder engagement over several years, highlighted that the road and rail specific requirements of the Code in particular, do not fully support the smooth and safe movement of dangerous goods across borders and transport modes.

The purpose of the review, therefore, is to ensure that the Code is reflective of the Australian transport environment, draws upon road and rail mode specific concepts used elsewhere in the world where appropriate, and considers inclusion of explosives as regulated dangerous goods under the Code's requirements.

Given the scale of the review, the content of the code has been broken into a series of topics. This paper focuses on tanks and bulk containers used for dangerous goods transport. It is the fourth paper on this topic and brings together the responses to the first three to present a set of draft provisions for tanks and vehicles in Australia.

While extensive changes are proposed in this paper, the changes take the style and format of the ADR, and modify them to ensure that it reflects Australian transport practices.

Themes

Chapter 1 – Project to Review the Australian Dangerous Goods Code

In November 2020, transport and infrastructure ministers approved the NTC's recommendation to conduct a comprehensive review of the Code.

The review seeks to better align Australia with international practices contained in the road and rail mode specific versions of the UN Model Regulations and will focus on improving transport of dangerous goods safety outcomes.

Chapter 2 – context of issues

This chapter provides contextual overview for the topics included within this paper.

Chapter 3 – Outline of key changes for tanks and vehicles

There are extensive changes proposed for the future code in tanks and vehicles. However, these primarily relate to the way the compliance requirements are specified. These changes aim to specify requirements in a clear and unambiguous manner. Generally, the ADR style and format has been followed. However, a key aim of these changes is not to dramatically change transport operations in Australia. As a result, the ADR text has been extensively modified to better reflect Australian requirements.

The future code will provide a more transparent process for the use of ADR-style tanks in Australia. While unlikely to be in great demand, this will support tank vehicles that aren't envisioned in AS 2809, while ensuring proper regulations are in place.

Chapter 4 – ADG Code Part 4 – Tank use provisions

The requirements for the use of tanks and tank vehicles in Part 4 will change in the draft code. As with other areas, the aim is not to significantly change transport operations, but to ensure that the transport requirements more clearly reflect Australian practices.

Additionally, this chapter will introduce provisions for the use of fibre reinforced plastic (FRP) tanks and vacuum tanks. These are already in use in Australia; these chapters will provide greater certainty and transparency on their use.

This chapter also contains a discussion on the way that large compartments are specified in the current code and ADR. There are some additional differences identified that weren't discussed in early papers, this should result in clearer provisions for the use of tanks falling under these provisions.

Chapter 5 – ADG Code Part 6 – Tanks and similar containment systems

The most significant changes outlined by this chapter are in Chapter 6.8 of the future code. At present, the code doesn't contain detailed tank design requirements. These will be introduced to the code, based on the requirements in AS 2809. A particular change here is more transparent tank design requirements, and more transparent requirements for gas vehicles consisting of multiple elements (tube-vehicles). While the detailed requirements will remain in the Australian Standards, this will ensure that the general expectations are more readily available to users of the code.

Additional requirements are being introduced for the construction of fibre reinforced plastic tanks, vacuum tanks and bulk containers for solid dangerous goods. As with the use requirements, these will reflect existing practices for these tanks.

Chapter 6 – ADG Code Part 9 – Vehicle provisions

The vehicle provisions in the future code will change dramatically. However, as with other areas discussed in this paper, the effects "on-the-ground" will not be so dramatic. These changes have been extensively rewritten from ADR. This ensures that the intent of these provisions is carried into the future code, but not at the loss of Australian transport requirements.

This chapter includes a specific discussion on issues that are not properly addressed in the current code. The current code includes limited controls on the use of portable tanks and IBCs as tanks on a tank vehicle. This chapter includes a detailed discussion on more clearly specifying controls for these vehicles. This regulatory gap can be addressed with the new code. The use of these as tanks on vehicles often result in a tank vehicle, but the principles that apply to their use can be much more clearly defined.

Chapter 7 – Next Steps

Due to the extensive changes in these sections, it will be essential to introduce transitional provisions to ensure that existing tanks and vehicles can be used into the future. An outline of this process is provided.

Additionally, guidance materials will be prepared to support the industry and regulators to incorporate these new requirements as the new code is delivered.

Next steps

Consultation on this issues paper will close on Monday 29 April 2024.

The responses to this paper will be used to develop a consultation draft of the tank provisions for the future code. This will likely be developed along with the vehicle requirements, after considering responses to the various papers on these issues.

List of questions

No.	Question	Page
Q1	Are there other terminologies that you consider may be confusing for users of the future Code, where you consider adjustments or definitions may be needed? Note that these can be considered for adoption later in the Code development process.	22
Q2	Are there specific provisions that you consider may require clarification, either in the form of notes or for specific guidance?	22
Q3	Should this requirement be modified to only permit the transport with the permission of a competent authority (in situations other than a dangerous situation)? Please explain your reasoning.	25
Q4	Do you have any concerns with these proposed modifications to the list of TU codes? Please explain your reasoning.	26
Q5	Do you support the extension of the 8,600 L and the 80/15 rule to tanks or compartments that have been appropriately divided by surge plates or partitions? Please explain your reasoning.	27
Q6	Are there substances that you consider should require the use of ADR-style tanks, or principles on which this should be based? Please explain your reasoning.	28
Q7	After reviewing the code provisions, are there any additional transitional provisions relating to the use of tanks that you consider may be necessary? Please provide details and your reasoning.	28
Q8	After reviewing the requirements in 6.8.1.5 and 1.8.7, are there controls that you consider are missing or need to be amended? Please provide details.	30
Q9	Are there marking requirements in the draft code that you consider are missing, excessive or should be amended? Please provide details.	32
Q10	After reviewing the requirements in Chapter 6.10, are there controls that you consider are missing or need to be amended? Please provide details.	33
Q11	After reviewing the requirements in Chapter 6.11, are there controls that you consider are missing or need to be amended? Please provide details.	34
Q12	After reviewing the requirements in Chapter 6.13, are there controls that you consider are missing or need to be amended? Please provide details.	34

No.	Question	Page
Q13	After reviewing the code provisions, are there any additional transitional provisions you consider may be necessary? Please provide details and your reasoning.	34
Q14	What qualifications or experience do you consider appropriate for the person reviewing the completed tank and vehicle? Please explain your reasoning.	36
Q15	Do you have a preference between providing a standardised template or a list of minimum information to include here? Please explain your reasoning.	37
Q16	Do you consider it necessary to include a detailed list as found in AS 2809.1? Please explain your reasoning.	37
Q17	Do you have any concerns or proposed changes to the draft definition for the AN vehicle type? Please explain your reasoning.	39
Q18	Do you consider that a vehicle used for the transport of packages should be subject to any amended or additional controls? Please provide details and your reasoning.	40
Q19	Do you consider that a vehicle used for the bulk transport of solids should be subject to any amended or additional controls? Please provide details and your reasoning.	40
Q20	Do you consider that a vehicle used for the transport of temperature controlled substances should be subject to any amended or additional controls? Please provide details and your reasoning.	41
Q21	After reviewing the code provisions, are there any additional transitional provisions you consider may be necessary? Please provide details and your reasoning.	42
Q22	Do you consider that a vehicle that uses a package as a tank should require, or be exempted from approval? Please explain your reasoning.	44
Q23	Do you consider it necessary to permit the use of combustion heaters on vehicles used for the tank transport of dangerous goods in Australia? Please explain your reasoning.	45
Q24	Do you consider it necessary to include transitional provisions for combustion heaters for dangerous goods vehicles in Australia? Please explain your reasoning.	45
Q25	Are there any other general comments that you would like considered that have not been addressed in earlier comments? Please provide details.	46
Q26	Do you consider it necessary to include transitional provisions for combustion heaters for dangerous goods vehicles in Australia? Please explain your reasoning.	44
Q27	Are there any other general comments that you would like considered that have not been addressed in earlier comments? Please provide details.	45

1 About this project

Key points

- In November 2020, transport and infrastructure ministers approved the NTC's recommendation to conduct a comprehensive review of the Australian Code for the Transport of Dangerous Goods by Road and Rail (the Code).
- Mode-specific requirements of the current code consist of a repository of often disjointed, contradictory requirements that fall apart when closely examined.
- The review seeks to better align Australia with international practices as set out in the ADR and RID.
- The review will focus on outcomes that serve the best interest of all parties involved in the transport of dangerous goods.
- Given the scale of the review, the content of the code has been broken into a series of topics, each allocated to a topic specific working group.

1.1 Project objectives

In November 2020, transport and infrastructure ministers approved the NTC's recommendation to conduct a comprehensive review of the Australian Code for the Transport of Dangerous Goods by Road and Rail (the Code). Ministers also supported the proposal to incorporate into the Code principles from both:

- the Agreement for the International Transport of Dangerous Goods by Road (ADR)
- the Agreement for the International Transport of Dangerous Goods by Rail (RID).

The ADR and RID are used extensively throughout Europe, Africa and Asia. As with the Australian code, both the ADR and RID are based on the United Nations Recommendations on the Transport of Dangerous Goods - Model Regulations (UN Model Regulations). In general, the requirements of the ADR and RID are the same. They only differ where requirements need to apply specifically to either road transport or rail transport.

Stakeholder feedback over the years and a literature review of relevant materials suggests that the mode-specific requirements of the current code consist of a repository of often disjointed, contradictory requirements that fall apart when closely examined. In many instances, there was no supporting evidence or data for their introduction and there is no evidence that they have contributed to safer outcomes. The lack of consistency and cohesiveness in these requirements coupled with a lack of a framework for maintaining the mode-specific requirements results in a continuing cycle of ad-hoc, random amendments without consideration of the consequential inconsistencies or contradictions.

Goal of the review

The goal of the review is to deliver a code that:

- addresses the specific risks of transport by land, while also recognising any risks unique to the Australian transport environment
- remains contemporary

- is aligned to international practices that support the smooth and safe movement of dangerous goods across borders and transport modes.

The review is focused on outcomes that serve the best interest of all parties involved in the transport of dangerous goods. This includes:

- parties that must meet the requirements
- parties that regulate and administer the requirements
- parties that must maintain the requirements.

The aim of the review is to deliver more than just a cohesive and contemporaneous code. We also aim to deliver a framework for making sure the Code remains up to date and aligned with international standards.

1.2 Background

In 2020, the NTC released an issues paper on the land transport of dangerous goods. The paper focused on the legislative framework that supports the dangerous goods code. However, the responses we received highlighted several problems with the code itself.

A major concern raised in submissions centred on the Australia-specific chapters of the current code. The biennial maintenance cycle of the Code, which keeps it aligned to the UN Model Regulations, is appreciated. However, many submissions noted the Australia-specific chapters have not been reviewed or revised. Many of these chapters were carried over from the sixth edition of the Code (ADG 6), either in full or in part, without examination. They have not been critically reviewed for over 15 years and are now outdated. In the case of some requirements, no evidence base, or justification can be found to support their original introduction.

Industry and regulators also noted the Australian Explosives Code is outdated and has no responsible agency. They expressed a strong preference for the dangerous goods code to be expanded to include Class 1 Explosives, and for the Australian Explosives Code to be made obsolete.

After analysing the submissions received, the NTC made recommendations to infrastructure and transport ministers. All recommendations were endorsed, including the following:

Recommendation 4:

Conduct a full review of the Australian Dangerous Goods Code to update outdated chapters, identify and correct translation errors, incorporate relevant ADR concepts and incorporate requirements for Class 1 and Division 6.2. Note: the technical requirements for Class 1 and Division 6.2 will be incorporated into the ADG Code but the legal requirements will not be incorporated into the regulations.

1.3 Approach

A set of Review Principles has been developed to guide the review and give it the best chance of delivering the right outcome. These principles were developed with regard to the following key considerations:

- impacts and benefits

- stakeholder engagement
- maintaining currency of the Code and associated model laws.

Given the scale of the review, the content of the code has been broken into a series of topics, each allocated to a topic specific working group.

This discussion paper deals specifically with the draft provisions for the design, construction and use of tanks, bulk containers and vehicles for dangerous goods transport. These provisions will be contained in Parts 4, 6 and 9 of the code.

Previous consultation papers for this review include:

- Classification of dangerous goods – Working group paper #1, January 2023
- Dangerous Goods List – UN entries – Working group paper #2, February 2023
- Tank provisions in ADR – Terminology – Supplementary paper #S1, March 2023
- Approval of tanks, bulk containers and vehicles – Working group paper #3, March 2023
- Safety equipment for dangerous goods transport – Working group paper #4, May 2023
- Fire extinguishers for dangerous goods transport – Working group paper #5, May 2023
- Part 5 – Consignment procedures – Working group paper #6, June 2023
- Vehicles for dangerous goods transport – Working group paper #7, August 2023
- Tanks and bulk containers for dangerous goods transport – Working group paper #8, August 2023
- Packing and tank provisions – Working group paper #9, November 2023
- Special provisions and conditions of carriage, loading, unloading and handling – Working group paper #11, February 2024

2 Context of issues

The design and construction of tanks and bulk containers is a critical safety control for the transport of dangerous goods. Likewise, the assignment of permitted tank types for transporting particular types of dangerous goods.

Using a poorly designed or constructed tank or a tank that is not compatible or appropriate for the dangerous goods being transported can lead to catastrophic failure of the containment system.

The UN MR, and the ADR, have detailed requirements for design, construction and use of tanks and bulk containers. The Guiding Principles for the Development of the Model Regulations on the Transport of Dangerous Goods documents the principles used in assigning tank codes to specific UN numbers.

Australia relies heavily on the use of non-UN tanks. While the requirements in the code for UN tanks are well developed and documented, there are deficiencies in requirements for the design, construction and assignment of non-UN tanks. This paper focuses on non-UN tanks and containment systems.

Chapter 3 – Outline of key changes for tanks and vehicles

This chapter provides an outline of the changes that are being proposed for tanks and vehicles. It discusses how these changes have been developed, and what factors have been considered. This chapter provides an explanation of how the underlying provisions are changing. It also explains how actual transport operations are unlikely to change dramatically with the introduction of these changes.

Additionally, it provides context for the draft code provisions that are being released along with this paper. While the changes are extensive, they will generally ensure that the future code should result in no significant changes for transport operations in the future.

Chapter 4 – ADG Code Part 4 – Tank use provisions

This chapter provides detail on the changes that will be introduced in part 4 of the code as it relates to tanks. While these changes are extensive, they will support the more effective use of tank vehicles for dangerous goods transport. Significantly, provisions for the use of fibre reinforced plastic (FRP) tanks and vacuum tanks will be introduced into the Code.

A detailed discussion item relating to large compartment tanks is also included here. There are some differences between ADR and the current code, and it is essential that these differences are resolved to ensure the effective future maintenance of the Code.

Chapter 5 – ADG Code Part 6 – Tanks and similar containment systems

The most significant changes outlined by this chapter are in Chapter 6.8 of the future code. Detailed tank design requirements are proposed to be introduced into the Code. However, it is essential that the design requirements from ADR do not conflict with those from AS 2809. A particular change here is more transparent tank design requirements, and more transparent requirements for gas vehicles consisting of multiple elements (tube-vehicles)

Additional requirements are being introduced for the construction of fibre reinforced plastic tanks, vacuum tanks and bulk containers for solid dangerous goods.

Chapter 6 – ADG Code Part 9 – Vehicle provisions

This chapter discusses how the new vehicle provisions have been constructed. The changes are extensive compared to both the existing code and ADR. This section discusses how the text has been taken from ADR, and modified to better reflect Australian practices.

As with other areas discussed in this paper, the effects “on-the-ground” will not be so dramatic.

Chapter 7 – Next Steps

This chapter discusses the next steps for tanks and vehicle provisions. It also provides information on transitional provisions that will be developed, and how the changes and responses to questions will be incorporated into the final code. Finally, guidance documents on the changes will be prepared, to better inform the transport industry and regulators of the changes, and how to use the new code.

3 Outline of key changes for tanks and vehicles

Key points

- This section of the discussion paper provides an overview of the changes, and why they are being made.
- It also provides an overview of how we aim to minimise the impacts of the changes on transporters.

3.1 Why are these provisions changing?

Creating a division between product containment system and the vehicle

In the current code, tanks, vehicles and the resulting tank vehicle are largely treated as a single unit. The provisions for these are intermingled, confusing the different roles that each perform. Tanks are a means of containment for dangerous goods, while vehicles perform the transport operation.

Because of these different functions, there are different requirements for the design and construction of tanks and the vehicles that transport them. This makes deciding how best to apply the requirements not as clear as it could be.

In many common situations that are addressed by the Code this ‘unified’ approach does not cause major problems. However, in less common situations, these conflicts can make deciding how to proceed difficult for both industry and regulators.

The future code will address this by splitting the requirements into tanks (or other means of containment), and the vehicles that transport them. As in both the current code and the ADR, the future code will include controls for vehicles once the means of containment has been matched to the vehicle.

Tanks for tank vehicles

The current code is extremely reliant on AS 2809 for the design requirements of tanks and vehicles. This means that when AS 2809 does not deal with a scenario, it becomes unclear for both industry and regulators how to proceed. So, while the current code works well for a range of “standard” situations, when the design or use of a vehicle is non-standard it requires significant effort to conform to the current regime.

This often requires the use or creation of bespoke solutions and managing them becomes quite unwieldy. It is also less transparent for other transporters who may experience similar issues.

There are a range of known scenarios that the current code does not readily address. A particular challenge is vehicles with permanently or semi-permanently mounted tanks that don’t meet the definition of a tank vehicle in AS 2809. Some examples of these include:

- Vehicles using non-AS 2809 tanks or using IBCs or portable tanks as a tank.

- Aerial application support vehicles using small, non-standard tanks for multiple materials.
- Bitumen crack-sealing units that transport and apply heated bitumen products.

The draft changes will provide a clear set of principles on how to manage these situations for both industry and regulators. We expect that most tanks for tank vehicles will continue to be designed to AS 2809. However, should a transporter need to use a tank that AS 2809 does not envision, the Code will provide a rule-set for regulators and industry to apply.

Tube vehicles for compressed gas transport

Another example for which no current rules exist are tube-vehicles that are used for the transport of compressed gases. With the growth in hydrogen transport, how to address this issue has become more pressing, even though these vehicles have been used for some time in Australia. However, the current code does not recognise this type of vehicle, but the general requirement that dangerous goods be transported in approved packaging means that Competent Authorities are being called on to manage an approval pathway. The provisions of the draft code will support clearer rules for the design, construction, approval, and use of these vehicles.

Reliance on Standards Australia

As noted, the current code is reliant on AS 2809 for tank vehicle design, construction and maintenance. This places considerable responsibility in the hands of the technical committee responsible for the standard. It also means that these requirements are “locked away” in a standard that must be purchased. This violates the principle that knowledge about how to comply with the law should be readily available.

Even the general design requirements for tank vehicles, and obligations for inspection and maintenance are not readily available. This standard can only be readily obtained by purchasing a copy.

In earlier consultations, we heard support for including these general principles where they already exist in AS 2809. The specific design requirements will be left to the referred standards, as these remain subject to an appropriate process.

Additionally, while the current code provides for a standard 12-month transition when new standards are released, this may be too rigid in some cases, especially where the changes are minor. The draft code provides flexibility to the Code maintenance system to determine for how long a superseded standard may continue to be used.

3.2 Impact of the changes on transporters

The new provisions for tanks and vehicles are laid out in a substantially different manner to the current code. While at first this may seem unusual, the layout follows the logical order used in ADR. And for the personnel who use tanks and vehicles, they should experience very limited changes in their operations. The provisions have been re-written to reflect and support existing practices, while also providing clearer, more readily accessible rules.

This means that on the road, the actual transport task and the controls around transport will not change significantly. Some provisions will change, however where they do, operators of existing tank vehicles will be provided with transitional measures. Examples are provided to support readers to understand how these provisions may be constructed. Many more examples can be found in Chapter 1.6 of ADR.

These transitional provisions can be written to:

- allow continued use of vehicles until end of life.
 - An example of such a provision would be “Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 January 2026 in accordance with the requirements of the ADG Code in force at the time of construction, but which do not, however, conform to the requirements of Chapter 6.8 applicable as from 1 January 2026 may still be used, provided they continue to comply with their approval.”
- provide sufficient time to bring vehicles into compliance.
 - An example of such a provision may be “Tank vehicles and demountable tanks constructed before 1 January 2026 in accordance with the requirements of the ADG Code in force at the time of construction, but which do not, however, conform to the requirements of Chapter 9.2 applicable as from 1 January 2026 may still be used, until 31 December 2027”.

We expect that most tanks and tank vehicles will continue to be built to the AS 2809 standard. The AS 2809 standard has proven itself to be an effective system for most dangerous goods tank transport scenarios in Australia. The future code will more readily permit tanks conforming to ADR standards. We expect the future code is more likely to be of interest where AS 2809 does not envision a particular scenario.

The ADG Code has permitted ADR tanks as an alternative means of design for a long time. The model regulations permit ADR tanks as foreign approved tanks. However, the way the foreign approved tank provisions would be applied is not well defined. The changes discussed in this paper will ensure that ADR-style tanks are available if needed, but only after proper approval. While we expect that ADR-style tanks are unlikely to become widespread, if demand arises, the future code provisions allow them to be brought directly into the Code if appropriate.

Regardless of whether an AS 2809 or ADR-style tank is used, the future code will clarify that the vehicle transporting it will need to conform to the general principles and requirements for Australian vehicles as set out in AS 2809.1.

By bringing the general design and compliance requirements into the Code, all interested parties will be able to understand the principles used to design, construct and use tanks. And This will also make understanding how provisions apply to tanks and vehicles much easier, when the tank or vehicle is changed or modified.

A particular example of this issue is the development of tube-vehicles for the transport of compressed hydrogen. The future code will provide clear rules on the design and use of tube-vehicles for the first time.

3.3 Draft code for consultation

A copy of the chapters of the Code discussed in this paper is included in this consultation. These chapters have undergone significant rewriting from their form in ADR to make sure that Australian requirements are properly adopted, and to address the feedback provided during earlier consultations.

The draft code sections provided are the following:

- Part 1
 - Section 1.8.7 details the administrative controls relating to the design, construction, entry into service and periodic inspections of tanks conforming to Chapter 6.8 (and chapters 6.10 and 6.13 as appropriate).
 - Note, this section also applies to pressure vessels constructed in accordance with Chapter 6.2. The section drafted for this paper only deals with Chapter 6.8. Separate consultation with the gas industry will be undertaken on how Chapter 6.2 would be affected.
- Part 4
 - Chapter 4.3 contains the requirements for the use of tanks, tank vehicles, multiple-element containers (MEGCs) and tube-vehicles (other than UN portable tanks and UN MEGCs) that are being used for the transport of dangerous goods.
 - Chapter 4.4 includes additional requirements for the use of tanks constructed from fibre-reinforced plastics.
- Part 6
 - Chapter 6.8 contains the requirements for the design and construction of tanks and multiple-element containers that are in accordance with Chapter 4.3.
 - Chapter 6.10 contains additional requirements for the design and construction of vacuum-operated waste tanks.
 - Chapter 6.11 includes requirements for the design and construction of bulk containers. These are fundamentally the same as in Chapter 6.8 in the current code.
 - Chapter 6.13 includes additional requirements for the design and construction of tanks constructed from fibre-reinforced plastics.
- Part 9
 - This part deals with the design, construction, use and maintenance of vehicles used for the transport of dangerous goods, in particular vehicles used for the transport of tanks (defined as “FL vehicles” and “AT vehicles” in the Code).

These changes will also introduce 3 new columns into the dangerous goods list. These are:

- Non-UN tank codes
 - This code outlines when a tank may be used for transport, and which type of tank may be used.
- Non-UN tank special provisions
 - These codes are special provisions relating to the use of tanks and their design and construction. Only the “TU” codes are proposed to be incorporated from ADR.
- Vehicle for tank carriage
 - These codes indicate the requirements for vehicles that are transporting tanks.

In earlier consultations, a tracked changes copy of the relevant chapters was provided. However, in this case the changes are extensive. As a result, we have provided a copy of the relevant chapters as they will appear in the future Code. To assist readers, references are provided to the source on the right-hand side of the page, with the following notations:

- “ADR”
 - This ADR clause has been adopted, with the same clause number.

- “ADR – 4.3.2.1”
 - This clause has been adopted from ADR, the clause has been renumbered from the numbered clause.

Where appropriate, additional notes on the modifications have been included. Information included to the right-hand side of the dashed divider will not be included in the future code.

Impacts on tank and tube transport of gases

Some of the changes to these sections of the draft code will have a significant impact on the transport of gases. While the changes are included in the accompanying drafts, specific consultation will be undertaken with the gas transport industry on:

- the impact of these changes for tank transporters.
- similar impacts of changes in other parts of the Code (such as packing instruction P200 for gases).

Changes already made in the draft code

These changes have been made throughout the draft code sections, and so are not called out individually:

- The future ADG Code uses the term “tube-vehicle” instead of the more ambiguous term “battery-vehicle” used in ADR. This is a straight substitution.
- In a number of locations draft notes have been added where it was felt that additional clarity was needed.
- Minor changes to align language to current style, such as the use of “shall” rather than “must”.

Guidance and notes

Additional guidance (either separate documents or within the Code as notes) will be prepared to help educate users of the Code about how the new provisions apply. While the effects of the new rules are not fundamentally different, we appreciate that the change will require effective communication.

In reviewing the draft provisions we are interested in receiving feedback on terminology or information that is ambiguous, and may require additional definition, or inclusion in guidance materials.

Question 1: Are there other terminologies that you consider may be confusing for users of the future Code, where you consider adjustments or definitions may be needed? Note that these can be considered for adoption later in the Code development process.

Question 2: Are there specific provisions that you consider may require clarification, either in the form of notes or specific guidance?

4 ADG Code Part 4 – Tank use provisions

Key points

- These chapters of the Code deal with the use of tanks for the transport of dangerous goods.
- This chapter of the discussion paper outlines some of the key changes in the current draft.
- There are some questions for items where further drafting is required.

4.1 Use of vehicles including tanks (Chapter 4.3)

This chapter imposes many of the same requirements that are included in Chapter 4.4 of the current Code. There are some items in Chapter 4.4 of the current Code that are not included in these draft provisions. They are instead included in Part 7 of the Code, which relates to the carriage, loading, unloading and handling of dangerous goods.

In general, Chapter 4.3 states the requirements for filling and using tanks more clearly than is found in the current Code. For example, the current code states that a “vehicle used to transport dangerous goods ... must be clean”. This is hard to interpret and could be read as referring to the general tidiness of the vehicle. However, we understand this is intended to refer to dangerous goods residues. The future code states “no dangerous residue of the filling substance shall adhere to the outside of the tank during carriage”. This is the same interpretation found in the NSW EPA’s *Dangerous Goods Tank Vehicle Inspection Manual*.¹

Another example of clearer requirements is that “after filling, the filler shall ensure that all the closures of the tanks, tube-vehicles and MEGCs are in the closed position and there is no leakage.” This is unambiguous and, when complied with, ensures that vehicles are checked before departure.

4.3.1 – Scope

Transitional measures will be added to Chapter 1.6 (of the future code) to cover tank vehicles, demountable tanks and tank containers that are in use at the time of commencement of the future code. A note has been added to provide a signpost for users of the Code to the relevant section.

We expect that these transitional measures will permit the continued use of a tank vehicle, demountable tank or tank container that is in use at the commencement of the future code. This expectation includes continued use in accordance with its approval, and the general use requirements of the future code.

¹ Dangerous Goods Tank Vehicle Inspection Manual, NSW Environment Protection Authority, Sydney 2023
Available from <https://www.epa.nsw.gov.au/your-environment/dangerous-goods/vehicle-maintenance>

4.3.2 – Provisions applicable to all classes

This section generally requires that the tanks that are used comply with Chapter 6.8. This section of the Code permits the use of tanks that conform to AS 2809, AS 1210 or AS 2022, and details are provided on the application of these standards.

In addition to the Australian Standards, tanks that conform to ADR are permitted as an alternative.

We have retained the ADR tank codes in the dangerous goods list. So, the table that outlines the meaning of tank codes is included to promote ready understanding. An explanatory note has been added for this.

The requirements for degree of filling have been moved into this section from Chapter 10.3 in ADG 7. To reduce ambiguity, the concept of “ullage” is replaced by “degree of filling”. Degree of filling is a recognised term within the UN model regulations, and we consider that it is more intuitive to use the amount of substance loaded into a tank, rather than the free space remaining above the substance.

The large compartment tank threshold has been retained at 8,600 L. The same prohibition on a degree of filling between 15 and 80 % for large compartment tanks has also been retained. Further discussion on this can be found in 4.4 below.

4.3.3 – Special provisions applicable to class 2

Note: Further targeted consultation will be undertaken on requirements for the transport of gases.

As noted, the dangerous goods list uses ADR tank codes. Therefore, the table that outlines the meaning of tank codes is also included. An explanatory note has also been added for this.

The table outlining the hierarchy of tanks has been deleted, as they are not relevant except where ADR tanks are in use. A note explains that including this information is likely to increase the complexity of the Code without much benefit. Should ADR tanks become more common in Australia, this information can be directly incorporated into this section in future.

A note has been added to the section on filling conditions and test pressures to clarify that this section does not override pressure vessel requirements in Australia. If there is inconsistency, the more conservative value prevails.

This section contains the minimum test pressure for tanks and filling ratios for gases in tanks and MEGCs. In the current code this information is found in P200. We consider the tank section to be a better location for this information, in line with ADR. The table of gases and test pressures in ADR provides these values in both bar and MPa, though it is not clear why ADR provides the value in both units. Since the value in bar is simply 10× the value in MPa, we propose that only the value in bar be included in the table to make reading easier.

4.3.4 – Special provisions applicable to classes 1 and 3 to 9

Again, the table that outlines the meaning of tank codes is included to promote reader understanding of tank codes. As with 4.3.3, a note has been added about this.

As with class 2, the table outlining the hierarchy of tanks has been deleted, as they are not relevant except where ADR tanks are in use. As with 4.3.3, a note has been added about this.

In addition to the hierarchy of tanks, ADR explains how particular tank types are assigned, described as “the rationalized approach”. This information is likely to be of limited interest to most transporters, and is likely to increase complexity without much benefit. This information could be included in future if it is needed.

Two general provisions have been incorporated:

- Restricting the outside temperature of a tank to 70°C.
- Requiring hoses and connecting pipes to be empty during transport.

4.3.2.4 – empty tanks etc

ADR includes the following provision for the transport of empty, uncleaned tanks, tube-vehicles and MEGCs:

Where empty tanks, tube-vehicles and MEGCs, uncleaned, are not closed in the same manner and are not leakproof to the same degree as if they were full and where the provisions of ADG cannot be complied with, they shall be carried, with due regard to adequate safety, to the nearest suitable place where cleaning or repair can be carried out. Carriage is adequately safe if suitable measures have been taken to ensure equivalent safety commensurate with the provisions of ADG and to prevent the uncontrolled release of the dangerous goods.

ADR often provides guidance on how to interpret it’s provisions where they may be unclear, the final sentence of this provision performs this function. In Australia, we expect this transport would take place at an officer’s direction using the powers they are provided. But this provision permits it to be undertaken generally, provided it meets the requirements of “adequate safety”, i.e. direction from an officer would not be required.

We are seeking input on whether this provision should be restricted to situations where an authorised officer or emergency services directs it.

Question 3: Should this requirement be modified to only permit the transport with the permission of a competent authority (in situations other than a dangerous situation)? Please explain your reasoning.

4.3.5 – Special provisions

The special provisions for use are likely to be generally applicable, and so have been included. In many cases they modify some of the “degree of filling” requirements or requirements relating to filling. Three special provisions of use have had notes appended to them or been modified as follows:

- TU9, which relaxes some tank requirements on UN 1202 (petrol) with a vapour pressure between 110 and 150 kPa. This is not relevant to AS 2809 designed tanks and may cause confusion to users without additional information.
 - This entry has been modified by a note to clarify that it only applies to ADR tanks.
- TU41, which requires that the suitability for tank transport of any UN 0331 (explosive, blasting, type B) be accepted by each competent authority along the journey.
 - We are not aware of any demand for the tank transport of class 1 substances. Preliminary consultation supported removing UN 0331 from eligibility for transport in tanks.

- As a result, this entry is proposed for deletion and replacement with an explanatory note, as it only applies to this UN number.
- TU43, which requires that tanks transporting UN 1744 (bromine and bromine solution).
 - This entry has been modified to require any tanks used for this transport comply with the Chapter 6.8 construction requirements in ADR. The demand for tank vehicle transport of bromine in Australia is likely to be very low. This will make the ADR tank provisions mandatory should the demand arise.

Question 4: Do you have any concerns with these proposed modifications to the list of TU codes? Please explain your reasoning.

4.2 Use of fibre reinforced tanks (Chapter 4.4)

This chapter governs the use of fibre reinforced plastics (FRP) tanks, other than FRP portable tanks. These provisions are relatively simple but provide some restrictions on the use of these tanks compared to metal tanks. These are quite like those that apply to FRP portable tanks.

Transitional provisions will be introduced to permit the continued use of FRP tanks that are in service at the commencement of the future code. As with other transitional provisions, continued compliance with the approval will be required.

4.3 Use of vacuum operated waste tanks (Chapter 4.5)

This chapter applies controls on the use of vacuum operated waste tanks. These were subject to consultation in working group paper #9, however since then it has become apparent that a minor edit is required to ensure that a vent system or raised stack is used when necessary. This edit requires that the vent shall be positioned either:

- (a) 15 m from, and directed away from the vehicle, or
- (b) In the case of a raiseable vent stack, at least 3.7 m above the vehicle

4.4 Large compartment tanks

Note: This section only applies to non-UN tanks. The large compartment rules for portable tanks will continue to be aligned to 7,500 L, as under the current Code. The 8,600 L threshold will only apply to non-UN tanks.

The current Code only recognises the division of tanks on tank vehicles into physically separated small (not more than 8,600 L) or large (more than 8,600 L) compartments. Tanks with large compartments are not permitted to transport liquids with a degree of filling between 15% and 80%. There are exemptions from this for liquefied gases, tanks for bitumen transport (UN numbers 1999, 3256 and 3257), and vacuum waste tanks.

The comparable threshold in ADR is for tanks greater than 7,500 L capacity. However, in ADR, a tank may be treated as a small compartment tank if it is divided by surge plates or partitions into sections no greater than 7,500 L capacity. A surge plate or partition is defined as:

“Surge-plates and partitions shall be dished, with a depth of dish of not less than 10 cm, or shall be corrugated, profiled or otherwise reinforced to give equivalent strength. The area of the surge plate shall be at least 70 % of the cross-sectional area of the tank in which the surge-plate is fitted.”

The current Code offers no such concession, and only considers individual compartments.

In the earlier consultations on tanks greater than 8,600 L, the preference expressed was for the large compartment thresholds to remain at their current values. The draft code has been written to achieve the following outcomes. These provisions are found in 4.3.2.2.4:

- The threshold between small and large compartments is set at 8,600 L, the same threshold as at present.
- The degree of filling for large compartment tanks must be not less than 80% and not more than 15% of the capacity of the tank (“the 80/15 rule”), the same rule as at present.
- Incorporate the ADR exemption of transport of liquid hydrogen and liquid helium from the 80/15 rule. ADR excludes liquid hydrogen and liquid helium from the requirement that applies to other low viscosity liquids based on their very low specific gravity (70 kg/m³ for liquid hydrogen and 125 kg/m³ for liquid helium). This substantially reduces the stability impacts of liquid slosh and surge in transport.

However, when incorporating provisions from ADR, we have also used the ADR practice of permitting a tank to be divided into surge plates or partitions. To enable this, we propose to:

- Introduce the ADR definition of surge-plates and partitions, meaning that a partition of less than 70% of the cross-sectional area is **not counted** for this purpose.
- Introduce the ADR practice of adding an “S” notation on the tank plate for compartments greater than 8,600 L that are divided into sections no greater than 8,600 L.
- Require any tank divided into sections greater than 8,600 L to comply with the 80/15 rule, while allowing this to take the form of a partition or surge-plate, in addition to individual compartments.
- Remove the permission for liquefied gases and bitumen tanks to operate without application of the 80/15 rule.

This would create issues for operators of current tanks, where division with surge plates may not have been common. To mitigate this problem, we will also introduce a transitional provision that will carry forward the existing permission for liquefied gases and bitumen-based products. As with other transitional provisions, this will apply to tanks in use at commencement of the new code, until the end of their useful life. ADR implemented a similar transition for liquefied gases in 2009, this can be found in section 1.6.3.34 in ADR.

Question 5: Do you support the extension of the 8,600 L and the 80/15 rule to tanks or compartments that have been appropriately divided by surge plates or partitions? Please explain your reasoning.

4.5 Mandating ADR tanks in certain cases

One option that the new code provides is the possibility to preference, or even mandate, the use of ADR-style tanks in certain cases.

ADR tanks are generally designed as pressure vessels, and so may be more appropriate for certain materials. This is especially the case for materials that were not directly considered in the development of AS 2809. Examples may include certain corrosive or toxic substances.

Additionally, a tank designed according to the requirements in ADR would be readily able to access the tank usage hierarchy. This hierarchy is like the one for portable tanks. A user needs to use a tank that meets or exceeds the requirements provided in the tank code, but in most cases may be used for any materials. This provides significant additional flexibility in tank selection compared to AS 2809.

As discussed in chapter 6 (which deals with Part 9 of the draft Code), a tank vehicle approved with an ADR tank would still need to comply with AS 2809.1. A mandate to use an ADR tank would only relate to the design and use of the tank itself. It is expected the vehicle would need to comply with AS 2809.1.

Question 6: Are there substances that you consider should require the use of ADR-style tanks, or principles on which this should be based? Please explain your reasoning.

4.6 Transitional provisions

The future code will include transitional provisions for tanks that are in use at the time of the Code's introduction. However, if there are any specific situations you are aware of that may need transitional provisions, please provide information so that we can consider them for incorporation into the Code.

Question 7: After reviewing the Code provisions, are there any additional transitional provisions relating to the use of tanks that you consider may be necessary? Please provide details and your reasoning.

5 ADG Code Part 6 – Tanks and similar containment systems

Key points

- Part 6 of the Code deals with the design and construction requirements for various means of containment for dangerous goods.
- The chapters in this part of the consultation paper deal with tanks, including those made from fibre-reinforced plastics and for vacuum waste tanks, along with bulk containers for solid dangerous goods.
- There have been extensive changes to this part of the Code, to ensure that tanks designed according to Australian standards are properly referenced and permitted.
- The inclusion of these chapters also ensure that the general principles relating to tank design are readily available to users of the Code.

Earlier consultations showed support for ADR tanks as an alternative design code. While this was seen as valuable, the preferred method varied. There was strong support for the continued use of relevant Australian standards, especially AS 2809.

There was also support for incorporating the general tank design requirements from ADR and AS 2809 into the Code. This would leave the detailed technical requirements to the AS 2809 series of standards. Furthermore, the current code permits the use of tanks designed to two other standards: AS 1210 for dangerous goods, and AS/NZS 2022 for anhydrous ammonia. To support this, the scope and general provisions provide for tanks to conform to either AS 2809 or ADR tank design requirements. The future code will require that a designer choose one or the other systems.

Notes have been added throughout to support users should they wish to use ADR tanks, and to clarify the continued support for AS 2809. As noted earlier, ADR tanks may be particularly useful for substances that were not considered during the development of AS 2809.

5.1 Tank design and construction (Chapter 6.8)

We expect that most tanks in Australia (other than portable tanks) will continue to be designed to AS 2809. This means including the full text of the ADR tank requirements (sections 6.8.2 to 6.8.5) would add about 50 pages to the Code with very little benefit at present. These sections are referenced but are not included. Users who need to use these sections for ADR-conforming tank design may do so by obtaining a copy of ADR, which is available online at the UNECE website². Should more extensive demand arise for ADR tanks, these sections may be incorporated in the future.

Two new sections have been written to incorporate the general design requirements of ADR and AS 2809, numbered as 6.8.6 and 6.8.7. These sections are derived from ADR sections

² <https://unece.org/about-adr>

6.8.2 and 6.8.3 but have been condensed to the relevant general requirements only. The special provisions for tank construction, equipment, approval, tests or marking have been excluded. By drafting these new sections, the future maintenance of these sections of code is simplified.

The current code does not provide any useful guidance on the design of a vehicle with multiple elements for the transport of compressed gases. Section 6.8.7 will incorporate these requirements. As noted already, the requirements for gas transport (including 6.8.7) will be subject to more detailed consultation with the gas industry.

6.8.1.5 – Conformity assessment, type approval and inspections procedures

ADR uses a system of approved inspection bodies for type approvals of tanks and vehicles. These sections provide guidance on how to apply the administrative requirements relating to approvals, manufacture, and initial & in-service inspections. The detailed requirements are in section 1.8.7 of ADR.

We have not adopted this system as is. Doing so would mean a major reconfiguration of the Australian tanker industry, with limited benefits. But we propose edits to the requirements in 6.8.1.5 and section 1.8.7 to define the requirements for these processes in line with Australian practice.

The draft of Chapter 6.8 provides requirements to ensure that:

- The type examination is undertaken by a professional engineer.
- The approval certificate is issued by a competent authority.
- Manufacture is overseen by a qualified person and is subject to a quality assurance system if overseen in-house.
- Competent authorities may require verification of conformance before licensing a tank vehicle. They may direct such an inspection to a particular, qualified person.
- Inspections are undertaken at intermediate (2.5 year) and periodic (5 year) intervals by a qualified person. Additional exceptional inspections will be needed after an incident or repair.

The detailed controls for these requirements are included in Section 1.8.7 of the future code. These have been included in this consultation, as they contain important information relating to approvals and inspections.

These requirements are not clearly stated in the current code but are dispersed between the Code, Regulations and competent authority policies. This section has been rewritten to define who may undertake quality assurance/vetting processes. It includes parameters to ensure that they are done properly. This will provide a clear, minimum set of expectations for industry and regulators when carrying out these processes.

Quality assurance has been included when internal oversight is required. Quality assurance is already a defined term in the current Code, ADR and UN model regulations. It includes a quality system certified to ISO 9001, but certification is not mandated.

Question 8: After reviewing the requirements in 6.8.1.5 and 1.8.7, are there controls that you consider are missing or need to be amended? Please provide details.

6.8.6 – Requirements applicable to all classes

Section 6.8.6 is a new section based on the requirements of section 6.8.2 of ADR, and the current requirements in AS 2809. As already noted, we received support to include general requirements, but will leave the details to standards. This section has been written to achieve these goals.

The main source for the requirements is 6.8.2 in ADR. However, the specific details that ADR includes have been removed where they would duplicate or conflict with the Australian Standards that referenced in 6.8.6.6.

Where sections from ADR are not required, these have been reserved and noted. This preserves the alignment of numbering between 6.8.2 and 6.8.6, supporting effective maintenance of the Code. It also retains the distinction between tanks designed according to ADR and to Australian standards. It also means that if a new provision is introduced into ADR, it can be considered for adoption in 6.8.6.

A detailed analysis of all the provisions have not been provided, but some particular items are included as per below:

6.8.6.3 – Type examination and approval

This section requires that tanks undergo examination and approval prior to entry into service. As with current practice, more than one tank may be constructed to a particular approval.

This section allows minor variations within an approval but does not delineate what those permissible variations are. Any variations must lessen loads or stresses, or increase the safety of the design. These variations must be described in the approval certificate. A note has been added to clarify that approval of such variations is at the discretion of the competent authority.

6.8.6.4 – Inspections and tests

All ADR tanks are designed as pressure vessels, which is designated as part of the tank code. This code provides the calculation pressure, which is equal to at least the test pressure of the tank. Even “G” tanks (for gravity discharge only) are pressure vessels with a nominal design pressure. This is at least twice the static pressure of water, or the substance to be carried (if the density is greater than 1 kg/L).

The tanks are required to undergo the following tests (note that ADR varies the inspection window depending on the tank usage, unlike the draft code):

- Hydraulic pressure tests - during commissioning and at the periodic inspection (5 or 6 years)
- Leakproofness tests, during commission, at the periodic inspection (5 or 6 years) and the intermediate inspection (2.5 or 3 years).

We have made the following changes for tanks designed according to Australian Standards:

- Inspection intervals are standardised at 5 years for periodic inspections, and 2.5 years for intermediate inspections. Vehicle inspections (as in AS 2809.1) are dealt with in Part 9, and a note on this has been included.
- The hydraulic test has not been included.
- The leakproofness test for the periodic inspection has been replaced by the hydrostatic test from AS 2809. The requirement for hydrostatic test marking is carried over.
- A review of the tank to its design standards and approval has been incorporated into the periodic inspection, taken from AS 2809.1.

- Typically, hatch, vent and valve inspections are carried out as a hydrostatic test at 2.5 year intervals, so this has been incorporated. Where inappropriate, such as for bitumen tanks, the inspection has been provided as an alternative to the hydrostatic test.
- Pressure vessels subjected to detailed inspection programs are deemed to comply. A program including AS/NZS 3788, AS/NZS 4481, AS 3992, or AS 4037 (as appropriate for the tank), will meet these inspection requirements.
- A specific requirement that inspection failures must be corrected has been included. In ADR, this is included in EN 12972, the EN standard for testing, inspection and marking of tanks. This will clarify that a failure found during inspection must be corrected.

6.8.6.5 – Marking

The marking requirements for tanks have been taken from the current code, with the following modifications:

- A requirement for multicompartment tanks to have the capacity of each compartment listed.
- Where the tank or its compartments are divided by surge plates into sections less than 8,600 L, the addition of an “S” symbol to indicate this has been included from ADR.
- The types of dangerous goods that the tank is approved to transport are required to be marked.
 - Note, the term “type” has been used, as the dangerous goods permitted can be very narrow, such as a single UN number, or broad, such as multiple classes.
- The name of the owner or operator of the tank has been included from ADR.
- The requirement for units of measurement after numerical values is a footnote in ADR, it has been converted from a footnote to part of the Code text.

Question 9: Are there marking requirements in the draft code that you consider are missing, excessive or should be amended? Please provide details.

6.8.6.6 – Referenced standards for design and construction

This section includes references to AS 2809 parts 2 – 6, AS 2022 and AS 1210. Some modifications from ADR have been made to reflect the differences between the two systems. For instance, ADR requires only a single standard be used. This has been deleted to clarify that multiple parts of AS 2809 can be used.

The table of referenced standards has been prepared as in ADR. We have made some amendments to clarify what happens when new standards are released as follows:

- New editions of a standard can be used immediately.
- The Code will define when a standard is allowed to be used for approval.
- The Code will also define when existing approvals are withdrawn.

This will provide flexibility to competent authorities and industry to use new innovations. But this will also provide clarity on how long standards and approvals remain current.

6.8.6.7 – Alternative criteria to referenced standards

ADR provides for alternative technical codes to be used to reflect progress in design and technology or where a standard does not adequately address an issue. The use of alternative technical codes need to be transmitted to the UNECE when they are used. These requirements are not relevant in the ADG Code and have been removed. However, because of the risk of unforeseen scenarios a permission to use alternative criteria is provided. This is based on 6.10.2.1.3 of the current Code, in place of the ADR requirement.

6.8.7 – Additional requirements applicable to class 2

Most tank vehicles constructed for class 2 substances will remain covered by the requirements of the standards referenced in 6.8.6. Therefore, this section mostly deals with the design, construction and approval of tube-vehicles and multiple-element gas containers.

As already noted, additional consultation will be undertaken directly with the gas transport industry to ensure that these provisions have been properly designed.

Question 10: After reviewing the requirements in Chapter 6.8, are there controls that you consider are missing or need to be amended? Please provide details.

5.2 Requirements for portable tanks constructed from fibre-reinforced plastics (Chapter 6.9)

This chapter contains the requirements for UN portable tanks and is fundamentally the same as in the current code. It has been included in this draft to support the inclusion of chapter 6.13 for other tanks made of fibre-reinforced plastics.

5.3 Requirements for vacuum operated waste tanks (Chapter 6.10)

In 2013, the Competent Authorities Panel adopted requirements from ADR and Recommended Practice 2219³ (from the American Petroleum Institute). This adoption manages the design, construction and operation of vacuum waste tanks used for dangerous goods.

This chapter in ADR has been incorporated into the future code.

A minor amendment has been made in the scope section to note that the requirements in 6.8.2.1.19 – 6.8.2.1.21 apply only to tanks designed according to ADR. Therefore, they are **not relevant** for tanks designed according to AS 2809.

RP 2219 includes a requirement that a vent system be designed to discharge more than 15 m away from the vehicle, or using a stack raised 3.7 m above the vehicle. This has been added into the construction requirements in 6.10.3.8(a). As already noted, a requirement to use this vent is included in Chapter 4.5.

³ <https://www.api.org/oil-and-natural-gas/health-and-safety/refinery-and-plant-safety/occupational-safety/rp-2219>

Finally, the additional inspection requirements applicable to vacuum waste tanks have been amended to include a reference to 6.8.6.4.3. This has also been aligned to a 2.5-year interval, as per the other tank inspection requirements.

Question 11: After reviewing the requirements in Chapter 6.10, are there controls that you consider are missing or need to be amended? Please provide details.

5.4 Requirements for bulk containers (Chapter 6.11)

ADR has fundamentally the same rules for the design and construction of bulk containers as the current code (found in Chapter 6.8), and the UN model regulations.

One minor difference between the codes is found in 6.11.4.3. In the current code this provision reads:

Vehicles must comply with the requirements of, and be acceptable to, the competent authority responsible for land transport of the materials to be transported in bulk.

ADR marks this provision as reserved because it includes Chapter 9.4. This chapter contains requirements for vehicles transporting solids in bulk containers. With the introduction of Chapter 9.4 into the future code, this provision is no longer required. A consultation question on these requirements is included below.

Question 12: After reviewing the requirements in Chapter 6.11, are there controls that you consider are missing or need to be amended? Please provide details.

5.5 Requirements for tanks constructed from fibre-reinforced plastics (Chapter 6.13)

Chapter 6.13 contains provisions for the design and construction of tanks made of fibre-reinforced plastics. These provisions are derived from the requirements contained in chapter 6.9 or refer to them.

Limited amendments have been made to this section. These are mainly to ensure that references to ADR-style tanks (in 6.8.2) include Australian Standards tank requirements (in section 6.8.6) if appropriate.

ADR provides test and calculation pressures for ADR-style tanks. This is not generally the case for tanks designed according to Australian Standards. A new section (6.13.1.4) has been introduced to ensure that the designer determines appropriate values for these pressures.

Question 13: After reviewing the requirements in Chapter 6.13, are there controls that you consider are missing or need to be amended? Please provide details.

5.6 Transitional provisions

The future code will include transitional provisions for tanks that were constructed prior to the introduction of the future code. However, if there are any specific situations you are aware of that may need transitional provisions, please provide information so that we can consider them for incorporation into the Code.

Question 14: After reviewing the Code provisions, are there any additional transitional provisions you consider may be necessary? Please provide details and your reasoning.

6 ADG Code Part 9 – Vehicle provisions

Key points

- Part 9 of the future code will include the requirements for vehicles transporting dangerous goods.
- Most of the requirements apply to tank vehicles, but some additional requirements will also apply to vehicles transporting other dangerous goods.
- This part will ensure that regardless of the means of containment for the dangerous goods, the vehicle is required to meet appropriate standards.
- Vehicles for explosives will be subject to separate development, but the structure of this part will support their inclusion.

Unlike the changes proposed for part 4 and part 9, this section significantly reorders the provisions. The rationale for the structure of Part 9 of ADR are unclear, but they are likely to be confusing for an Australian reader. ADR mixes the requirements for FL, AT and EX vehicles. It splits the provisions for incomplete and completed vehicles into separate chapters.

While it would be possible to carry this structure into the future code, this would likely be very confusing for users of the Code. We considered that the benefits in ease of understanding outweighs the cost to the maintenance process. Consequently we restructured the section into a logical sequence for users of the Code. This restructure will make maintenance of this section more complex for the NTC and competent authorities, but much more straightforward for users of the Code. The chapters have been retained to preserve references in other parts of the Code. But the requirements for incomplete and complete vehicles have been combined.

The result is a significant re-write of the requirements of Part 9 of ADR. It incorporates the requirements of AS 2809.1 as it applies to vehicles used in Australia. At present, much of this information is restricted to a purchaser of AS 2809.1, so this will ensure that these requirements are transparent to users of the Code.

The sources of these provisions are:

- ADR, especially where they align with the requirements of AS 2809.1
 - Some additional requirements that are not addressed in AS 2809.1 have been incorporated as well.
- AS 2809.1, where ADR is silent on a requirement that is contained in AS 2809.1

The chapters on class 1 vehicles (Chapter 9.3) and Mobile Processing Units (MPUs, Chapter 9.8) will be prepared in conjunction with the explosives working group to cover this. This may have some minor impacts on the other chapters in Part 9.

6.1 General requirements for vehicles (Chapter 9.1)

This chapter deals with matters applying to vehicles used for dangerous goods transport generally. It covers scope, definitions, vehicle approvals, inspection and maintenance.

9.1.1 Scope and definitions

This section has been modified from ADR by removing unnecessary definitions. The reference to the EN 590 standard for diesel has been removed. Under ADR, diesel meeting the EN 590 standard (with a flash point of no less than 55°C) is permitted for transport in “AT vehicles”, which are subject to reduced requirements compared to “FL vehicles”. Ongoing work on development of a paraffinic diesel standard by the Department of Climate Change, Energy, the Environment and Water may impact on this. Consultation will be undertaken on how to address potential changes in the diesel fuel standards as they are developed further.

Tank vehicle definitions

ADR includes thresholds for when a vehicle needs to comply with the FL and AT tank requirements. For fixed tanks, demountable tanks and tube-vehicles (i.e., tank vehicles) this threshold is 1 m³ (1,000 L). For tank-containers, portable tanks and MEGCs, this limit is 3 m³ (3,000 L).

Additional definitions

The following definitions are proposed for inclusion in the future code:

- “dangerous goods containment system” means the shell, service and structural equipment of a fixed-tank, demountable tank, tank-container, portable tank, or the elements, service and structural equipment of a tube-vehicle or MEGC.
 - This definition is included to permit a distinction between the parts of a transport unit that perform a product containment function and those that are related to the vehicle or wagon, without having to list each type when they appear collectively.
- “AN vehicle” means a vehicle that is intended for the carriage of UN 3375, UN 2426, UN 1942 or UN 2067 in tanks, bulk containers or IBCs. Where an AN vehicle is used for tank transport, it shall additionally comply with the requirements of an AT vehicle.
 - This definition has been included to support the introduction of special requirements for explosion risk goods. More information on this is provided in this section below.

9.1.2 Approval of FL and AT vehicles

This section requires that completed FL and AT vehicles are approved before being used for transport of dangerous goods. This approval requires a qualified person to review the vehicle and declare its conformity to the requirements of Chapter 9.2. At this stage no additional detail has been provided for the definition of suitably qualified person. This will be left to competent authorities to determine, unless more detail is included.

This includes that the containment system for the dangerous goods complies with the relevant requirements. When the containment system is already approved (such as for re-horsing), a verification that it conforms to its approval will be needed.

The draft code includes a note to clarify that the requirements for tank approval and vehicle approval have been separated in the Code. The note makes clear that a competent authority may undertake these approvals at the same time.

Question 15: What qualifications or experience do you consider appropriate for the person reviewing the completed tank and vehicle? Please explain your reasoning.

Question 16: Do you consider that the Code should more clearly define a suitably qualified person? Please explain your reasoning.

9.1.3 Certificate of approval

ADR includes a template of the approval certificate. There is no standard approval certificate in Australia at present, though many jurisdictions use a consistent format.

Two options are presented here for consideration:

- Option 1: a standardised template for tank approvals
- Option 2: a standardised list of minimum information to be included in the approval.

Under either of these options, competent authorities issuing approvals will remain able to add any additional information as they deem necessary. Inclusion of this would only set minimum requirements for the document.

Question 17: Do you have a preference between providing a standardised template or a list of minimum information to include here? Please explain your reasoning.

9.1.4 Compliance plate

The required compliance plate information is primarily included in Chapter 6.8, and AS 2809.1 contains some additional plate and marking requirements. This section provides an outline of these requirements to ensure that readers are readily able to find them.

9.1.5 Modification of vehicles

This section has been derived from the requirements in Section 1.8.7.2.2.3, to ensure that they apply to vehicles as well. When a vehicle is modified in a way that impacts its approved design, additional approval by the competent authority will be required. Inclusion of this provision continues the status quo, but makes the requirement clear.

9.1.6 Initial inspection of completed FL and AT vehicles

This section includes a requirement that the vehicle be inspected prior to use to ensure it conforms to the requirements of the Code. This section also includes a draft requirement for a vehicle dossier to be completed at the time of inspection. It then needs to be handed to the purchaser of the vehicle and kept as part of the tank record.

The vehicle dossier is under separate development along with the Competent Authorities Panel and several tank vehicle manufacturers. Additional consultation on this will be undertaken separately. References to a vehicle dossier should be considered placeholders at this time.

9.1.7 Inspection and maintenance of completed vehicles

The draft code requires that the items referenced in Chapter 9.2 are subject to an inspection and maintenance program for the vehicle. This also includes an that the inspections correspond to the program in AS 2809.1. This will provide readers of the Code with detailed information on the inspection and maintenance requirements. This includes the expected frequency.

An additional option would be to include a list of the items to be inspected, as found in AS 2809.1. Such a list will need to be developed, and if included, most likely as an appendix.

Question 18: Do you consider it necessary to include a detailed list as found in AS 2809.1? Please explain your reasoning.

A provision to require inspection and maintenance for vehicles complying with Chapter 9.4, 9.5 or 9.6 has been included. This is a general requirement that an inspection and maintenance program be instituted for these vehicles.

Vehicles for explosion risk goods (ammonium nitrate-based products)

After investigating an explosion involving the transport of ammonium nitrate emulsion in 2022, the WA competent authority released a report into the incident⁴. This report identified potential recommendations for vehicles transporting division 5.1 “AN explosion risk goods” (a term defined in WA legislation). These substances include:

- UN 3375 – Ammonium nitrate emulsion, suspension or gel
- UN 2426 – Ammonium nitrate, liquid (hot, concentrated solution)
- UN 1942 and UN 2067 – ammonium nitrate

The recommendations that have been proposed that impact on vehicle construction are:

- Vehicles transporting AN explosion risk goods should be fitted with a hub and tyre temperature and pressure monitoring system.
- Automatic fire suppression systems should be considered for tyres of vehicles transporting AN explosion risk goods.
- Mudguards with heat shielding properties (e.g. stainless steel) should be fitted, to protect the tank or cargo containing AN explosion risk goods from the heat radiation of a tyre fire.
- Vehicles should be fitted with a pressurised foam or water-based firefighting system with sufficient capacity to prevent the fire spreading to the load.
- Consideration should be given to the practicality of fitting fire screens beneath loads of AN explosion risk goods.
- Critical components of an AN explosion risk goods vehicle’s running equipment should be protected from rocks and debris for the safe operation of the vehicle.

The vehicle provisions in the new code provides a useful way to introduce requirements for these vehicles by creating a new vehicle type. This will allow the Code to either reference existing provisions for any vehicle transporting these substances, or to create additional requirements where they don’t currently exist in the draft. Including these requirements in the Code will also make these requirements more visible to users of the Code. For example, 9.2.3.5.1 in the draft contains the following requirement (to which the AN vehicle type can be easily added):

⁴ Department of Mines, Industry Regulation and Safety, 2023, Ammonium nitrate emulsion tanker trailer explosion: Incident investigation report. Department of Mines, Industry Regulation and Safety, Western Australia, 115pp.

The following vehicles shall be equipped with an automatic fire suppression system for the compartment where the internal combustion engine propelling the vehicle is located:

- (a) FL vehicles carrying liquefied and compressed flammable gases with a classification code including an F;*
- (b) FL vehicles carrying packing group I or packing group II flammable liquids.*

To address the need for these changes, the future code will incorporate an “AN vehicle” to accommodate these requirements. The applicable requirements will be developed separately, but a draft definition is provided here:

“AN vehicle” means a vehicle that is intended for the carriage of UN 3375, UN 2426, UN 1942 or UN 2067 in tanks, bulk containers or IBCs. Where an AN vehicle is used for tank transport, it shall additionally comply with the requirements of an AT vehicle.

Some minor consequential changes will also be made to the dangerous goods list and Part 7 to ensure that AN vehicles are mandated for the transport of ammonium nitrate.

Question 19: Do you have any concerns or proposed changes to the draft definition for the AN vehicle type? Please explain your reasoning.

6.2 Requirements for construction of vehicles (Chapter 9.2)

Chapter 9.2 of the future code will contain the design and construction requirements for vehicles that are required to comply with the requirements for AT or FL vehicles. This chapter blends requirements from the following:

- ADR Chapter 9.2 – construction requirements for AT and FL vehicles
- ADR Chapter 9.7 – completed vehicle requirements for AT and FL vehicles
- AS 2809.1 – Road tank vehicles for dangerous goods – general requirements

This chapter is a significant restructure from ADR, to reflect the needs of Australian users of the Code. In general, these are:

- Layout in a more logical sequence, and removal of detailed requirements which are better covered elsewhere, such as in AS 2809.1.
- Removal of references to UNECE vehicle regulations. These have not been replaced, as these types of vehicle requirements (such as braking systems) are best left to the Australian Design Rules.
- Removal of references to ISO and EN standards. In most cases (such as references to IEC 60079), these have been adjusted to the equivalent Australian standards.

As noted earlier, it is expected that tank vehicles will not be permitted to transport explosives. This removes the need to include requirements for these vehicles from Chapter 9.2, as is found in ADR. The relevant requirements for explosives vehicles will be developed with the explosives working group for inclusion in either chapter 9.3 or 9.8 as appropriate.

Some Specific items that have been proposed for removal include:

Item	Justification
<p>In “fuses and circuit breakers”, the references to:</p> <ul style="list-style-type: none"> ▪ Connection from the battery to the endurance braking system. ▪ Connection from the battery to axle lifting mechanism. 	<p>These are not mentioned in AS 2809 as circuits that can be left unprotected.</p>
<p>In “lighting” the reference to light sources with a screw cap not being permitted.</p>	<p>AS 2809 contains extensive requirements for lighting for hazardous areas.</p>
<p>The list of vehicle/trailer electrical connections deemed to comply with the connection requirements.</p>	<p>All references are to ISO standards or UN regulations.</p>
<p>References to the installation and use of combustion heaters.</p>	<p>Combustion heaters are not widely used in Australia on DG vehicles.</p>

6.3 Requirements for explosives vehicles (Chapter 9.3)

Chapter 9.3 is left empty as a placeholder for vehicles for class 1 transport. These provisions will be developed separately with the explosives working group.

6.4 Vehicles for packages (Chapter 9.4)

Chapter 9.4 includes requirements for vehicles transporting packages of dangerous goods. These provisions are relatively simple and have adopted in whole.

This chapter includes draft provisions for vehicles using packages as if they are tanks. See 6.11 below for more detailed discussion of this issue.

Question 20: Do you consider that a vehicle used for the transport of packages should be subject to any amended or additional controls? Please provide details and your reasoning.

6.5 Vehicles for bulk transport (Chapter 9.5)

Chapter 9.5 includes requirements for vehicles transporting solid dangerous goods in bulk. These provisions are simple and have adopted in whole.

The body of a vehicle used as a bulk container must meet the bulk container requirements. This includes any approval requirements. While this is not a new requirement in Australia, it will be clearer than at present.

Question 21: Do you consider that a vehicle used for the bulk transport of solids should be subject to any amended or additional controls? Please provide details and your reasoning.

6.6 Vehicles for temperature controlled substances (Chapter 9.6)

Chapter 9.6 includes requirements for vehicles transporting dangerous goods that require temperature control. These provisions are relatively simple and have adopted in whole. The current code contains general guidance on ensuring temperature control. The provisions in this section ensure that appropriate risk controls are included on such a vehicle. This manages the particular hazards from the temperature control requirement more effectively.

Question 22: Do you consider that a vehicle used for the transport of temperature controlled substances should be subject to any amended or additional controls? Please provide details and your reasoning.

6.7 Chapter 9.7 – Completed vehicles

Chapter 9.7 is marked as “reserved” as the content included here in ADR has been moved to chapter 9.2. There are a very small number of references to this chapter outside of Part 9 that will require consequential amendment.

6.8 Chapter 9.8 – Mobile processing units

Chapter 9.8 is a placeholder for MPUs for the manufacturing of explosives. These provisions will be developed separately with the explosives working group.

6.9 Transitional provisions

Transitional provisions specific to tank vehicles will be needed as a part of the transition to these new vehicle provisions. These will be subject to more detailed development and drafting along with other transitional provisions. These will ensure that:

- Vehicles that are in use when the future code is implemented may continue to be used.
- All tank vehicle approvals do not immediately lapse when the new code is implemented. It may be appropriate to stagger these provisions so that older approvals expire sooner than newer ones. An example is provided below that shows a possible concept for this.

An example provision for tank vehicles that are currently in service:

Vehicles meeting the definition of completed FL or AT vehicles that were in service at the commencement of the future code may continue to be used, providing the following conditions are met. This includes vehicles that were built to an existing approval in accordance with transitional provisions:

- (a) *The completed vehicle was properly approved by a competent authority.*
- (b) *The completed vehicle, and its use, remains in accordance with that approval.*
- (c) *The vehicle is inspected and maintained in accordance with the relevant requirements in part 9 (section 9.1.7 in the attached draft code).*

An example provision for approvals that are currently in use. Note that these dates are provisional, and included for illustration purposes only:

Approvals for vehicles meeting the definition of completed FL or AT vehicles that, at the commencement of the future code, have not expired or have not been otherwise cancelled by a competent authority may continue to be used to build tank vehicles in accordance with the following:

- (a) *Approvals issued on or before 31 December 2021 may not be used after 31 December 2025.*
- (b) *Approvals issued after 31 December 2021 and before the introduction of the future code may not be used to build a tank vehicle after 31 December 2026.*

Question 23: After reviewing the Code provisions, are there any additional transitional provisions you consider may be necessary? Please provide details and your reasoning.

6.10 Vehicles transporting portable tanks

Generally, UN portable tanks (such as isotanks) are excluded from the scope of this paper. However, the ADR vehicle definitions capture vehicles transporting portable tanks.

It is possible for a portable tank to be mounted on a vehicle and used as a tank vehicle. In this case, dangerous goods are filled or emptied from the vehicle while the tank is on the vehicle. A tank and vehicle used in this way are like a "traditional" tank vehicle. Therefore, it's appropriate to include controls on this transport scenario.

Requiring all vehicles with portable tanks where transfer occurs to meet the tank vehicle requirements may be excessive. AS 2809.1 addresses this issue by excluding "single filling or discharge of a portable tank in intermodal service" from the scope of the standard. However, it is not clear what effect this modification to the scope of the standard achieves in practice, as portable tanks are excluded from the definition of tank vehicle.

In the current Code and MSI, portable tanks are exempted from the definition of tank vehicles entirely. While this limits over-regulation, it leaves a significant gap in the legislation when a portable tank is used as if it is a tank on a tank vehicle. These "pseudo-tank-vehicles" are then subject to under regulation.

The following two issues are presented together, along with options. Depending on the option chosen, issues may arise during implementation of the future code. Transitional provisions may be needed to ensure vehicle availability during implementation. The vehicle definitions may also need minor amendments modification to ensure applicability.

Note that tank vehicles consisting of fixed-tanks or demountable tanks and tube-vehicles are not affected by this issue, as they will already be subject to the requirements of part 9.

Vehicles transporting portable tanks, tank-containers and MEGCs, where no transfer occurs while on the vehicle

Under the current Code, vehicles transporting portable tanks, tank-containers and MEGCs do not need approval. Requiring approval of these vehicles would create a significant amount of work for industry and regulators. It would also substantially reduce flexibility in vehicle selection. This is likely to provide limited benefits. As a result, it is not included as an option. Two remaining options are presented here, though others may be considered.

Option 1: Exempt these vehicles from the approval requirement of Part 9

These vehicles would still need to meet the relevant design and construction requirements outlined in Part 9 of the draft Code. They would not need to undergo competent authority approval. This is comparable to prime movers meeting tank vehicle requirements under the current code. They are not approved but must adhere to the technical requirements any time they are towing a dangerous goods tank trailer.

Option 2: Exempt these vehicles from Part 9 entirely, only when no transfer occurs while the tank is on the vehicle

When no transfer from a vehicle occurs, the risk is substantially reduced. In this scenario, the design and construction requirements for the vehicle are less critical. Exempting these vehicles would continue the current exemption for vehicles transporting these tanks. However, this would be only in cases where dangerous goods transfer does not occur into or out of the tank while on the vehicle. It would not apply when transfer occurs while the tank is on the vehicle (covered in the next subsection).

Vehicles transporting portable tanks, tank-containers and MEGCs, where transfer occurs while on the vehicle

Where a tank is filled or emptied on a vehicle, the risk profile changes. However, this risk profile varies depending on the way the vehicle is used. Requiring all such vehicles to fully comply with Part 9 has been rejected as it is probably too onerous. Two remaining options are presented here, though others may be considered.

Option 1: Exempt single discharge tanks from certain requirements in Part 9

This option would mean that when a tank is used for single discharge, certain requirements are observed. The critical requirements are included, while those that are not practicable are excluded. Examples of such requirements are:

- approval (as outlined in the previous section above); and
- brake interlock driveaway protection, where the tank and vehicle must interact with one another.

In contrast, provisions that only apply to the vehicle would still be needed. These include items such as wiring, battery isolation, roll-over switches and similar requirements.

An example of the requirements for this option is:

The following requirements of Part 9 does not apply to vehicles used for the carriage of dangerous goods in tank-containers, MEGCs or portable tanks, or other packages for dangerous goods that is emptied only once while on the vehicle in intermodal service:

- *Approval of vehicles*
- *Brake interlock driveaway protection*

Option 2: Exclude single discharge from the scope of Part 9 entirely

This option would exempt portable tanks from the requirements of Part 9, but only when used for a single discharge in intermodal service. This would mean that pseudo-tank-vehicles are captured as tank vehicles. But intermodal tanks discharged only once would follow the existing rules.

An example of the requirements for this option is:

Part 9 does not apply to vehicles used for the carriage of dangerous goods in tank-containers, MEGCs or portable tanks, or other packages for dangerous goods that is emptied only once while on the vehicle in intermodal service.

Note: this is intended to permit a single trip to empty a tank or other package while on a vehicle, however if any tank or package (such as an IBC) is permanently or semi-permanently mounted on a vehicle, the vehicle is treated as a tank vehicle.

6.11 Vehicles transporting packages, where transfer occurs while on the vehicle

Certain larger packages, especially IBCs, may be mounted on vehicles and transfer to or from the package while on the vehicle. In some cases, these vehicles are essentially a tank vehicle. While in others the package may only be filled or emptied once while on the vehicle. This is common in industries where smaller quantities than is economical for a full tank vehicle are transported. Examples include agriculture and helicopter aviation.

Requiring all such vehicles to meet all the requirements of Chapter 9.2 has been rejected as excessive. By exempting single filling or emptying from these compliance requirements, the status quo is maintained.

By contrast, when a package is treated as if it is a tank, it is reasonable to impose clearer compliance requirements. This has been recognised as a regulatory gap in the past. This would close that gap, while still providing for cases where full AS 2809 tank vehicle requirements are excessive.

Draft provisions that require vehicles where the package is treated as a tank on a tank vehicle have been drafted in 9.4.1.4, along with an explanatory note.

One more proposal would be to consider whether these vehicles should be included or exempted from the need to get a vehicle approval. This would relate only to the vehicle, not to the package itself.

Question 24: Do you consider that a vehicle that uses a package as a tank should require, or be exempted from approval? Please explain your reasoning.

6.12 Combustion heaters

ADR contains an extensive set of requirements for combustion heaters. Initial enquiries suggests that these are not common in Australia, and so the draft code includes a general prohibition on combustion heaters in AT and FL vehicles. This makes it unnecessary to carry over to the future code, and unless objections to this are received, we will not be including these provisions in the future code.

It is expected that a similar restriction would be applied to explosives vehicles as well.

This provision has been drafted to exclude a combustion heater that forms part of a vehicle approval, such as a burner system that is fitted to a tank vehicle for bitumen-based products.

One consideration that ADR does not address that may be of importance in Australia is the use of aftermarket air conditioners fitted to a vehicle. Some of the risks from an air conditioner may already be addressed. For example, the electrical installation of such an air conditioner would be covered by the electrical equipment provisions.

To address this and similar risks generally, a draft provision is included at 9.2.2.7.10. This provision requires that any equipment that is fitted to the vehicle does not create a danger to the load through heating or ignition.

Question 25: Do you consider it necessary to permit the use of combustion heaters on vehicles used for the tank transport of dangerous goods in Australia? Please explain your reasoning.

If there are vehicles that are already in use fitted with combustion heaters, it would be possible to introduce a transitional provision to permit these to continue to be used.

Question 26: Do you consider it necessary to include transitional provisions for combustion heaters for dangerous goods vehicles in Australia? Please explain your reasoning.

7 Next steps

Key points

- Transitional provisions will be introduced to ensure continuity of existing vehicles, equipment and approvals.
- Consequential changes may result from responses to this paper, or additional work yet to come on the future code, including the enabling legislation.
- Guidance material will be prepared to support the introduction of the future code.

Question 27: Are there any other general comments that you would like considered that have not been addressed in earlier comments? Please provide details.

7.1 Transitional provisions

As noted in this document, there will need to be transitional provisions introduced for existing tanks and vehicles. This will ensure that tanks and vehicles that are in use at the commencement of the future code are able to continue to be used. Tanks and vehicles have a long service life, and the introduction of the Code will not prevent the use of existing vehicles without good reason.

The use of clear transitional provisions will result in a well-defined set of principles for the use of existing equipment. ADR includes detailed transitional provisions in Chapter 1.6. This assists a user of the Code to readily understand when a transitional provision applies to their situation and puts them in one place. Where appropriate, signposts to these transitional provisions will be placed in notes to the regulatory text in the main body of the Code.

Transitional provisions will be developed for the Code in its entirety, based on discussion papers. Transitional provisions will generally be ongoing, except where a time limit is appropriate. These include:

- cases where the current practice or equipment is unsafe or inadequate, but needs to continue in the short term; or
- where the transitional provision prevents administrative problems during the transition. For example, preventing approvals from lapsing immediately.

7.2 Consequential changes

Aside from transitional provisions, there are likely to be consequential changes to other parts of the Code. Due to the scale of the changes, we need to ensure that no significant gaps result. There may also be some changes made after reviewing responses to this paper, especially where options are still open.

The introduction of the Code will also include legislative reforms. During that process, it may be identified that some requirements that are in the draft code should be in legislation instead. In that case, the draft text of the Code as consulted on can provide guidance.

Any of these consequential changes will be included in the consultation on the completed future code and legislation.

7.3 Guidance documents

As noted earlier, the intent of these changes is not to introduce radical changes from current practices. Defining the rules more transparently will support more effective transport and regulation. The look and feel of transport in Australia should not change significantly due to these changes.

The structure of the future code will be more logical, and requirements should be more readily found by participants in transport. Additionally, many requirements that are currently in other documents will now be in the Code itself.

Nonetheless, the changes are significant. As a result, we intend to accompany the change with guidance materials to outline what has changed, and what has not. This will include information on where to find requirements relating to these issues in the future code.

Glossary

See the supplementary paper (S1) on tank and vehicle terminology for detailed discussion of terms relating to tanks, bulk containers and vehicles.

Term	Definition
the Code	Refers to the Australian Code for the Transport of Dangerous Goods by Road & Rail – no specific edition
current code	Refers to edition of 7.8 of the code
future code	Refers to the revised code
ADR	Agreement concerning the International Carriage of Dangerous goods by Road
CAP	The Competent Authorities Panel
RID	Agreement concerning International Carriage of Dangerous Goods by Rail
UN MR	United Nations Model Regulations on the Transport of Dangerous Goods

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