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# WA Performance Based Standards (PBS) Scheme

Vehicle Certification Guidelines

# Contents

REF	ERENCES AND RELATED DOCUMENTS	4
1	PURPOSE	6
2	SCOPE	6
3	CERTIFICATION RECORDS	6
3.1	Certification Records	6
3.2	Photographic Evidence	6
4	VEHICLE CERTIFICATION PROCEDURE	6
4.1	Towing Vehicle Certification	6
4.2	Trailer Certification	10
4.3	Vehicle Combination Onsite Measurements	13
5	ROAD TRAIN SIGNAGE	
5.1	Warning Signs for Certain Combinations	13
5.2	Warning Signs Specifications	14
Appe	endix 1 – RAV Warning Signs	15
Appe	endix 2 – 60m RAV Warning Sign	16
Appe	endix 3 – RAV Warning Sign Dimensions & Font Specifications	17
Appe	endix 4 – Split RAV Warning Signs	18

# **Document Control**

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# **Amendments**

Revision Number	Revision Date	Description of Key Changes	Section / Page No.
1	August 2021	Review entire document on transferred onto new template	All
2	August 2021	Added 60m Road Train Signage requirements	24
3	27 April 2023	Updated Document Owner and Custodian. Added new compliance plate note. Added 3.2.6 for generic tyres. Updated Level 4B signage requirements. Updated Related Documents to include Certification Workbook and Voltage Test Procedure.	s.3, p. 4 s.3, p.15 s.4, p.25 s.5, p.26
4	30 September 2025	Updated document for Self-Certification.	All

D20#826341 Page 3 of 18

# REFERENCES AND RELATED DOCUMENTS

The following documents are related to the WA PBS Scheme and the vehicle certification process. These documents are available on the Performance Based Standards (PBS) page on the Main Roads website.

Document Name	Location
WA PBS Manufacturer's Vehicle Certification Application	Performance Based Standards (PBS) Page
WA PBS Vehicle Certification Application	https://www.mainroads.wa.gov.au/globalassets/heavy-vehicles/getting-a-permit/pbs/wa-performance-based-standard-scheme-vehicle-certification-application.pdf?v=48ecd9
PBS Vehicle Dimension Guide	Performance Based Standards (PBS) Page
WA Performance Based Standards (PBS) Scheme – Access Levels and Principles	https://www.mainroads.wa.gov.au/globalassets/heavy-vehicles/getting-a-permit/pbs/wa-performance-based-standards-pbs-scheme-access-levels.pdf?v=48f8d9
WA Performance Based Standards (PBS) Scheme – Application and Approval Process	https://www.mainroads.wa.gov.au/globalassets/heavy-vehicles/getting-a-permit/pbs/wa-performance-based-standards-pbs-scheme-application-and-approval-process-as-at-5-november-2020.pdf?v=4928b3
WA Performance Based Standards (PBS) Scheme – Assessment Results (Part A)	https://www.mainroads.wa.gov.au/heavy-vehicles/permit-order-scheme/PBS/
WA Performance Based Standards (PBS) Scheme – Audit Framework	https://www.mainroads.wa.gov.au/globalassets/heavy-vehicles/getting-a-permit/pbs/wa-performance-based-standards-pbs-scheme-audit-framework.pdf?v=4928cb
WA Performance Based Standards (PBS) Scheme - Manufacturer's Declaration - Towing Vehicle	https://www.mainroads.wa.gov.au/heavy-vehicles/permit-order-scheme/PBS/
WA Performance Based Standards (PBS) Scheme - Manufacturer's Declaration – Trailer	https://www.mainroads.wa.gov.au/heavy-vehicles/permit-order-scheme/PBS/

D20#826341 Page 4 of 18

Document Name	Location
WA Performance Based Standards (PBS) Scheme - Road Train TEBS Voltage Test Procedure	https://www.mainroads.wa.gov.au/globalassets/heavy-vehicles/getting-a-permit/pbs/wa-pbs-scheme-road-train-tebs-voltage-test-procedure.pdf?v=4a65ab
WA Performance Based Standards (PBS) Scheme – Standards and Vehicle Assessment Rules	https://www.mainroads.wa.gov.au/globalassets/heavy-vehicles/getting-a-permit/pbs/wa-performance-based-standards-pbs-scheme-standards-and-vehicle-assessment-rules.pdf?v=49a411
WA Performance Based Standards (PBS) Scheme - Trailer Manufacturer's Checklist	https://www.mainroads.wa.gov.au/heavy-vehicles/permit-order-scheme/PBS/
WA Performance Based Standards (PBS) Scheme - Vehicle Certification Guidelines	Performance Based Standards (PBS) Page
WA Performance Based Standards (PBS) Scheme – Vehicle Specifications (Part B)	https://www.mainroads.wa.gov.au/heavy-vehicles/permit-order-scheme/PBS/

D20#826341 Page 5 of 18

# 1 PURPOSE

This document outlines the steps a certifier should follow when conducting a Performance Based Standards (PBS) certification under the WA PBS Scheme.

# 2 SCOPE

These procedures apply to the WA PBS Scheme only. The NHVR PBS Vehicle Certification Rules must be followed when certifying vehicles under the National PBS Scheme.

# 3 CERTIFICATION RECORDS

#### 3.1 Certification Records

- **3.1.1** All details verified during the certification inspection must be recorded in the WA PBS Scheme Vehicle Specifications (Part B) form, or a similar document.
- 3.1.2 The vehicle must not be certified unless the evidence recorded during the inspection verifies the vehicle complies with all the specifications in the WA PBS Scheme Vehicle Specifications (Part B) form and the Vehicle Design Approval.
- **3.1.3** All certification records must be maintained for a minimum of 7 years and produced to Main Roads Heavy Vehicle Services personnel upon request.

# 3.2 Photographic Evidence

During the inspection, photos must be taken of all components inspected, including compliance plates, modification plates, ratings plates, any other relevant plates fitted, signs, all couplings, tyre groups and individual tyres clearly showing the sizes, makes and model. Photos also need to be taken of the front view, the rear view and the full combination (where applicable). The certifier should take photos of anything else in this document that requires evidence to be recorded and a photo is a practical means of verification.

# 4 VEHICLE CERTIFICATION PROCEDURE

## 4.1 Towing Vehicle Certification

- **4.1.1** Record the Vehicle Identification Number (VIN) of the towing vehicle that is on the plate or chassis. The VIN number in a manufacturer's declaration for a towing vehicle must match with VIN number on the compliance plate.
- **4.1.2** Record the Engine Make and Model.
- **4.1.3** Record the Power and Torque information.

4			_		
		Cummins: ISX600-20-50 (Signature) Euro 5 –			Manufactures rating
	Engine torque-speed	448 kW (600 hp), 2781 Nm (2050 lb.ft)			letter and declaration
		Volvo D16G 600, Euro 5 – 441 kW (600 hp),			
		2800 Nm (2065 lb.ft)		Cummins X15 Euro V 600 -	
				615	
Engine and		Mack: MP10 Euro 5 – 441 kW (600 Hp), 2800	□ No	Power: 459kW@1800rpm	
Driveline		Nm (2065 lb.ft)		Torque:	
				2779Nm@1200rpm	
		Note: Engines a higher power and torque			
		output over the engine rpm range can be			
		considered equivalent, refer section 8 – Engine			
		power and torque curves.			

D20#826341 Page 6 of 18

4.1.4	Record	the	clutch	engagement	torque.

	porque curves.			
Clutch engagement	50 % peak torque assumed in assessment			Updated manufacture
torque	(1389.5 = 50% of 2779Nm)		1390Nm	declaration received
(manual transmission)				

# **4.1.5** Record the gearbox make.

Make, model and gearbox ratios	Eaton Fuller RTLO14918B/RTLO16918B 18-speed 14.40, 12.29, 8.56, 7.30, 6.05, 5.16, 4.38, 3.74, 3.20, 2.73, 2.29, 1.95, 1.62, 1.38, 1.17, 1.00, 0.86, 0.73 Eaton Fuller RTLO18918B/RTLO20918B/RTLO22918B 18-speed 14.40, 12.29, 8.51, 7.26, 6.05, 5.16, 4.38, 3.74, 3.20, 2.73, 2.28, 1.94, 1.62, 1.38, 1.17, 1.00, 0.86, 0.73 Eaton Fuller FOxxE318B-xXP (Ultrashift) 14.40, 12.29, 8.51, 7.26, 6.05, 5.16, 4.38, 3.74, 3.20, 2.73, 2.28, 1.94, 1.62, 1.38, 1.17, 1.00, 0.86, 0.73 Volvo ATO3112D 11.73, 9.21, 7.09, 5.57, 4.35, 3.41, 2.7, 2.12, 1.63, 1.28, 1.0, 0.78	⊠ Yes □ No	Fuller RTLO229188 Overall ratio 19.72 14.40, 12.29, 8.51, 7.26, 6.05, 5.16, 4.38, 3.74, 3.20, 2.73, 2.28, 1.94, 1.62, 1.38, 1.17, 1.00, 0.86, 0.73	Manufacturers declaration Manufacturers rating letter
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#### **4.1.6** Record the final drive ratio.

		,,,				
Differential	drive ratio	5.19:1 – 5.56:1: Eaton Fuller RTLOxx918B 18- speed, Eaton Fuller FoxxE318B-xXP ( <u>Ultrashift</u> ) 3.4:1 – 4.55:1: Volvo I-Shift ATI3112D	⊠ Yes	□No	Dana T78-590 FDR: 5.19	Manufacturers declaration Manufacturers rating letter

- **4.1.7** Record the steer axle rating as provided in the manufacturer's declaration.
- **4.1.8** Record the steer axle and drive axle suspension details.

	Make and Model	Variant 1 Steer – Taper leaf springs 7.0 t (minimum) Variant 2 Steer – Taper leaf or multi-leaf springs 13.0 t (minimum)	⊠ Yes	□ No	Steer: Kenworth Leaf Spring 7.2	Manufacturers declaration Manufacturers rating letter
Suspension		Twin steer (if applicable) – load sharing	☐ Yes	□ No	N/A	
		<b>Variant 1</b> Drive – <u>Neway:</u> AD 390/10 <b>Variant 2</b> Drive – Volvo: RADD-GR RAL27	⊠ Yes	□ No		Manufacturers declaration Manufacturers rating letter

**4.1.9** Measure and record the steer axle track width, drive axle track width and dual tyre spacing and record the measurements. Refer to the PBS Vehicle Dimension Guide.

**4.1.10** Record the drive axle group tractive effort distribution / differential torque distribution.

						In an art and
	Track width and dual	Steer: 2,000 mm (minimum)			Steer Track – 2,150 mm	Inspected
	tyre spacing	Drive: 1,850 mm (minimum)	Yes		Drive Track – 1,870 mm	
	tyre spacing	Dual tyre spacing: 320 mm (minimum)			Dual tyre spacing – 340 mm	
Wheels and		50:25:25				Manufacturers
	Drive axle group tractive effort distribution	or equally distributed with maximum difference				declaration
		in tractive force between any two axles in the	⊠ Yes	⊠ Yes □ No	33:33:33	
		group is not greater than 10 % of the total				
		tractive force delivered by the drive axle group				

D20#826341 Page 7 of 18

**4.1.11** Inspect the tyres fitted on the towing vehicle and record details of the make, model and tyre size. Identify if tyres are re-treads and if so, ensure re-treads are approved on the Part B.

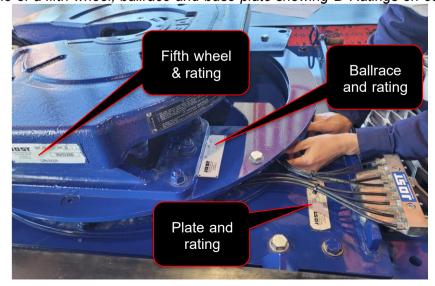
	_		Steer – Non-brand-specific (22.5-inch rim diameter)	⊠ Yes	□ No	385/65R22.5 Michelin x Multiway	Inspected
	L		Dunlop 295/80R22.5	⊠ Yes	□No	Duniop 295/80R22.5	Inspected
Tyres			(	☐ Yes	□No		
		Re-tread tyre size,	Drive - <u>Retread</u> or regroove tyres are permitted, provided they are certified by the manufacturer as having performance equivalent to that of a new tyre that is acceptable under this	□ Yes	□ No		
			approval.				



**4.1.12** Inspect the tow coupling, including fifth wheel, ballrace and the base plate (as applicable), and record the make and D-Rating on the identification plates fitted to each component.

			Fifth-wheel D≥236 kN			Fifth wheel: 90/D260	spected
Coupling	gs	Type, D rating		⊠ Yes	□ No	Jost DR38 C1-160 90mm ballrace Ballrace: 275kN	

Example of a fifth wheel, ballrace and base plate showing D-Ratings on each unit



D20#826341 Page 8 of 18

**4.1.13** Record the braking system details, including the braking system's electrical power output and confirm the system provides Controlled Area Network (CAN) control signals.

	Brakes	EBS, ABS, LPV	In accordance with the Main Roads WA requirements:  • The prime mover must supply sufficient power to ensure that the Trailer Electronic Braking System (TEBS) on all trailers functions as per manufacturer's specifications when all vehicle units are coupled together and the electrical system is under maximum permissible load from all current-drawing electrical devices in the vehicle combination.  Note: It is expected that this requirement will be complied with if the prime mover provides 24-Volt power with a minimum of 25 amperes continuous capacity to the Trailer Electronic Brake System (TEBS). Also, provided that the voltage measured at the rearmost trailer is at		Drum Brake EBS ESP Bendix Fusion ACB with collision mitigation 24v TRM  Confirmed CAN Bus connection	Manufacturer Declaration. Updated Manufacturer's Declaration received (refer Section 6).
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- **4.1.14** Obtain the tare weight of the prime mover using one of the following methods:
  - a) Physically weigh the vehicle(s) using portable scales,
  - b) Physically weigh the vehicle(s) on a certified weighbridge,
  - c) A weight declaration or weighbridge docket(s) from the manufacturer.

T	「are	Minimum tare (kg)	12,000	⊠ Yes	□ No	Manufactures rating letter and declaration

**4.1.15** Inspect the ratings plate of the towing vehicle and record the manufacturer's Gross Vehicle Mass (GVM) and Gross Combination Mass (GCM).

		Variant 1:			Manufactures rating
		GVM: 30.5 t (minimum)			letter and declaration
		GCM: 210.0 t (minimum)			
		Variant 2:			
		GVM: 35.5 t (minimum)			
	Gross Vehicle Mass (kg)	GCM: 215.0 t (minimum)			
1ass	Gross Combination Mass	Note: the required GVM/GCM may be reduced	⊠ Yes □ No	GVM 32.00 tonnes	
/1055		if it aligns with the approved axle group	△ res □ ivo	GCM 246.00 tonnes	
	(Tonnes)	weights which may be adjusted:			
		<ol> <li>to comply with road access restrictions</li> </ol>			
		<ol><li>to comply with appropriate steer axle</li></ol>			
		load			
		<ol><li>to align with the manufacturer's</li></ol>			
		recommended maximum GVM/GCM.			

- **4.1.16** Where the towing vehicles GVM and/or GCM ratings have been modified, inspect the modification plate (the "blue plate") and record the modified GCM and GVM ratings.
- **4.1.17** Check that the towing vehicle meets any additional or special requirements specified in the WA PBS Scheme Vehicle Specifications (Part B) form that have not already been addressed.

()ther	Additional or special requirements	The front connection shall provide a roll-coupling between trailing units which may include up to ±2 degrees of lash. The connection must comply with the static overturning moment performance requirements applied to fifth wheel couplings in Australian/New Zealand Standard AS/NZS 4968.2:2003 Heavy Road Vehicles – Mechanical coupling between articulated vehicle combinations – Part 2: Testing and installing of fifth wheel and associated equipment.	⊠ Yes □	No	Complies	Confirmation of tow coupling lash Trim D20#1037563
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D20#826341 Page 9 of 18

## 4.2 Trailer Certification

- **4.2.1** Record the Vehicle Identification Number (VIN) of the trailer that is on the plate or chassis. The VIN number in a manufacturer's declaration for a towing vehicle must match with VIN number on the compliance plate.
- **4.2.2** Record the position number of the trailer in the design, where there are different trailers in the design, e.g. Unit 2 for the lead semi-trailer, Unit 3 for the converter dolly.
- **4.2.3** Record the generic trailer description, the make (i.e. Manufacturer's name) and model number (as per the manufacturer) of the trailer.

		Side-tipping tri-axle lead trailer or semi- trailer component of 6-axle dog trailer	⊠ Yes	□ No	Tri axle semi 1TWL329	Manufacturer Declaration & Inspected
Vehicle	Make and model	Howard Porter	⊠ Yes	□ No	Howard Porter Tri470 OD	Manufacturer Declaration & Inspected
	Body type	Side tipper	⊠ Yes	□ No	Side Tipper	Manufacturer Declaration & Inspected

**4.2.4** Record the make and model number of the suspensions fitted. If the trailer is fitted with a steerable axle, record the steerable axle make and model number separately.

Rigid axle suspension make and model  Suspension  Rigid axle suspension make and model  Suspension  Steerable axle suspension  TMC: 3 leaf overslung 3204017PB-137R  Load sharing spring, TN  Load sharing spring, TN	310018	pie axie, record ti	ie steerable avie make and	יי ווויטע		иньег зерагатету.	
Suspension Steerable axle suspension TMC: 3 leaf overslung 3204017PB-137R Load sharing spring, TM		Rigid axle suspension make	***************************************	⊠ Yes	□ No		Manufacturer Declaration
Steerable axle suspension TMC: 3 leaf overslung 3204017PB-137R Load sharing spring, TN	C			☐ Yes	□ No		
make and model	Suspension	Steerable axle suspension make and model	TMC: 3 leaf <u>overslung</u> 3204017PB-137R	⊠ Yes	□ No	Load sharing spring, TMC 3204027PB – 137R	Manufacturer Declaration

- **4.2.5** Measure and record the trailer track width and dual tyre spacing. Refer to the PBS Vehicle Dimension Guide.
- **4.2.6** Record the tyre size and check the tyre size and the load rating meet the requirements specified in the Vehicle Design Approval.

Ī	Tvres	New tyre size, make, model	11R22.5, any brand	⊠ Yes	□ No	11R22.5 HiFly HH104	Manufacturer Declaration & Inspected
	,	Re-tread tyre size, make, model	11R22.5, any brand	□ Yes	□ No		Manufacturer Declaration

- **4.2.7** Inspect the tow coupling, including fifth wheel, ballrace and the base plate (as applicable), and record the make and D-Rating on the identification plates fitted to each component.
- **4.2.8** Inspect the kingpin and record D-Rating, make and model.

Example of photographic evidence for a kingpin D-Rating



D20#826341 Page 10 of 18

Couplings	Type D rating	Fifth wheel or ball-race coupling on rocker feet/hard coupled Kingpin (if applicable), D≥236 kN Fifth-wheel or <u>ballrace</u> , D≥242 kN	⊠ Yes □ N	260kN Hard coupled	Manufacturer Declaration & Inspected
				Ballrace: KHitch KHDR1000 480kN	

**4.2.9** Record the D-Rating, make and model for the drawbar tow eye (if applicable) for the dolly.



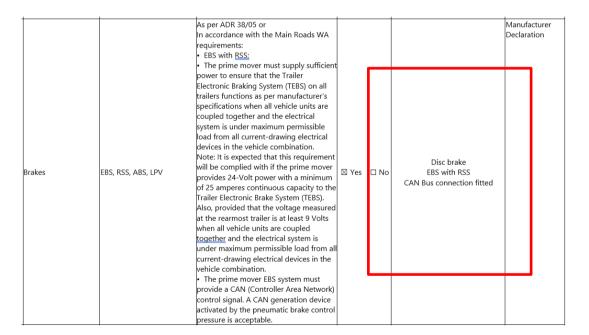
**4.2.10** Record the D-Rating, make and model for the Ringfeder (pin coupling) attached at the rear of the semi-trailer (if applicable).



**4.2.11** Record the D-Rating, make and model for the gooseneck drawbar and/or roll-coupling (if applicable).

D20#826341 Page 11 of 18

- **4.2.12** The certifier must confirm the following braking system requirements and keep a record of how these details were verified:
  - a) The prime mover must be fitted with an Antilock Braking System (ABS) or an Electronic Braking System (EBS).
  - b) All vehicles must be fitted with and have a functioning EBS wiring network to support CAN communications across the entire combination, with adequate power to support the Trailer Electronic Braking System (TEBS) of all trailers and dollies (where applicable) in the combination.
  - c) All prime movers / rigid trucks must supply a CAN / TEBS brake application signal.
  - d) All trailers with TEBS must be fitted with a green TEBS power-on indicator lamp and a red or flashing green TEBS fault indicator lamp, or a diagnostic board. The green lamp must illuminate when the TEBS is powered, and red lamp must illuminate when there is a system fault, or the green lamp must flash when there is a system fault.
  - e) All semi-trailers must be fitted with TEBS, with a fully functional Rollover Stability System (RSS) and a compatible CAN connection linking all units in the combination.
  - f) If dollies are not fitted with TEBS, the EBS cabling can bypass the dolly and directly connect semi-trailer to semi-trailer.



- **4.2.13** Inspect the trailer to confirm a Trailer Electronic Braking System (TEBS) plate is fitted. Obtain an End of Line (EOL) Test Report of each individual unit that is fitted with an ABS/EBS unit.
- **4.2.14** Inspect the compliance / ratings plate of the trailer and record the manufacturer's Aggregate Trailer Mass (ATM).

1			47000			Manufacturer
ŀ	Mass	Aggregate Trailer Mass (kg)		⊠ Yes □ No	47,000kg	Declaration &
1						Inspected

- **4.2.15** Obtain the tare weight of each trailer using one of the following methods:
  - a) Physically weigh the vehicle(s) using portable scales,
  - b) Physically weigh the vehicle(s) on a certified weighbridge,

D20#826341 Page 12 of 18

- c) Weight declaration or weighbridge docket(s) from the manufacturer.
- d) Manufacturers declaration.

Tare Minimum tare (kg) 7300	⊠ Yes □ No	7,400kg	Manufacturer Declaration
-----------------------------	------------	---------	-----------------------------

**4.2.16** Check that the trailer meets any additional or special requirements specified in the WA PBS Scheme – Vehicle Specifications (Part B) form that have not already been addressed. These items are generally declared by the relevant manufacturer.

Other Additional or special requirements	□ Yes □ No
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#### 4.3 Vehicle Combination Onsite Measurements

- **4.3.1** Using the WA PBS Scheme Vehicle Specifications (Part B) form, or similar document, record all vehicle measurements in accordance with the schematic contained within the Part B and confirm all measurements
- **4.3.2** All measurements shown in Part 8 of the WA PBS Scheme Vehicle Specifications (Part B) form must be recorded as a minimum.

# 5 ROAD TRAIN SIGNAGE

The certifier must confirm the correct signage is fitted to the rear trailer in the PBS combination, as per the following requirements:

# 5.1 Warning Signs for Certain Combinations

- **5.1.1** A Level 2 RAV exceeding 22 metres in length, but not exceeding 27.5 metres in length, must display a 27.5m Long RAV Warning Sign, as specified in *Appendix 1*.
- **5.1.2** A Level 2B RAV exceeding 27.5 metres in length, but not exceeding 30 metres in length, must display a 30m Long RAV Warning Sign, as specified in *Appendix 1*.
- 5.1.3 A Level 2B RAV exceeding 30 metres in length, must display a Specific Length RAV Warning Sign, with the actual vehicle combination length rounded up to the nearest metre, and showing a car equivalent based on a 5-metre-long car (rounded up), as per the example in Appendix 1.
- **5.1.4** A Level 3 RAV exceeding 30 metres in length, but not exceeding 36.5 metres in length, must display a 36.5m Long RAV Warning Sign, as specified in *Appendix 1*.
- **5.1.5** A Level 3B RAV exceeding 36.5 metres in length, but not exceeding 42 metres in length, must display a 42m Long RAV Warning Sign, as specified in <u>Appendix 1</u>.
- **5.1.6** A Level 4 RAV exceeding 42 metres in length, but not exceeding 53.5 metres in length, must display a 53.5m Long RAV Warning Sign, as specified in *Appendix 1*.
- **5.1.7** A Level 4B RAV exceeding 53.5 metres in length, but not exceeding 60 metres in length, must display a 60m Long RAV Warning Sign, as specified in <u>Appendix 2</u>.
- **5.1.8** The RAV warning sign must only be fitted horizontally on the rear of the RAV.

D20#826341 Page 13 of 18

# **5.2 Warning Signs Specifications**

- **5.2.1** The RAV warning sign must be manufactured in one or 2 parts from:
  - (a) sheet steel with a minimum thickness of 0.8 mm thick; or
  - (b) a sticker attached to an equivalent rigid surface; or
  - (c) a flexible vinyl material, provided the sign is attached in such a manner that ensures it remains taut and clearly visible.
- **5.2.2** The RAV warning sign must be the minimum dimensions shown in *Appendix 3*.
- **5.2.3** The RAV warning sign must display the words specified in <u>Appendix 1</u> or <u>Appendix 2</u>, in black capital letters, in typeface Helvetica Neue Bold Condensed, and the size shown <u>Appendix 3</u>.
- **5.2.4** If the RAV warning sign is in 2 parts, it must be split through the centre as shown in <u>Appendix</u> 4.
- **5.2.5** The RAV warning sign must have a black border. A black border is not required on the inside of a RAV warning sign split in 2 parts.
- **5.2.6** The RAV warning sign must display the sign manufacturer's name or logo, and the brand and class of retro-reflective material used, in block letters not over 10 mm high.
- **5.2.7** The RAV warning sign must be coated with yellow retro-reflective material that complies with class 100 or 400 of AS1906.1 2017 *Retroreflective Materials and Devices for Road Traffic Control Purposes Retroreflective Sheeting.*
- **5.2.8** The RAV warning sign must only be fitted on the rear of the RAV and so:
  - (a) no part of the sign is
    - (i) over 2.75 m above ground level; or
    - (ii) under 500 mm above ground level;

and

(b) if the sign is in 2 parts, the parts are fitted at the same height above ground level.

Note: The 60m RAV Warning Size cannot be split into 2 parts.

D20#826341 Page 14 of 18

# Appendix 1 - RAV Warning Signs

# 27.5m Long RAV Warning Sign:



30m Long RAV Warning Sign:



Specific Length RAV Warning Sign:



36.5m Long RAV Warning Sign:



42m Long RAV Warning Sign:



53.5m Long RAV Warning Sign:



D20#826341 Page 15 of 18

# Appendix 2 - 60m RAV Warning Sign

60m Long RAV Warning Sign:



D20#826341 Page 16 of 18

# **Appendix 3 – RAV Warning Sign Dimensions & Font Specifications**

# All Signs other the 60m Long RAV Warning Sign:



# 60m Long RAV Warning Sign:



D20#826341 Page 17 of 18

# Appendix 4 - Split RAV Warning Signs

# **Example of Split RAV Warning Sign:**



D20#826341 Page 18 of 18