



mainroads
WESTERN AUSTRALIA

Measurement Adjustments for the Enforcement of Mass Requirements

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Amendments

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1 PURPOSE

There are often variances in the measured mass when using portable scales (also known as loadmeters), due to the weighing equipment being used, weighing site characteristics, weighing methods and conditions under which the process is conducted.

For this reason, prior to considering any possible enforcement action, a measurement adjustment is applied by enforcement officers, to ensure the assessed mass can be legally relied upon.

Section 113(4) of the *Road Traffic (Administration) Act 2008* stipulates:

“If a loadmeter is used to ascertain the mass supported on a particular part of a vehicle, then for the purpose of determining whether or not the vehicle and its load if any comply with a road law, the mass supported on the part is to be taken to be the mass as ascertained less the prescribed amount”.

Regulation 31 of the *Road Traffic (Administration) Regulations 2014* stipulates:

“For section 113(4), the prescribed amount for a vehicle and its load is the measurement adjustment applied in accordance with the Measurement Adjustments document”.

For the purpose of Regulation 31, this document is the “Measurement Adjustment document” and sets out the “prescribed amount” referred to in Section 113(4).

2 APPLICATION

The measurement adjustments are applied when Main Roads Transport Inspectors weigh a vehicle for compliance and enforcement purposes, using portable scales. Once the measured mass is established, the measurement adjustment is then deducted to determine the assessed mass. Enforcement action will be based on the assessed mass.

The measurement adjustments do not apply to a vehicle that is weighed on a public weighbridge or verified weighbridge, as defined in the *National Measurements Act 1960*. The weighbridge docket will be admissible in any proceedings under a road law and considered prima facie evidence of the mass of the vehicle at the time it was weighed.

3 WEIGHING SITE CATEGORIES

Three categories of weighing sites have been defined to account for the environmental factors at weighing sites, such as gradient and slope.

3.1 Category 1

A Category 1 weighing site is a site that has a flat surface designed and constructed for accurate, reliable use with portable scales. Refer to Section 4 for Weighing Site Specifications.

3.2 Category 2

A Category 2 weighing site is a site that has a hard flat surface, but not specifically designed and constructed to meet the standards of a Category 1 weighing site. These sites can be well set out temporary roadside sites. Refer to Section 4 for Weighing Site Specifications.

3.3 Category 3

A Category 3 weighing site is a site that has less favourable conditions and does not fall under Category 1 or Category 2. Refer to Section 4 for Weighing Site Specifications.

4 WEIGHING SITE SPECIFICATIONS

The category of weighing site is determined by the suitability of the site surface. When considering the suitability of a weighing site, three factors need to be assessed to determine the category:

- The weighing area
- The approach wheel paths
- The departure wheel paths

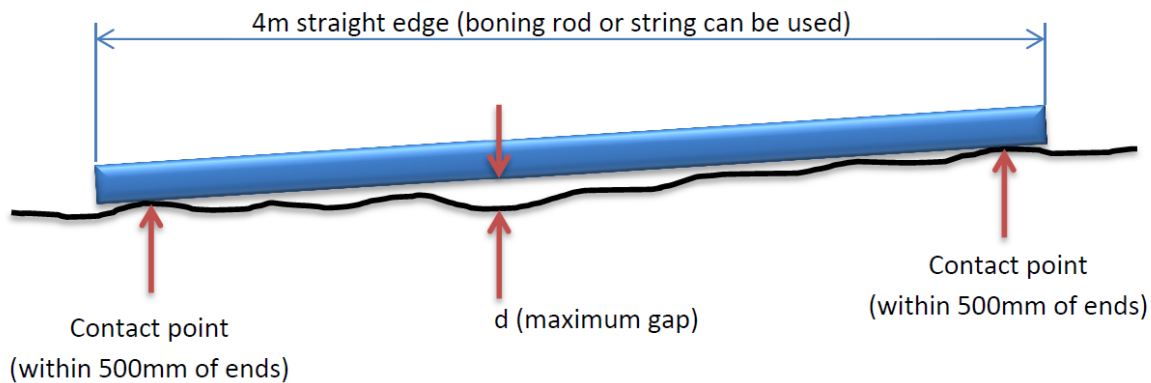
The category of the weighing site will be based on the worst case of these three areas.

This section provides the necessary specifications to enable enforcement officers to determine the weighing site category prior to conducting an enforcement weigh, or for selected sites to be pre-surveyed and a list of categorised sites published accordingly.

4.1 Diagram 1 – Measuring Unevenness

The following diagram shows how the unevenness is measured for the purpose of subsection 4.3.

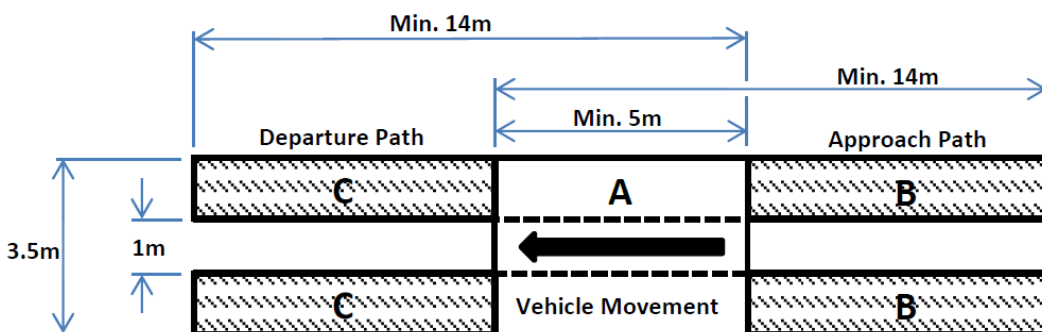
Measuring Road Profile Variations (Unevenness)



4.2 Diagram 2 – Site Layout

The following diagram shows how the measurements and site layout for the purpose of subsection 4.3.

Elements of Site Layout



- A = Area used for weighing
- B = Approach wheel paths
- C = Departure wheel paths

4.3 Maximum Limits

With regards to the respective weighing site category, the unevenness and gradient for the weighing area, approach path and departure path, as shown in subsections 4.1 and 4.2, should not exceed the maximum limits specified for each area in the following tables.

The width and length limits shown in subsection 4.2 are minimum limits. The 1 metre gap shown between the wheel paths does not need to conform to the following specifications.

4.3.1 Maximum Limits for Area A – Weighing Area

The weighing area (Area A) is the area in which the portable scales will be used. Within Area A, the following limits apply:

Weighing Site Category	Longitudinal Gradient	Transverse Gradient	Unevenness (mm) ('d' over 5m span)
Category 1	2% Up to 100mm	3% Up to 105mm	10mm
Category 2	3% Up to 150mm	5% Up to 175mm	20mm
Category 3	5% Up to 250mm	5% Up to 175mm	50mm

Note:

- 1) Unbraked vehicles are likely to roll on gradients of more than 2%. If a vehicle does not roll in each of areas A, B and C, the site can be considered to meet the limit on longitudinal gradient for a Category 1 weighing site. A check of the transverse gradient and unevenness will determine the actual category for the site.
- 2) The direction of crossfall should not change over Area A.
- 3) Gradient equivalents, shown in mm, are based on the minimum length and width for the area.

4.3.2 Maximum Limits for Area B – Approach Wheel Path

The approach wheel path (Area B) is the portion of the site that the vehicle's wheels move along before they reach the weighing area. Within Area B, the following limits apply:

Weighing Site Category	Longitudinal Gradient	Transverse Gradient	Unevenness (mm) ('d' over 5m span)
Category 1	2% Up to 280mm	3% Up to 105mm	20mm
Category 2	3% Up to 420mm	5% Up to 175mm	40mm
Category 3	5% Up to 700mm	5% Over 175mm	100mm

As shown in subsection 4.2, the approach wheel path (Area B) combined with the weighing area (Area A) must be at least 14 metres. However, this is not applicable if the vehicle is weighed in a single step and the weighing area is as long as the vehicle being weighed.

Note:

Gradient equivalents, shown in mm, are based on the minimum length and width for the area.

4.3.3 Maximum Limits for Area C – Departure Wheel Path

The departure wheel path (Area C) is the portion of the site that the vehicle's wheels move along after the weighing area. Within Area C, the following limits apply:

Weighing Site Category	Longitudinal Gradient	Transverse Gradient	Unevenness (mm) ('d' over 5m span)
Category 1	2% Up to 280mm	3% Up to 105mm	30mm
Category 2	3% Up to 420mm	5% Up to 175mm	60mm
Category 3	5% Up to 700mm	No limit Over 175mm	150mm

As shown in subsection 4.2, the departure wheel path (Area C) combined with the weighing area (Area A) must be at least 14 metres. However, this is not applicable if the vehicle is weighed in a single step and the weighing area is as long as the vehicle being weighed.

Note:

Gradient equivalents, shown in mm, are based on the minimum length and width for the area.

5 MEASUREMENT ADJUSTMENTS – PRESCRIBED AMOUNTS

The prescribed measurement adjustments for a single axle, axle groups and gross mass are as follows:

Axle Group	Measurement Adjustment (tonnes)		
	Category 1	Category 2	Category 3
Single axle with single tyres	0.3	0.3	0.4
Twin steer or tandem axle, single tyres or combination of single and dual tyres	0.3	0.4	0.5
Single axle with dual tyres	0.4	0.4	0.5
Tandem axle with dual tyres	0.5	0.5	1.0
Tri axle, Quad axle or axle group with more than four axles	0.5	0.5	1.0
Gross mass	0.25	0.5	1.0

The measurement adjustment is applied for each weighing step. A weighing step is any movement of the vehicle needed to complete the weighing process for an axle, axle group and/or the vehicle's gross mass.

Refer to the examples of how to apply the measurement adjustments in *Appendix 1 to 3*.

6 APPENDICES

Appendix	Title
Appendix 1	Applying the Measurement Adjustment to a Rigid Truck
Appendix 2	Applying the Measurement Adjustment to a Semi-Trailer
Appendix 3	Applying the Measurement Adjustment to a B-double

APPENDIX 1: Applying the Measurement Adjustment to a Rigid Truck



This rigid truck is weighed in a single step on a Category 1 weighing site.

Allowable Mass	Measured Mass	Number of Weighing Steps	Assessed Mass	Breach (Yes/No)
Steer axle – 6.0t	6.5t	1	$6.5t - 0.3t = 6.2t$	Yes
Tandem axle with dual tyres – 16.5t	17.0t	1	$17.0t - 0.5t = 16.5t$	No
Gross mass – 22.5t	23.5t	1	$23.5t - (0.25t \times 1) = 23.25t$	Yes

APPENDIX 2: Applying the Measurement Adjustment to a Semi-Trailer



This semi-trailer combination is weighed in two steps on a Category 2 weighing site.

Step 1, the prime mover is weighed.



Step 2, the trailer tri-axle group is weighed.

Allowable Mass	Measured Mass	Number of Weighing Steps	Assessed Mass	Breach (Yes/No)
Steer axle – 6.0t	6.3t	1	$6.3t - 0.3t = 6.0t$	No
Tandem axle with dual tyres – 16.5t	17.8t	1	$17.8t - 0.5t = 17.3t$	Yes
Tri axle with dual tyres – 20.0t	21.5t	1	$21.5t - 0.5t = 21.0t$	Yes
Gross mass – 42.5t	45.6t	2	$45.6t - (0.5t \times 2) = 44.6t$	Yes

APPENDIX 3: Applying the Measurement Adjustment to a B-double



This B-double is weighed in three steps on a Category 3 weighing site.

Step 1, the prime mover weighed.



Step 2, the lead semi-trailer is weighed.



Step 3, the rear semi-trailer is weighed.

Allowable Mass	Measured Mass	Number of Weighing Steps	Assessed Mass	Breach (Yes/No)
Steer axle – 6.0t	6.0t	1	$6.0t - 0.4t = 5.6t$	No
Tandem axle with dual tyres – 16.5t	17.5t	1	$17.5t - 1.0t = 16.5t$	No
Tri axle with dual tyres – 20.0t	21.0t	1	$21.0t - 1.0t = 20.0t$	No
Tri axle with dual tyres – 20.0t	21.0t	1	$21.0t - 1.0t = 20.0t$	No
Gross mass – 62.5t	65.5	3	$65.5t - (1.0t \times 3) = 62.5t$	No