

# ADG Code Review Information Webinar

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## Purpose

This information document provides information about the NTC's comprehensive review of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code). It contains information that was presented during an information webinar held on 23 June 2022.

## About the ADG Code review

In November 2020, 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 ADG Code). Ministers also supported the proposal to incorporate into the ADG 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 ADG code, both the ADR and RID are based on the United Nations Model Regulations (also known as the Orange Book). 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.

## Why is the review happening?

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 ADG Code. However, the responses we received highlighted several problems with the ADG Code itself.

A major concern raised in submissions centred on the Australia-specific chapters of the ADG Code. The biennial maintenance cycle of the ADG 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 ADG 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 They have not been critically reviewed for over 15 years and are now outdated.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Industry and regulators also noted the Australian Explosives Code is outdated and has no responsible agency.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 ADG Code to be expanded to include Class 1 Explosives, and for the Australian Explosives Code to be made obsolete.

Many stakeholders also identified the need to include detailed training requirements aimed at specific duty holders in the ADG Code. This would help make sure more training packages that are fit for purpose are available on the open market.

## Scope of the Review

After analysing the submissions received, the NTC made a number of 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.

**Recommendation 5:** Develop a training matrix based on a training needs analysis, including discrete, task-specific training and explore the potential for a dangerous goods specialist advisory competency.

### What do we hope to deliver?

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

## What's wrong with the current ADG Code?

### Comparison with international Mode specific Codes

It's important to understand where the ADG Code sits in comparison to the international framework for transport of dangerous goods.

The UN Model Regulations – the (Orange Book) – is the principal document. It contains the basic concepts and principles of classification, packaging, hazard communication, and so on. These concepts are designed to make sure we have standards for these matters that are accepted universally.

The model regulations are non-modal. They don't contain provisions for how to apply the core concepts to different modes of transport.

Mode-specific bodies add extra requirements to the model regulations so they can be implemented. The extra requirements take into consideration specific risks associated with the relevant mode of transport.

For **air transport**, the International Civil Aviation Authority (ICAO) develops the Technical Instructions for the Safe Transport of Dangerous Goods by Air.

The International Air Transport Authority (IATA) converts the ICAO Technical Instructions into operational language. This forms the IATA Regulations.

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The format of the IATA Regulations is in line with that of the Orange Book. But it is supplemented by additional requirements and chapters specific to transport by air.

For **sea transport**, the International Maritime Organisation implements the model regulations through the International Maritime Dangerous Goods Code (IMDG Code).

The format of the IMDG Code is also in line with the Orange Book. Again, it is supplemented by additional requirements and chapters specific to transport by sea.

Both the IMDG Code and the ICAO Technical Instructions are used worldwide.

For **land transport**, much of the world uses or replicates the ADR and RID and the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN). Different bodies within the Economic and Social Council and the United Nations Economic Committee for Europe are responsible for maintaining each of the instruments.

The format of the ADR, RID and ADN is in line with the Orange Book. As with the IATA Regulations and IMDG Codes, they are supplemented by additional chapters specific to transport by road, rail or inland waterways respectively.

### Maintenance of international codes

The necessary framework and processes are in place to regularly update the international codes. This ensures they remain current. More importantly, the international codes have the guidance, framework and resources to:

- ensure requirements remain consistent
- identify and eliminate contradictions and conflicts between provisions.

### Structure and history of the ADG Code

In comparison, Australia followed a different approach when it moved from ADG 6 to the seventh edition of the ADG Code (ADG 7). The decision was made to base ADG 7 on the Orange Book and then add our own mode-related provisions. Many of these were brought forward from ADG 6 without review. Often, they came from even earlier editions of the ADG Code.

The intent at the time was to examine each of the unique Australian or land-related provisions to determine if they were still appropriate. However, time and other pressures meant this didn't happen.

All provisions relating to vehicles, placarding, loading, stowage, segregation, emergency information, licensing and other mode-specific requirements are uniquely Australian.

Many of the Australian provisions were originally based on other sources. For example, the segregation requirements were originally based on the IMDG Code – but a version of the IMDG Code current 40 years ago.

Australia has no mechanisms to maintain the currency of these requirements. In some instances, the source or even intent of some of the current requirements is unknown.

Current mode-specific requirements in the ADG Code are often disjointed, contradictory and fall apart when examined. This is supported by stakeholder feedback over several years, as well as a literature review of relevant materials.

In many instances, there is no supporting evidence or data for the requirements' introduction. There is also no evidence they have contributed to safer outcomes. There is a

lack of consistency and cohesiveness in the mode-specific requirements, and no framework for maintaining them. This results in a continuing cycle of ad-hoc, random amendments without consideration of the consequential inconsistencies or contradictions.

### Placardable Unit vs Cargo Transport Unit

The current process isn't working. The example of the Placardable Unit concept demonstrates the gaps in our current approach, but is just one of many examples.

Placardable Unit is an Australian concept that doesn't exist anywhere else in the world. Its definition includes multiple-element gas containers (MEGCs) and excludes Cargo Transport Units.

Cargo Transport Unit is an international concept that underpins many of the requirements in the ADG Code. Its definition also includes MEGCs.

The circular reference makes MEGCs both included and excluded in the definition of Placardable Unit.

This contradiction has been corrected in the most recent version of ADG 7 (ADG 7.8). This only happened because it was identified in the process of incorporating a long-standing exemption for placarding of bundles of cylinders into the ADG Code. The exemption was issued many years ago to address an unintended consequence from the introduction of placardable units.

There are many exemptions in the ADG Code that were introduced to address other unintended consequences. There are also several inconsistencies or contradictions that haven't been addressed.

Australia does not have the maintenance framework or resources that international bodies have to ensure such contradictions or inconsistencies are not introduced.

In general, we analyse the impact policy changes will have on duty holders. But we don't identify or analyse the consequential impacts on the ADG Code itself.

We need to find a better way.

### Review process from ADG 6 to ADG 7

As mentioned earlier, the intention during the review process from ADG 6 to ADG 7 was that Australian provisions would be examined for their appropriateness at that time, as well as their underpinning risk basis. This proved to be an impossible task as, in most instances, there was no data or evidence to support the initial inclusion of the requirements.

Without data and evidence, it was not possible to determine if the requirements had contributed to safer outcomes. The result was a compromised review. Australian provisions were retained without examination, in the interests of completing the review on time. The process also delivered an ADG Code that was disjointed and contained gaps, contradictions, and inconsistencies.

The limitations in the review process resulted in an undertaking to phase out the unique Australian provisions over the life of ADG 7.

### How will this review be different?

Earlier we outlined the goals for the current review.

Primarily, it 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 is unlikely to be achieved if the review follows the same process as the transition from ADG 6 to ADG 7.

We need to take a fresh approach to how the review is conducted.

### How will we get there – key considerations

The principles guiding the review are in place to give it the best chance of succeeding. The principles were developed with regard to the following key considerations:

#### Impacts and benefits

- Ensuring that the revised Code will deliver an appropriate outcome that is risk based without imposing unnecessary burden on industry or society
- Ensuring requirements are proportionate to the risk
- Aligning to existing internationally accepted requirements for land transport of dangerous goods, without introducing changes that would result in major changes that do not provide an equivalent benefit and are not necessary for the cohesiveness of requirements
- Visibility of the supporting data and rationale for the requirements
- Australia would directly benefit from the land transport experience of ADR-contracting parties, while remaining free to retain Australian practices where change is not warranted.
- Aligning with the principles for segregation and marking and labelling with the IMDG will enable smooth inter-modal transport.
- By not fundamentally altering the framework, it will remain familiar to users, and extensive retraining will be avoided.

#### Stakeholder engagement

- Ensuring an appropriate balance of industry and regulator representation on the review working groups
- Providing all interested stakeholders an opportunity to provide input, comment and stay connected with the review

#### Maintaining currency of the Code and associated Model Laws

- Utilising existing international processes for ensuring requirements for land transport of dangerous goods remain contemporaneous and incorporate updates from both the UN Model Regulations and the relevant land transport codes (ADR and RID)
- Active participation in the UNECE RID/ADR/AND Joint Meeting. The RID/ADR/ADN Joint Meeting examines amendments arising from the UN Model Regulations, which apply globally, as well as proposals which only concern European land transport, such as the provisions for RID/ADR tanks.

### How will we get there – review principles

A full list of the review principles is available on the project page on the NTC's website. Some extra explanation is provided here for Principles 2, 4 and 6.

**Principle 2** – The starting point for requirements specific to land transport will be the requirements in the ADR and RID. But the ADG Code will keep current methodologies for placarding, segregation, and compliance with Australian Standards (where relevant).

This means the trigger for requirements such as segregation or placarding may change but the how we segregate or how we placard won't. This principle works closely with Principle 6 which is:

**Principle 6** – Existing Australian methodologies identified to be kept will be reassessed to make sure they still meet their intended purpose. This includes reassessing trigger thresholds and operational application, for example, reassessing placarding thresholds.

The triggers will be examined but the current methodologies will be retained.

**Principle 4** – Existing provisions in the ADG Code unique to Australia will only be kept if an analysis against the ADR or RID identifies a valid risk that isn't controlled by an existing ADR or RID provision.

Many of the relevant, risk appropriate requirements already exist in the ADR. The difference is that they are seamlessly woven into the ADR and regularly maintained. Global experts debate whether these requirements should be included or amended, and document the outcomes.

This is a step change from the way Australia has conducted comprehensive reviews in the past. This kind of change is vital to delivering a cohesive ADG Code that balances risks and controls. Appropriate balance of risks and controls would deliver the best outcome for Australia and the transport system as a whole.

The updated ADG Code would retain the format, numbering style, usability and look and feel that it currently has.

The proposed approach would also enable Australia to benefit from the discussion and evaluation undertaken by the working party for updating and maintaining the ADR and RID. But it wouldn't bind Australia to the outcomes.

### Why base the ADG Code on the ADR and RID?

To help explain this, it's helpful to take a high-level view of the ADR, focusing on its structure, not the detailed words.

The following table demonstrates how the structure of the ADR parallels the transport process, from classification through to delivery. The duties in each Part are targeted at the appropriate person(s) in that transport process, truly implementing chain of responsibility

The requirements are logically grouped, making it easier for duty holders to find the requirements relevant to the tasks they do.

TRANSPORT STAGE	ADR PART	REQUIREMENTS
CLASSIFY	Part 2	
IDENTIFY	Part 3	Identify special provisions, Identify requirements for: <ul style="list-style-type: none"> <li>packaging/tanks</li> </ul>

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		<ul style="list-style-type: none"> <li>• special provisions for carriage including, loading, handling, operation</li> <li>• etc.</li> </ul>
<b>PREPARE</b>	Parts 4 & 5	Prepare consignment / load: <ul style="list-style-type: none"> <li>• packing</li> <li>• marking and labelling</li> <li>• placarding</li> <li>• documentation</li> <li>• communicate special requirements (instructions)</li> </ul>
<b>TRANSPORT</b>	Part 7	Follow instructions for: <ul style="list-style-type: none"> <li>• vehicle selection</li> <li>• temp. control</li> <li>• carriage in:               <ul style="list-style-type: none"> <li>• packages</li> <li>• bulk</li> <li>• tanks</li> </ul> </li> <li>• loading, unloading, handling</li> <li>• segregation and stowage</li> </ul>
<b>DRIVE</b>	Part 8	Driver requirements for: <ul style="list-style-type: none"> <li>• carriage of documents</li> <li>• placarding and marking</li> <li>• equipment</li> <li>• incidents</li> <li>• supervision of vehicles</li> <li>• parking, smoking, brakes, etc.</li> </ul>

### ADR Dangerous Goods List

The ADR supports the parallel flow of its structure and the transport process by incorporating additional information in the dangerous goods list (DGL) which as we know, is, or should be, the central point of everything in the Code. This additional information is incorporated through additional entries and / or additional columns. The following provides some specific examples.

#### Additional entries

##### Example 1 - UN0015 – SP204

The ADG Code has the following, single entry for UN 0015, to which special provision SP204 is assigned.

UN No.	Name and description	Class	Subsidiary Hazard	Packing group	Special provisions
(1)	(2)	(3a)	(4)	(5)	(6)
0015	AMMUNITION, SMOKE with or without burster, expelling charge or propelling charge	1.2G			204

**SP204** *Articles containing smoke producing substance(s) corrosive according to the criteria for Class 8 must be labelled with a “CORROSIVE” subsidiary hazard label (Model No.8, see 5.2.2.2.2).*

*Articles containing smoke-producing substance(s) toxic by inhalation according to the criteria for Division 6.1 shall be labelled with a “TOXIC” subsidiary hazard label (Model No 6.1, see 5.2.2.2.2), except that those manufactured before 31 December*

2016 may be transported until 1 January 2019 without a "TOXIC" subsidiary hazard label.

This requires the duty holder to find the special provision in Part 3, which then refers them back to Part 2 – Classification.

The ADR places the classification requirements in Part 2 and then includes additional entries that reflect the possible classification outcomes. Eliminating the requirement for SP204

UN No.	Name and description	Class	Classification code	Packing group	Labels	Special provisions
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)
0015	AMMUNITION, SMOKE with or without burster, expelling charge or propelling charge	1	1.2G		1	
0015	AMMUNITION, SMOKE with or without burster, expelling charge or propelling charge, containing corrosive substances	1	1.2G		1 +8	
0015	AMMUNITION, SMOKE with or without burster, expelling charge or propelling charge, containing toxic by inhalation substances	1	1.2G		1 +6.1	

### Example 2 - UN1950 – SP63

The ADG Code has a single entry for UN1950 AEROSOLS. This entry lists the classification as Class 2 and assigns special provision SP63. As with UN0015, the duty holder needs to apply the requirements of SP 63 to identify the correct classification for a particular aerosol.

**SP63** *The division of Class 2 and the subsidiary hazards depend on the nature of the contents of the aerosol dispenser. The following provisions shall apply:*

- a) *Division 2.1 applies if the contents include 85 % by mass or more flammable components and the chemical heat of combustion is 30 kJ/g or more;*
- b) *Division 2.2 applies if the contents contain 1 % by mass or less flammable components and the heat of combustion is less than 20 kJ/g;*
- c) *Otherwise the product shall be classified as tested by the tests described in the Manual of Tests and Criteria, Part III, section 31. Extremely flammable and flammable aerosols shall be classified in Division 2.1; non-flammable in Division 2.2;*
- d) *Gases of Division 2.3 shall not be used as a propellant in an aerosol dispenser;*
- e) *Where the contents other than the propellant of aerosol dispensers to be ejected are classified as Division 6.1 packing groups II or III or Class 8 packing groups II or III, the aerosol shall have a subsidiary hazard of Division 6.1 or Class 8;*
- f) *Aerosols with contents meeting the criteria for packing group I for toxicity or corrosivity shall be prohibited from transport;*
- g) *Subsidiary hazard labels may be required for air transport.*

*Flammable components are flammable liquids, flammable solids or flammable gases and gas mixtures as defined in Notes 1 to 3 of sub-section 31.1.3 of Part III of the Manual of Tests and Criteria. This designation does not cover pyrophoric, self-heating or water-reactive substances. The chemical heat of combustion shall be determined by one of the following methods ASTM D 240, ISO/FDIS 13943: 1999 (E/F) 86.1 to 86.3 or NFPA 30B.*

Locating the additional classification requirements in Part 3 rather than Part 2 often results in aerosols being incorrectly consigned as Class 2 rather than being assigned to the relevant Division.



The ADR includes the classification requirements in Part 2, specifically 2.2.2.1.6. This is a much more logical location for it. The DGL then includes additional entries, reflecting each of the possible classification outcomes.

**Clearer information**

The ADG code includes many entries in the DGL that are either prohibited from being transported or are not required to comply with the ADG Code. These entries include information on classification, packing provisions, etc. The duty holder is only informed of the prohibition or exclusion by a special provision.

As can be seen in the following examples, the ADR informs the duty holder up front by excluding all of the normal transport information and replacing it with a clear statement.

1910	Calcium oxide	8	C6	NOT SUBJECT TO ADR			
2186	HYDROGEN CHLORIDE, REFRIGERATED LIQUID	2	3TC	CARRIAGE PROHIBITED			

**Additional Columns**

Where the ADR differs significantly from the ADG Code is the additional provisions aimed at addressing the specific hazards and risks associated with the handling and transporting of certain dangerous goods. These provisions are referenced in additional columns in the DGL. Details for the special provisions are then contained in the relevant Part or Chapter of the ADR, depending on where they sit in the transport process and who is responsible for them.

The biggest change for Australian industry is likely to be the ‘special provisions for carriage’ contained in columns (16) – (19). These columns contain provisions for transport in packages (16), transport in bulk (17), loading, unloading and handling (18), and operation (19). Not all entries in the DGL are subject to these special provisions. The special provisions are aimed primarily at higher risk or specialised DG, for example Class 1 Explosives or Class 7 Radioactive Material.

UN No.	Name and description	Class	Classification code	Packing group	Labels	Special provisions	Limited and excepted quantities		Packaging			Portable to bulk containers	Special provisions for carriage			
							3.4	3.5.1.2	Packing instructions	Special packing provisions	Mixed packing provisions		Instructions	Packages	Bulk	Loading, unloading and handling
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9a)	(9b)	(10)	(16)	(17)	(18)	(19)
1012	BUTYLENES MIXTURE or 1-BUTYLENE or cis-2-BUTYLENE or trans-2-BUTYLENE	2	2F		2.1	652	0	E0	P200		MP9	(M) T50			CV9 CV10 CV36	52 520
1013	CARBON DIOXIDE	2	2A		2.2	378 392 584 653 662	120 ml	E1	P200		MP9	(M)			CV9 CV10 CV36	

A full list of the detailed special provisions relevant to columns (16) to (19) can be found in Attachment A. To understand which entries are assigned special provisions for carriage, refer to the Dangerous Goods List in the ADR. <https://unece.org/adr-2021-files> To better understand the context around the provisions, refer to the ADR provisions identified in the column headings.

## DG Transport Document

To assist in the implementation of, and compliance with, special provisions and requirements for specific substances, the ADR places a duty on the consignor to identify and communicate any special provisions or requirements relevant to their products. As the owner of the substance, whether as an importer, manufacturer or reseller of the substance, the consignor is the more appropriate duty holder to identify and communicate any special requirements for their products.

Provision 5.4.1.2.5.2 of the ADR requires the consignor to communicate this information via the dangerous goods transport document.

### ADR 5.4.1.2.5.2

*The consignor shall provide in the transport documents a statement regarding actions, if any, that are required to be taken by the carrier. The statement shall include at least the following information:*

- a) Supplementary requirements for loading, stowage, carriage, handling and unloading of the package, overpack or container including any special stowage provisions for the safe dissipation of heat (see special provision CV33 (3.2) of 7.5.11), or a statement that no such requirements are necessary;*
- b) Restrictions on the mode of carriage or vehicle and any necessary routing instructions;*
- c) Emergency arrangements appropriate to the consignment.*

## Anticipated impacts

As identified earlier, this review is focused on delivering outcomes that serve the best interest of all parties involved in the transport of dangerous goods. And making sure there is a framework in place to ensure the Code remains up to date and aligned to international standards. This will naturally mean doing things differently. There will be changes.

However, while the proposed approach to the review represents a step change from past reviews, it's not anticipated that it will result in significant changes to the fundamental aspects of the land transport of dangerous in Australia, such as:

- The way dangerous goods are classified
- Packaging, including packing instructions, performance requirements, marking and labelling
- The manner in which vehicles are placarded
- Segregation rules and the methods used for segregating incompatible dangerous goods
- The look of vehicle placards

While these may not change, the thresholds at which they're triggered more than likely will change.

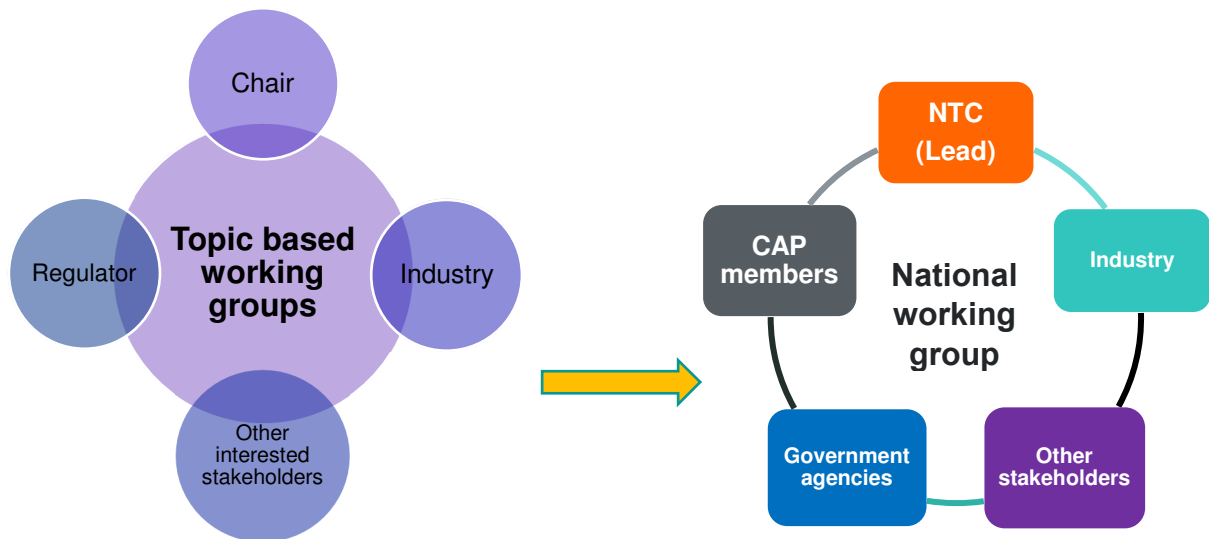
While the fundamental principles are not expected to change, the proposed approach will result in controls being more appropriately risk based and proportionate to the level of risk.

This is expected to reduce some of the burden for lower risks loads while ensuring that higher risk loads are effectively controlled.

## ADG Code review: approach and process

A detailed project plan has been developed for delivery of the review. The plan includes key deliverables and milestones, along with a timeline for delivery. The project plan also details the approach and process in place to ensure we retain the cohesiveness and consistency across the Code, while also allowing for maximum stakeholder input. To assist in delivery, the work to conduct the review has been collated into several topic specific packages. Each of these will be conducted by a separate working group, all of which will feed into an overall national working group. Membership of each topic specific working group consists of representation from regulators, industry and other interested stakeholders, led by a chairperson selected from the NTC, Competent Authorities or Industry. To further assist in maintaining consistency and cohesiveness of the final Code, all working groups have been given a specific scope of work and will conduct their work in line with the review principles.

Drafts produced by the working groups will be reviewed by a national working group consisting of CAP members, industry representatives, government agencies and other stakeholders. The national working group will be chaired by the NTC.



## Topic specific working groups

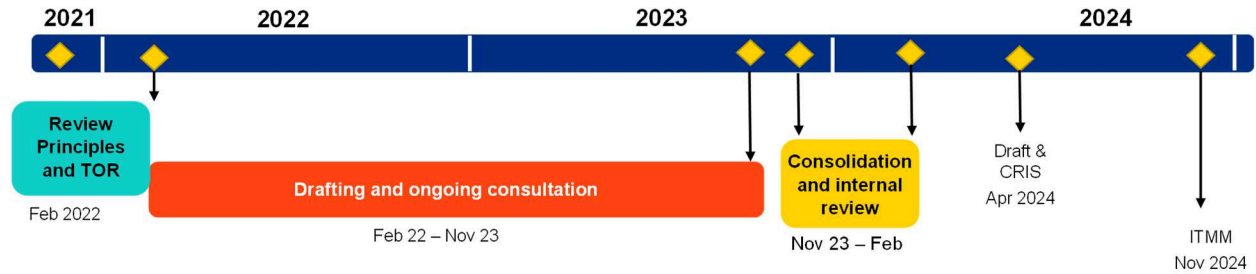
The following topic specific working groups have been established.

- ADG Code Scope and Exemptions
- Thresholds (small loads, placarding, segregations, etc.)
- Dangerous Goods List, Special Provisions and Special Provisions for Carriage
- Class 1 Explosives
- Incompatibility and Segregation
- PPE, fire and safety equipment, emergency response
- Tank and vehicle related provisions
- Rail specific provisions

- Training related provisions
- Other requirements

### Timeline for the review

The following provides a high level timeline of key deliverables for the review.



### Consultation

There will be many opportunities to review the draft provisions as they’re developed. Regular updates and calls for comments will be posted on the NTC website and advertised via our social media.

The NTC has a comprehensive list of stakeholders interested in the ADG Code. In addition, anyone who registered for the information session held on 23 June 2022 has been added to this list. All stakeholders will be notified of updates and consultation opportunities via direct email.

If you would like to check if you’re on our list, please email Debra Kirk at [dkirk@ntc.gov.au](mailto:dkirk@ntc.gov.au) If you have a particular interest in the work of specific working groups, please let us know.