

# Bus lighting assessment and improvement options

## Bike racks on buses and headlamps (low beam)

In October 2024 NZTA issued an alert about bike racks mounted on the front of urban buses and poor night time visibility affecting safety and compliance.

### [Industry alert - Bike racks on buses at night](#)

The alert has since been updated following wider industry bus testing to establish a standardised lighting performance assessment method, a Reference Line Method (RLM). The method is described below and detailed guidance on lighting performance improvement options is provided.

Bus operators should use the method below to check all bus model and bike rack model combinations for non-compliance. Operators can check if they meet the requirements of the [Land Transport Rule: Vehicle Lighting 2004](#) (the Rule) by using a RLM, and what action should be taken if they don't meet the requirements.

All buses fitted with bike racks will need to apply for an exemption from the Rule. Guidance on how to do this is in this document. The RLM will determine the details of the exemption.

The RLM checks if a bus has headlamps above or below a reference line.

Lighting from headlamps located below the line meets the performance requirements of the Rule. This means these buses will have effective headlamp illumination. The headlamp beams substantially pass below and to the sides of the bikes.

Lighting from headlamps located above the line does not provide effective illumination and does not meet performance requirements of the Rule. Lighting improvement for these buses is required.

### Bike rack type

There are four bike rack models currently in use in New Zealand, the most common is the **Sportworks Veloporter 2**.

All unique bus model and bike rack model combinations need to be assessed against the RLM. The principle of 'type approval' can be applied. For type approval to be applied, buses and bike rack installations must be identical in all respects. For example, for 30 identical bus-rack combinations, only one assessment is required.

For the four models of bike rack used in New Zealand, three share the same reference line. This guidance is for **Sportworks Veloporter 2, DL2** and **Apex 2** bike racks.

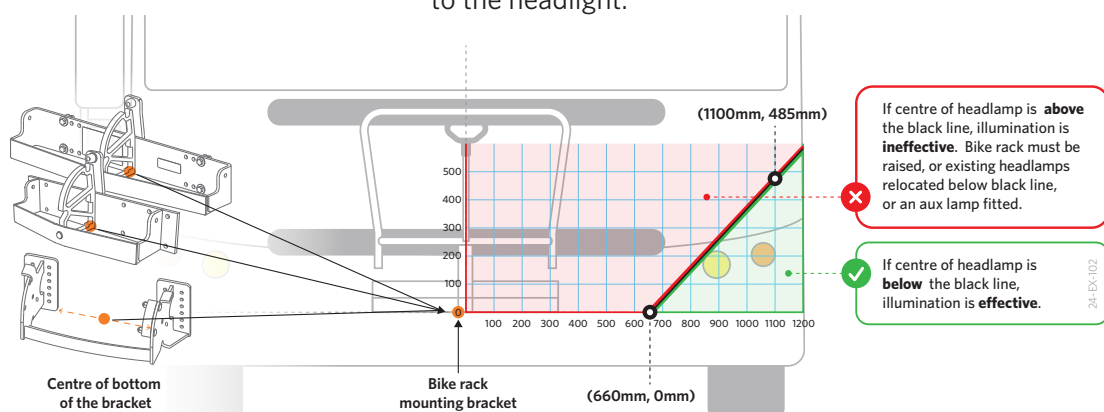
Guidance for **Apex 3** bike racks will be available in early 2025.

### Reference line method (RLM) - Veloporter 2 DL2 and Apex 2 racks

Use the centre underside of the bike rack bracket (see image below) as a measurement reference point (eg 0, 0).

Two points then define the reference line from point 0, 0. Point one is 660mm horizontal out from reference point 0, 0. Point two is out 1100mm horizontally and 485mm vertically from reference point 0, 0.

A straight line through these two points is the reference line. If the bike rack is mounted centrally, the line can be on either the left-hand or right-hand side of the bus. If the bike rack is not mounted centrally, the RLM should be applied to the side of the bus that the bike rack is closest to the headlight.



## Exemptions

**All buses will need an exemption**, whether they have effective lighting or need lighting improvement. This is to address ambiguity in the Rule about lamp obstruction.

After carrying out assessment using the RLM you must apply for an exemption to 2.1(11) of the Rule.

Exemptions will be issued with conditions. The bike rack-bus combination must continue to meet exemption conditions. Modification will invalidate the current exemption requiring a new post-modification assessment and a subsequent exemption application.

You can apply for this exemption using *Application for an exemption from land transport vehicle rules* (CA11).

[Application for an exemption from land transport vehicle rules \(CA11\)](#)

### If headlamps are above the reference line

For buses where the centre of either headlamp is above the reference line the following lighting improvement solutions are available:

1. Lifting the bike rack up, so the headlamps are below the reference line.
2. Moving the lamps, so the centre of the headlamps is relocated below the reference line.
3. Installing an auxiliary headlamp so that effective illumination is achieved in front of the rack.

### For headlamps below reference line

In the application form under 'Exemption details' and background select **18 Vehicle lighting**.

Under *Is there any other information you'd like to provide?*, write 'Exemption from clause 2.1(11). Bus assessed to RLM and has effective illumination.'

You need to attach a list of vehicles for exemption. This should include the vehicle year, make, model, VIN, registration, and bike rack model (eg 'Veloporter 2').

## If you install an auxiliary headlamp

If you need to install an auxiliary headlamp to improve lighting performance you will need to apply for an exemption to 2.1(11) **and 3.3(6)(a)** of the Rule. This is to ensure the additional headlamp is legal.

For the installation of an auxiliary headlamp, the:

- bus must be retrofitted with an additional single headlamp fitted to the bike rack, or the lower front of the bus, provided the additional headlamp is not higher than the bottom of the bike rack
- headlamp must be fitted symmetrically about the vehicle longitudinal centre line
- additional headlamp must comply with an approved vehicle standard (eg UN/ECE Regulation 112) for headlamps and direction and dip requirements for the height of installation as per the Rule.
- headlamp must operate during the hours of darkness (as defined in legislation) whenever the bike rack is in use.

You can apply for this exemption using *Application for an exemption from land transport vehicle rules* (CA11).

[Application for an exemption from land transport vehicle rules \(CA11\)](#)

In the application form under 'Exemption details' and background select **18 Vehicle lighting**.

Under *Is there any other information you'd like to provide?*, write 'Exemption from clause 2.1(11) and clause 3.3(6)(a). Bus assessed to RLM and did not have effective illumination. Standards compliant auxiliary headlamp has been fitted and combined headlamps illuminate the road in front of the vehicle for 50m.'

You need to attach a list of vehicles for exemption. This should include the vehicle year, make, model, VIN, registration, and bike rack model (eg Veloporter 2) and the make and model of auxiliary lamp fitted (eg LED Autolamps HL250 UN/ECE Reg 112 compliant).