WAKA KOTAHI
NZ TRANSPORT AGENCY

REQUIREMENTS FOR URBAN BUSES IN NEW ZEALAND

for consistent urban bus quality (2024)

1 July 2024

VERSION 4.3

New Zealand Government

Disclaimer

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More information

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This document is available on the NZTA website at http://www.nzta.govt.nz

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Record of amendments

Amendment number	Description of change	Effective date
1	Review of RUB first published in 2008	Start of 2012-2015 NLTP
2	Amendment to accommodate the introduction of double-decker buses	July 2013
3	Three-yearly review of the RUB	December 2014
4	Regular review of the RUB post PTOM contract implementation	Aug 2021
5	Amendment to include the 2025 Mandate	Feb 2022
6	Amendment to include changes to the driver compartment and general context	July 2024

Date at which compliance is required

This version of the RUB dated and published on 1 July 2024 applies to all public transport buses as follows;

- all buses ordered for purchase from 1 July 2024
- all buses at the point of mid-life refurbishment of existing fleet.

This version of the RUB (dated 1 July 2024) does not apply to buses that were already under contract prior to this date. Therefore, any buses that have been ordered prior to publication of this version of the RUB will be exempt, provided that the last delivery date for any such bus under the contract with the supplier is no later than one year after the commencement of the RUB in force at this time. This includes orders for newly constructed buses, as well as new or used imports.

Operators will need to provide written evidence to the relevant regional council to confirm contracts and delivery schedules to qualify for this exemption. Any bus qualifying for this exemption must still comply in all respects with the previous version of the RUB published in 2022 and/or vehicle quality standards in place at the time.

Abbreviations and definitions

AB	Articulated bus
AS 3696.13	Australian Standard AS.3696.13 Wheelchairs – determination of co-efficient of friction of test surfaces
BCA	Bus and Coach Association New Zealand
Contrast	Refers to the ability to distinguish between two colours, see Visual contrast (section 7.2)
DD	Double decker
ECE	Economic Commission for Europe
ESC/ESP	Electronic stability control or programme
EV	Electric vehicle
FMVSS	Federal Motor Vehicle Safety Standard
GPS	Government Policy Statement
Grab handle	Has the same meaning as 'handgrip'
GVM	Gross vehicle mass
HFC	Hydrogen Fuel Cell Bus – bus that uses a hydrogen fuel cell as its power source for electrically driven wheels
LB	Large bus
LBDD	Large bus double-decker
LEF	Low-entry floor – low entry from the front entrance to the rear exit, including priority seating area
LTMA	Land Transport Management Act 2003
MB	Medium bus
NLTF	National Land Transport Fund
NLTP	National Land Transport Programme
P&I	The New Zealand Transport Agency Waka Kotahi Planning and Investment group

PTOM	Public Transport Operating Model
RTS14	Road and traffic standard series RTS14 Guidelines for facilities for blind and vision impaired pedestrians (revision 2, 2009)
RUB	Requirements for urban buses in New Zealand: New Zealand's common standard for urban bus quality
SB	Small bus
Seat	The assembly, or part of an assembly, intended to seat at least one person
Seating position	A seat or part of a seat that is of a suitable size and shape for one person
UN/ECE	United Nations Economic Commission for Europe
VSB	Very small bus
VLB	Very large bus – double decker buses or articulated buses
NZTA	New Zealand Transport Agency Waka Kotahi
Zero-emission bus	Buses that produce zero emissions at tailpipe. This will include fuel sources such as electric and hydrogen, but there may be other technologies available.

1. INTRODUCTION

1.1. Introduction

1.1.1. Purpose of the RUB

The purpose of the *Requirements for urban buses in New Zealand* (the 'RUB') is to standardise urban bus requirements across regional councils and Auckland Transport to create efficiencies and improve the usability and accessibility, as well as environmental quality, of buses for all customers. The RUB is intended to be the standard for national bus quality and efficiency and takes precedence over regional vehicle quality standards.

The adoption of a common standard approach like the RUB results in:

- net savings, due to reduced capital and operating costs of purchasing and operating urban buses
- reduced time in understanding and complying with multiple regional vehicle quality standards, and
- more efficient use of urban buses by public transport operators because buses can be used in more than one region without costly modifications.

The RUB has wider benefits at a national level, including:

- improving the perception held by existing and potential users that buses can be used for all urban travel, including commuter, shopping, education, and recreational activities travel
- an increase in usage of public transport, including by an ageing population and people with physical, sensory, and cognitive impairments
- reducing bus design and feature variations that result in higher unit costs for supply, and
- safety and environmental benefits.

NZTA agrees that the quality of buses is necessary for creating a valued customer experience. It is also an important way to attract more patronage from people who have a greater choice about whether they use public transport to get to where they want to go. The RUB is a common New Zealand-wide vehicle quality standard for use in urban bus contracts. Regional councils and Auckland Transport must use the RUB so that they can access NZTA investment for public transport services involving buses. NZTA requires this through its procurement rules.

The RUB continues to evolve through a collaborative process with regional councils, Auckland Transport, Bus and Coach Association New Zealand (BCA), bus operators and suppliers to the industry. Since its inception in 2008, the RUB has been updated every three years. As a minimum a 3-year cycle will continue, however it is also intended that updates will take place in between as required, particularly where there may be technology or safety developments that necessitate an update sooner than the 3-year cycle.

1.1.2. Strategic context

The Land Transport Management Act 2003 (LTMA) has a purpose of contributing to an effective, efficient, and safe land transport system in the public interest. The LTMA provides the legal framework for managing and investing in land transport activities. The LTMA requires New Zealand Transport Agency Waka Kotahi to invest its revenue in a manner that seeks to achieve value for money. Part 5 of the LTMA sets out the statutory provisions regulating and managing public transport in New Zealand.

Safety outcomes - Improving safety on New Zealand roads is a priority for NZTA as part of the Safe System approach. Aspects of the RUB that support the Safe System include:

- Infrastructure improvements and speed management (e.g., onboard telematics to monitor drivers' speed)
- Vehicle safety (e.g., ESC on double decker buses, continuous handrails in stairwells, anti-trap door requirements,)
- Work-related road safety (e.g., mandated seatbelts for drivers, driver-controlled dimmable interior lighting to prevent glare)

- Road user choices (e.g., making public transport more appealing to commuters by introducing climate control and noise level requirements, ability to carry a bicycle, better accessibility for less able passengers, performance-based requirements for mobility devices)
- System management (e.g., external camera views of pedestrians and cyclists)

Environmental outcomes - Reducing road transport emissions are a key environmental priority for the government. To give this effect, the government is mandating that only zero-emission public transport buses be purchased by 2025 (the 2025 Mandate); A reduced emissions profile of the fleet could increase the proportion of customers who choose to use public transport, supporting mode shift to public transport.

From 1 July 2025, the RUB will only allow zero-emission public transport buses to be purchased. The 2025 Mandate will apply to public transport buses registered for the first time in New Zealand from 1 July 2025. This will cover new and used buses that are imported to New Zealand and new buses manufactured or built up in New Zealand. It will not cover buses that are already in the public transport bus fleet prior to 1 July 2025 - even if they are transferred between regions or operators or refurbished.

The 2025 Mandate will apply to public transport buses and small passenger service vehicles used to deliver public transport services contracted by public transport authorities. Earlier transition prior to this may be required by some councils. It will not apply to vehicles used to deliver Total Mobility services. It will not apply to buses used for services contracted by the Ministry of Education.

1.1.3. Implementation

NZTA expects that all Regional Public Transport Plans prepared under the LTMA include a policy of using the RUB for vehicle quality standards, and all public transport contracts will incorporate the RUB requirements as they are rolled out.

1.1.4. Verification of RUB requirements

While the RUB is outside the scope of the Land Transport Rule: Vehicle Standards Compliance 2002, compliance with the RUB does form part of NZTA contracts with PTAs.

All public transport contracts must adhere to the RUB and incorporate an inspection regime to verify compliance. At a minimum, compliance with the RUB must be verified prior to entering urban service and continued compliance must be verified as required by the regional council.

Inspection organisations and vehicle inspectors appointed by NZTA to conduct inspections and certifications for entry into service or in-service periodic inspection and certification are well-positioned to be able to conduct RUB compliance checks. Additional tools may be required, such as lighting meters or noise meters. Regional councils can choose to verify compliance with the RUB themselves or can outsource the RUB compliance inspections to CoF-A (light vehicle) or CoF-B providers (heavy vehicles), or another capable organisation, via agreement.

1.2. Scope

1.2.1. Regional councils / Auckland Transport contracted urban bus services

The RUB applies to approved organisations contracted to deliver public transport bus services in urban centres. The specifications contained in this document apply to buses entering the urban fleet for the first time, however, there are some minimum specifications that will apply to existing buses (see section 6).

This document is also not generally applicable to other forms of bus and coach operations, e.g., approved organisation's contracted school and rural services, tourist, charters, intercity services, or school services funded by the Ministry of Education, and either contracted through its agents or directly by schools themselves. Again, however, there are some minimum specifications that can be applied, at an approved organisation's discretion, to buses providing school and rural services (see section 6, including options for maximum age).

1.2.2. What does 'new to urban service' mean?

'New to urban service' means any new or used bus entering urban service in New Zealand for the first time. Technically, there are two definitions of a 'new' bus – the date of manufacture and the date of first registration in New Zealand.

This distinction is important to note because a bus will have a date of manufacture, then after it comes into New Zealand and is entry certified here, the bus is only subject to land transport rules when it is registered to go on the road. However, the relevant date here is the date of registration in New Zealand.

In the case of any existing urban service bus being accepted into a new urban service contract, the bus in question must:

- comply with the version of the RUB applicable to the age of the bus, or
- if pre-RUB, at a minimum meet the requirements listed in section 6, and
- be acceptable to the receiving regional council.

In the case of any bus entering into an urban service contract for the first time, the bus in question must:

- comply with the latest version of RUB, and
- the vehicle age will be deemed to be from the date of first registration anywhere.

1.2.3. Does the RUB apply to new, used, and existing vehicles in the fleet?

This document is intended for use by approved organisations in their procurement of urban bus services. It specifies requirements that apply to all buses entering urban service as of the date of this document (sections 2 to 5).

Requirements for existing urban service buses accepted into a new urban contract (section 6).

Requirements for the midlife refurbishment of existing fleet (section 6.3).

1.2.4. RUB compliance and variation for rural services, inter-city commuter, and airport services

All buses contracted to approved organisations to operate urban services must be RUB compliant. Buses providing urban school trips which are part of unit contracts must also comply with the RUB. Variations could be considered for buses providing a unique commuter service (e.g., extra luggage space for an airport service) but must maintain wheelchair accessibility and priority seating. It is important for bus providers to engage with the disability community when considering these unique solutions. These alternative solutions may have unique ticketing solutions.

- A very small bus (VSB) has 13 to 25 passengers (excluding the driver), includes a minimum of 13 seating positions.
- ‘Inter-city commuter service’ refers to any service that is a longer distance service that travels on open roads.
- ‘Rural service’ means any service that begins or ends in a rural area.
- ‘Rural area’ means any area judged to be rural in character, based on a reasonable assessment of its geographic features, resident population, dominant forms of employment and other relevant features[1].

This RUB is focused on the quality and usability aspects required to meet the needs of public transport bus customers. It is a quality standard delivered through a supplier service contract relationship and is subsidiary to the land transport rules. These rules are legislative requirements focusing on, among other things, commercial vehicle safety, dimensions, mass, and emissions.

This document is subsidiary to the legislative requirements for vehicles in New Zealand. All requirements of the RUB are in addition to, and do not replace land transport rules.

See land transport rules on the NZTA website here: https://www.nzta.govt.nz/resources/rules

1.2.5. Regular reviews of the RUB

The practical implementation of these requirements may highlight new ways of dealing with particular issues that may arise and the intent is that we should make improvements if need be. It is, therefore, proposed that this document be formally reviewed every three to five years or sooner as required and noted in 1.1.1. above.

[1] In the event of dispute, this is to be determined by NZTA at its sole discretion. Population and other statistical data (where used) to be sourced from the most recent national census data compiled by Statistics New Zealand.

1.3. Bus sizes

For the purpose of this document, a bus is a heavy vehicle that provides a service with more than 12 seating positions.

Very small bus (VSB)	13 to 25 passengers (excluding the driver), includes a minimum of 13 seating positions
Small bus (SB)	30 or more passengers (excluding the driver), includes maximum of 23 seating positions
Medium bus (MB)	54 or more passengers (excluding the driver), includes minimum of 24 seating positions. If double decker, MBDD
Large bus (LB)	75 or more passengers (excluding the driver) includes minimum of 36 seating positions. If double decker, LBDD; if articulated, LBAB
Very large bus (VLB)	95 or more passengers (excluding driver) includes minimum of 80 seating positions. If double decker, VLBDD; if articulated, VLBAB

References are to all bus sizes unless specifically noted as to the size category in the relevant sections that follow.

2. DESIGN AND PERFORMANCE

2.1. Introduction

The chassis must be fit for purpose as required by the heavy vehicles rules, e.g., Land Transport Rule: Vehicle Dimensions and Mass 2002 and Land Transport Rule: Passenger Service Vehicles 1999. The chassis shall be of an appropriate design and use protective material, or techniques such that a bus can be expected to give 20 years reliable life under normal high-intensity urban operational conditions of service, without incurring major structural failures or the need for major overhaul requirements due to operating, roading, and environmental conditions, excluding those that are attributable to vehicle crashes.

2.2. Maximum vehicle age and fleet average age profile

The maximum permitted vehicle age is 20 years from the date of first registration anywhere in the world – this also applies to EV buses. At the 'midlife' of a bus (around 10 years from first entry into urban service in New Zealand) a bus must be refurbished (refer to section 6.3). The maximum average age of the operator vehicle fleet under bus service contracts is to be 10 years. Consideration needs to be given to the whole-of-life of an EV and for the recycling of the vehicle's components.

Note: This applies to all vehicles, irrespective of whether they are new to urban service or existing buses.

2.3. Performance

All sizes – includes all modes of propulsion, i.e., liquid fuel, electricity, gas, hydrogen, or hybrid. By 2025, the government will only allow zero-emission public transport buses to be purchased. This commitment targets complete decarbonisation of the public transport bus fleet by 2035.

Acceleration (all buses)	Minimum: 0-50km/h ≤ 18 seconds. Note: Acceleration is measured in an unladen bus on a level road. The average of two tests, one in each direction within a period of 30 minutes. (Harsh acceleration is covered in section 4.11).
Battery powered electric buses	A battery electric bus must be able to meet operational requirements without the need for an additional bus, as required under the contract with council. This is a transitional measure while technology is advancing at a considerable pace and can be revisited. Public transport contracting authorities and bus operators must use battery electric buses which have the CCS2 type plug, which is currently the most common type used in New Zealand and is recommended in the Public Transport Design Guidance (PTDG).  See www.nzta.govt.nz/ptdg for infrastructure guidance on battery electric buses which may help with plug location and depot layout to increase interoperability. It is anticipated that any on-route chargers provided by Auckland Transport or regional councils will work best with plugs on the left-hand side towards the rear of the bus. Battery electric buses must use the Open Charge Point Protocol (OCPP) for communication between electric bus and chargers to enable central management system.

Transmission	Fully automatic or electronic shift, plus retarder (does not apply to EV buses).
Suspension (all buses except VSB)	Air suspension. Kneeling capability at front door with a kneel and rise time of <8 seconds each. Electronically controlled air suspension, including self-levelling.
Stability and steering	ESC/ESP is required for DD buses.
Vehicle braking	Anti-lock braking system and electronic braking system are required.
Hold brake/ interlock	Vehicles must be capable of being held by the hold brake (the automatic activation of the service brakes upon the opening of the doors), restarting without rolling back on sealed grades. Additional option – engage the hand brake system before doors can be opened. Passenger doors **must not be able to be opened** if the vehicle is moving. If a passenger door is open the brakes must be activated, the engine throttle returned to idle, and the door fully closed before the vehicle can move off. It must not be possible for the brakes to be released unless done so by the driver, in the driver's seat.
General safety, fire resistance and suppression	The passenger compartment and the engine bay should meet the technical requirements of UN/ECE R118-01. Compliance shall be demonstrated by manufacturer declaration or a parts summary including individual test reports for each component – a manufacturer declaration is preferred. If a manufacturers declaration is provided, individual parts do not need to be marked as compliant. Engine compartment for diesel: fire retardancy ISO 3795 (1998) or FMVSS 302. Fire suppression for engine and high-voltage battery compartment is mandatory: must be compliant with Australian Design Standard 5062-2006 (Fire protection for mobile and transportable equipment) or an equivalent internationally recognised standard, such as UN/ECE reg 107. Battery packs & EV systems: must comply with UN/ECE reg. 100 (or technical equivalent) for EVs. Hydrogen fuel cell vehicles: UN/ECE no.79/2009 (or technical equivalent). - Indication on the bus is needed to identify propulsion type and an emergency cut-off switch, to be located and clearly labelled, in the driver's compartment.

	- An external common label/sticker with E or H, like LPG and CNG, is required to be placed near the number plate, as per LPG/CNG requirements, to identify electric or hydrogen buses to emergency services. This label/sticker is not required for diesel or petrol buses. Additional signs meeting ECE R100 requirements to be placed on external panels identifying where battery packs are located.
Telematics	Fatigue and driver distraction can be serious safety concerns in public transport operation and NZTA supports the investigation and trial of these systems. Telematics should be able to monitor factors affecting passenger comfort, braking, acceleration, cornering, and speeding. It should give the driver real-time feedback and enable incidents to be recorded and traceable to a particular driver.

2.4. Environmental

Exhaust emissions	Current vehicle exhaust emissions rule with the exception that EURO VI-C stage (as defined in table 1 of appendix 9 of Commission Regulation (EU) No 582/2011) or better is required for a new bus. Any emissions-defeating or tampering (e.g., cheating devices, ecu-remapping). That disables AdBlue or other systems is strictly prohibited. All emissions control equipment must remain functional and within safe tolerance of its state when manufactured.	
External noise	These situations reflect urban on–road performance.	
	On-road noise	Maximum peak 77 dB(a) measured while driving by at 50km/h, fully laden, measured at a distance of 7.5 metres from the centre-line. For microphone setup, refer to figure 1 of annex 3 of UN/ECE reg. No. 51, also referenced in 7.4.1.1.
	Air brake noise	Maximum 72 dB(a), measured at a distance of 7 metres while the vehicle is stationary. Refer to figure 1 of annex 5 of UN/ECE reg. No. 51 for positioning of sound meter for testing and 7.4.1.2.
Internal noise	Attention must be taken to minimise noise, vibration and harshness transmitted to passengers. Factors such as noise, mechanical noise and air conditioning noise must be minimised.	

3. VEHICLE ENTRANCE AND EXIT

3.1. Ramp

Measurements	An electric sliding or manually operated flip-over style ≥800mm width ramp must be provided at the front door that can be deployed and recovered by the driver on request, where the kneeling facility proves to be insufficient. The maximum ramp gradient must be 1:8 / 12.5%, from an infrastructure design standard kerb.
Design features	Ramp hinges and lifting handles (65mm minimum) must be countersunk/flush with the floor to reduce the interference to passengers on foot or in wheelchairs. If the ramp is not electrically operated, the driver's lifting handle must be full hand-width style, rather than a single digit ring-style pull up. The ramp surface (when deployed) must be covered in a slip resistant material (refer to Floor). The 3 edges of the ramp surface (when deployed) must be highlighted with a 50mm-wide yellow edge as detailed in section 3.5.
Signage	A wall mounted sign adjacent to the front door (preferably pictorial) shall indicate the permitted maximum weight of the ramp e.g., 300kgs and maximum width of any wheelchair or pram that can be carried by the bus i.e., 700mm (excluding the user).

3.2. Ticketing/fare collection area

Any tag-on/tag-off equipment must be readily accessible and be easy to use by adults and children, irrespective of whether they have a disability or not. The positioning of the tag-on/tag-off equipment must be such that it does not reduce any of the clearances specified for accessibility.

Front door	All ticketing/revenue collection that requires interaction with the driver (card or cash) for all passengers of any capability, including those using wheelchairs, is to be through the front door. Boarding using an electronic revenue system with a tag-on requirement must be through the front door only. Alighting using a tag-off electronic requirement may be through either the front or rear doors. Ticketing equipment and till stand should be ergonomically located for driver ease of use. Ticketing equipment and till stand must not impede the driver's vision or access by wheelchairs. The height of the electronic tag-on/tag-off machine sensor must be between 900-1000mm. The machine must be located on the modesty panel stanchion, immediately to the right-hand side of the front door entrance and must not impede wheelchair access.

Rear door	Alighting using a tag-off electronic requirement may be through either the front or rear doors. Must have the ability to tag on and off at the rear door.

3.3. Doors

Number	VSB/SB	One front door.
	MB/LB/ VLB	One front and one rear. Larger vehicles that will be used solely on longer-distance urban express/limited stop style, or school bus services, may use only one door. Regional council prior approval for this configuration is required.
Location	All buses	Front door will be as close to the front of the bus as possible, and immediately opposite and in full view of the driver.
Design – door entrapment prevention		A system must be fitted to the front and rear doors to prevent passengers (or personal items e.g., backpack) being trapped and the person dragged along the road (e.g., sensitive edge to a minimum height of 1500mm).
Widths (clear space excluding any handrails on the door)	Front door	≥1000mm double leaf.
	Rear door	VSB/SB/MB ≥700mm single or double leaf for the rear door, if fitted. LB/VLB ≥1000mm double leaf.
Rear doors		A door system is required that cannot trap or crush people inside the bus (e.g. outward opening (plug) type doors).
Hold brake		The activation of either door open control must activate the service brakes (braking system) (See 2.3 Performance)
Weather screen		Provision for a weather screen shall be provided on both sides of the rear door and at the rear side of the front door to provide passengers shielding from the weather when doors are open. Fitment is optional by approved organisation.

3.4. Step height/depths

Door-step height measurements	Measurement to be taken at the midpoint of the open-door aperture with the bus on level ground (not on a cambered surface) and includes the step edge nosing. Kneeling is a requirement for all buses, except VSBs. Automatic kneeling capability is not required, rather this should be manually controlled by the driver. If the capability is used every time the bus stops, it will use unnecessary air and increase fuel costs and slow down overall journey times. A sign/sticker stating 'This bus kneels on request' must be provided on the exterior of the bus adjacent to the front door.
Front and rear doors	≤370mm at normal ride height. Kneel height at the front door to be between 245–280mm.

Ground clearance	Vehicles must have sufficient ground clearance to permit the body (including skid plates) of the vehicle to pass over a Kassel kerb without making contact with the kerb. These kerbs are 180mm high above the road surface, immediately adjacent to the Kassel kerb.
Any additional steps, including aisle or seat plinths	For passenger confidence, step heights should preferably all be of equal height. A maximum of two different heights is permitted. Minimum step depth (i.e., the horizontal measurement from the front edge to face of the next riser), except for any steps to access forward facing seats on the front of the wheel arches minimum step depth, is >220mm. To be clear, this applies to any steps into the rear saloon area by the rear door/axle location. The steps to the rear saloon must be built into the rear saloon floor. There must be no steps in the rear doorway.

3.5. Step and plinth edges

Design	All steps at door entry and exits or within the vehicle shall have full width step edges (nosing) fitted with a distinctive high-visibility yellow colour, slip resistant/non-trip style nosing in a solid band, contrasting with the immediately adjacent flooring material. The steps' high-contrast nosing in the horizontal planes is to be within the range of 50mm – 65mm wide and 30mm – 55mm on the vertical planes. Floor (section 4.5) for the slip resistant performance requirements. Refer to Visual contrast (section 7.2) Visual contrast for the contrasting colour performance requirements.

4. VEHICLE INTERIOR

4.1. Driver compartment

The role and responsibility of the urban bus driver is a demanding one. As a consequence, features that make the task easier and safer for drivers can facilitate an improved Public Transport system.

The driver's compartment is part of their workplace, where they spend most of their working day. It is therefore important that the space is comfortable and safe, and to recognise that improving comfort and safety is a continuous process.

This includes the option for Operators and PTAs to install Driver Protection Screens as a safety measure to support their joint responsibilities as a Person Conducting Business or Undertaking (PCBU) under the Health and Safety at Work Act (HSWA) 2015.

Prior to installation it is recommended that a risk assessment is undertaken to assess need alongside other health and safety measures in place, and that any decision to install Driver Protection Screens is by agreement between the Operator and PTA.

Comfort	Provision of: • A fully sprung driver's seat with adjustment for all three planes of driving position. The driver's seat suspension should be able to be adjusted to cater for varying driver weight. • A readily adjustable (tilt and height) steering wheel column and soft style easily cleaned, and dried, steering wheel. • A footrest for the left foot. • Coat/jacket storage, e.g., hook. • An area out of sight for the storage of personal belongings such as bag/lunchbox. • A seatbelt is required. • Personal driver-controlled form of heating and cooling, including to the foot area. This can be part of the bus climate control system, but the driver must be able to control the flow and direction.
On-board security	Provision of: Barrier Protection Panel • A Barrier protection panel immediately behind the driver to prevent any form of assault from behind, either directly by a passenger or by a thrown object Driver Protection Screen • A Driver Protection Screen which creates a transparent physical barrier between the driver and passengers to act as a safety measure. The goal of the Protection Screen is to reduce the risk of harm to drivers from aggressive and threatening passengers by substantially enclosing most of the driver compartment or fully enclosing the driver compartment. • This feature is optional and may be retrospectively fitted to existing buses or installed in new bus purchases at the point of manufacture. Should an optional Driver Protection Screen be installed, it shall be constructed as follows: - from rigid high quality, durable, transparent materials such as a polycarbonate, toughened safety glass, or plastic, with a transmittance value of >70 %; and meet the most recent glazing standard UN/ECE R43 Rev 4, or equivalent: - shall not trap the driver in the event they have a medical emergency;

	- shall have a release mechanism easily accessible by the driver; - shall reduce substantially any opportunity for threatening passengers to cause harm to the driver; - shall be free of substantial reflections; - does not interfere with the operation of airbags; - does not interfere with the driver's ability to reach vehicle controls including lights, warning devices etc.; - does not obstruct aisle access for driver or passengers and continues to meet section 4.6; - does not impede wheelchair ramp use and access; - be easy to clean; - does not interfere with the driver's vision (including through the front and side windows, rear-view mirrors) or create any blind spots for driver vision; - does not unduly impede communications with passengers; and - does not obstruct fare collection requirements. New Buses • New buses shall be manufactured to subsequently enable the fitting of a Driver Protection Screen conforming with the above requirements at a later date. Revenue Collection • A revenue collection and holding system so that the driver's cash can be readily and securely locked into a cash box that can be secured to the bus, e.g., to the ticket issuing equipment stand.

4.2. Driver operational communication

For an urban fleet service requiring more than five buses in service at any one time, a two-way radio shall be provided to provide communication between buses of the same operator, back to base depot and to any central information or control centre.

4.3. Priority seating area

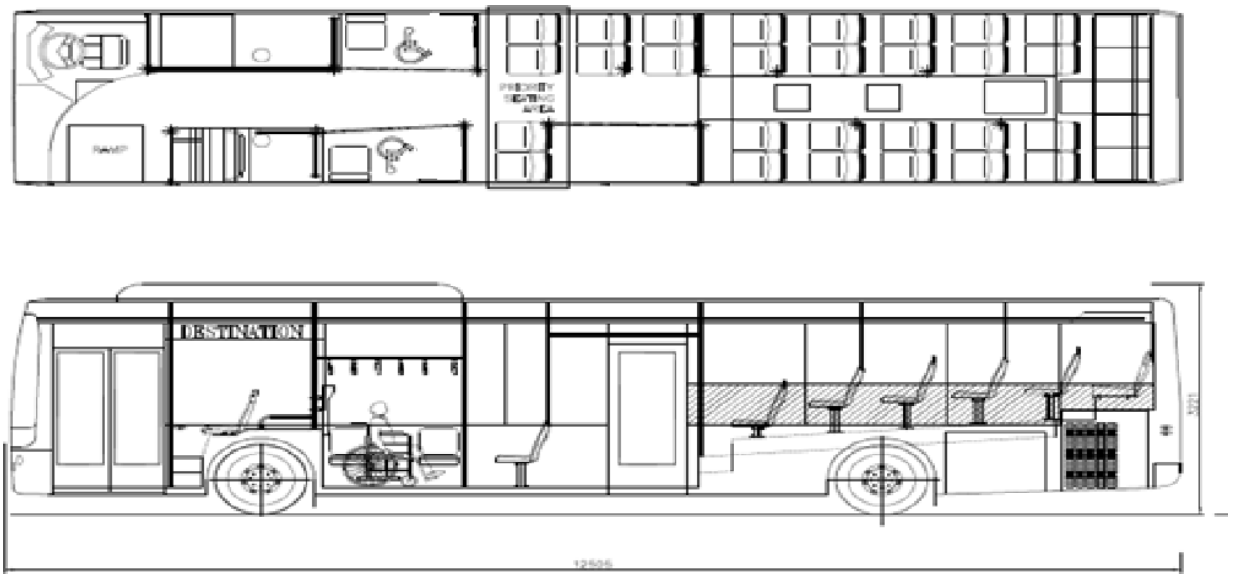
The priority area is a key concept in achieving accessibility. The picture below shows the general location of the priority area – it is not intended to show all the features and dimensions of the priority area.

Priority seating for those with physical, sensory, and cognitive impairments (including when accompanied by a guide dog) and parents/caregivers with children, irrespective of whether a pram or stroller is being used, must be located as far forward as possible to minimise the distance to the front door.

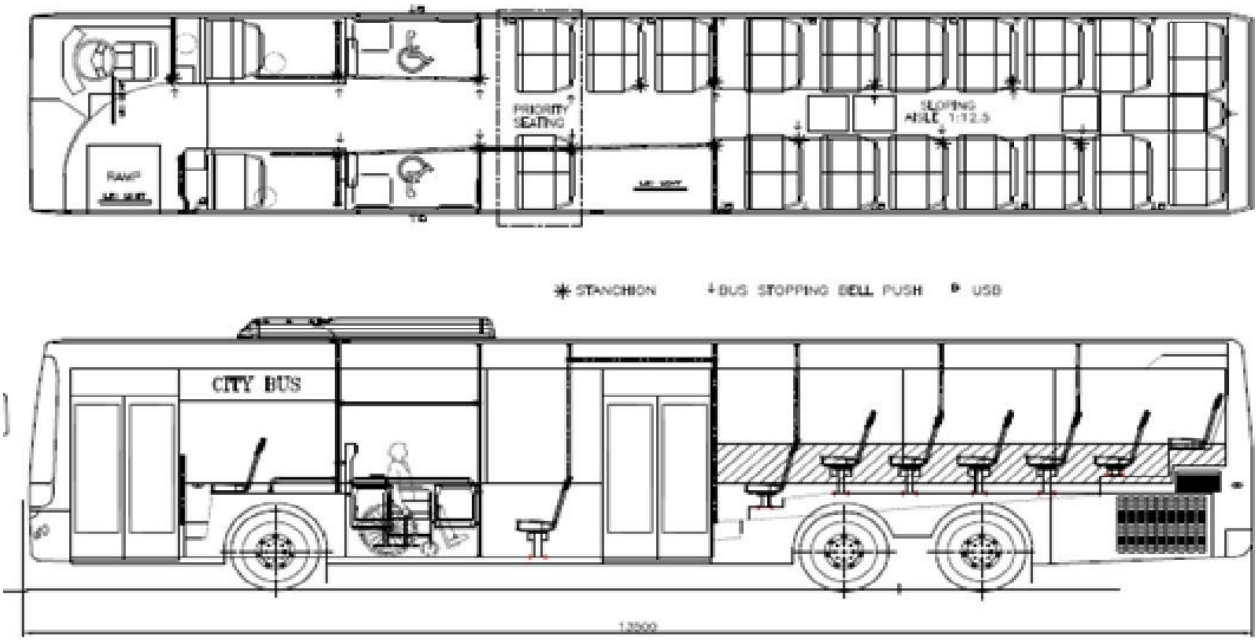
In total, sufficient protected space should be provided to accommodate two folded prams/strollers/mobility frames and two pieces of luggage, each of the luggage pieces being capable of being carried by one person, e.g., ≤25kg with dimensions ≤800mm x ≤300mm. Luggage storage may be side-by-side or one on top of another providing they are securely contained, readily accessible and do not hinder any passenger movement through the area. In the event that for special services or areas e.g., tourist centres or airport services, additional luggage space is required, this can be readily installed on a local basis by the removal of some seating (e.g., from over or forward of one or both the front wheel arches).

The diagrams below show an example of (a) medium-sized and (b) large-sized bus priority seating area layout:

(a)



(b)

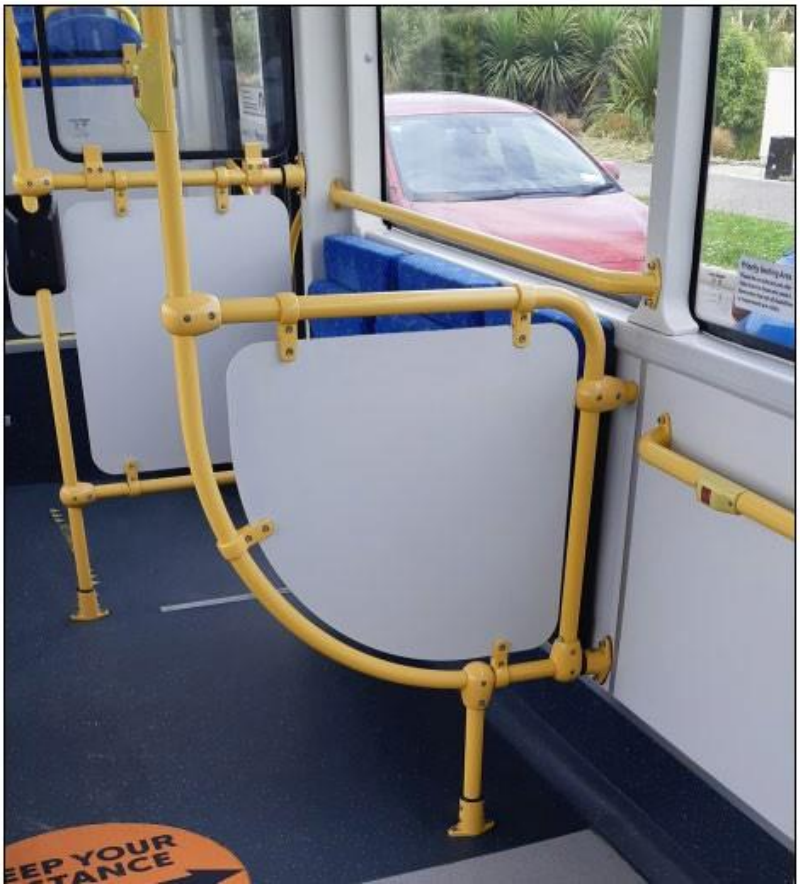


Provision shall be made as follows for passengers with physical, sensory, or cognitive impairments, including those that may be accompanied by a guide dog:

Location	The priority area is located well to the forward end of the saloon (in the case of an DD, the lower saloon), preferably immediately to the rear of the front wheel arches, or for DD immediately to the rear of the front wheel arches and stairwell, and encompasses a minimum of: • **for all buses there must be one multi-use/wheelchair space that will accommodate one wheelchair and user, or pram user, on the nearside of the vehicle,** and • **for single deck buses an additional multi-use/wheelchair space that will accommodate one wheelchair and user, or pram user, on the far side of the vehicle** • **one sideways facing, folding seat will be located immediately behind each wheel arch** – to facilitate wheelchair access and stowage. Any fold-up seat must be capable of being held in the stowed position, without locking. There must be a horizontal handhold for occupants of sideways facing seats. • four forwards facing seats must be available to the rear of the wheelchair spaces and as far forward as possible, behind a modesty panel (to protect vulnerable passengers in the case of a sudden stop).
Measurements	• Multi-use/wheelchair spaces must have dimensions of **not less than 800mm by 1300mm to cater for a wheelchair or other mobility device with a footprint of ≤700mm width x ≤1200mm length x 1100mm high** and its user. The mobility device must be stable and able to be safely secured, i.e., must not fall over if not supported.
Signage	• Contrasting easily seen signage to indicate the area and request to vacate seats for use by passengers with disability/mobility needs along the following lines: **'Priority seating area - please vacate these seats for elderly or disabled passengers or parents/caregivers with children.'**

4.4. Wheelchairs

Wheelchairs are described as both manual self/caregiver-propelled or powered versions of required characteristics as follows:

Measurements	• The spaces provided for a wheelchair with a maximum dimension of **≤700mm width and ≤1200mm length.** • Hand holds to the rear of both wheelchair spaces must be 300mm clear of the floor with the vertical support to the floor no more than 500mm out from the wall. This provides additional foot space for a passenger in a wheelchair to manoeuvre into and out of the wheelchair space, as well as space providing sufficient space for a service dog. 
Weight restriction	• Weight restriction of 300kg, including wheelchair and passenger.
VSB/SB/DD	• To carry one wheelchair.
MB/LB/VLB	• To carry two wheelchairs.
Restrictions	• Transport mobility devices, including powered mobility scooters and segways, that exceed these dimensions and weight restrictions are not classed as a wheelchair and are not able to be carried due to their dimensions and restricted manoeuvrability. • This restriction may be revisited at the next RUB review, if evidence that more suitable (weight and dimensions) mobility scooters have become more widely available.

4.5. Floors

Slip resistance	All floor surfaces must use a slip resistant material with particular attention paid to its effectiveness in the entry and exit door areas, including the wheelchair ramp, and areas designated and signed for wheelchair users, priority seating and floor-positioned luggage areas. A slip resistant material means it meets one of the following criteria: • ISO 7176-13 / AS 3696.13 coefficient of friction between 0.75 and 1 • ASTM D2047 ≥ 0.6 • Wet pendulum (TRRL, British Pendulum, PTV) ≥ 35 • AS 4586 ≥ P4 • DIN 51130 ≥ R10 • Surface microroughness ≥ 20 µm Ramps, when deployed, must have greater slip resistance than flat areas (refer to Ramps).
Contrasting colours	Floor surfaces in the priority area must use easily seen contrasting colour flooring material, which contrasts to the flooring of the rest of the main saloon, including under the other passenger seats and any luggage areas. See also Visual contrast (section 7.2).
Signage	• "Please stand behind this line" floor insert or sticker to be positioned on the floor in the central aisle immediately behind driver's seat. • Wheelchair signage as a flooring insert is required in addition to a sidewall-mounted wheelchair sign, which must clearly state that the wheelchair user must apply the wheelchair's brakes and use the wheelchair restraint (if fitted), always when the bus is moving. Refer to section above.
VSB/SB	• Flat, or nearly flat, floor from front entry to immediately forward of rear axle is required for SB, and as close as practical for a VSB.
MB/LB/VLB	• Flat, or nearly flat, floor from front entry to rear edge of the rear door or immediately to the front of the rear axle if only one door (i.e., no steps). • Behind the rear door or rear axle stepped access (preferably a maximum of two, excluding any step access to the rear seat) in conjunction with sloping floors are acceptable.

4.6. Aisle width

The manoeuvring width inside the front door entrance, fare paying and turning area must be at least the same as the aisle width between the wheel arches and up to the rear of the multi-use wheelchair space. There must be unimpeded access for a wheelchair and pram through the front wheel arches to at least the front edge of the rearmost set of priority seating or the rear of the wheelchair space.

For LBDD – the aisle width of >440mm applies throughout the upper saloon as well.

Swept path through entrance to rear of wheelchair /mobility device/pram area	**VSB/SB:** ≥780mm and such that a representative 700mm wide x 1200mm long x 900mm high box can pass through).
	MB/LB/VLB: ≥800mm and such that a representative 700mm wide x 1200mm long x 900mm high box can pass through).
Aisle width from front edge of rearmost set of priority seats	**≥450mm*** for all buses *can be reduced to ≥440mm in upper deck of DD. Stairwell step width >550mm is required.
Shoulder room in aisles (above the seat back)	**≥550mm*** * flexible grab handles can encroach on this requirement.

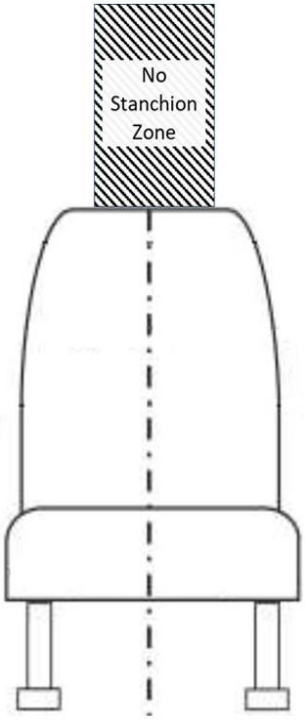
4.7. Seating design

Seating must consist of a fabricated frame or moulded shell which must contain a flat bench style or minimally contoured squab or padded insert style seat. A single layer unpadded fabric or synthetic material liner is not acceptable.

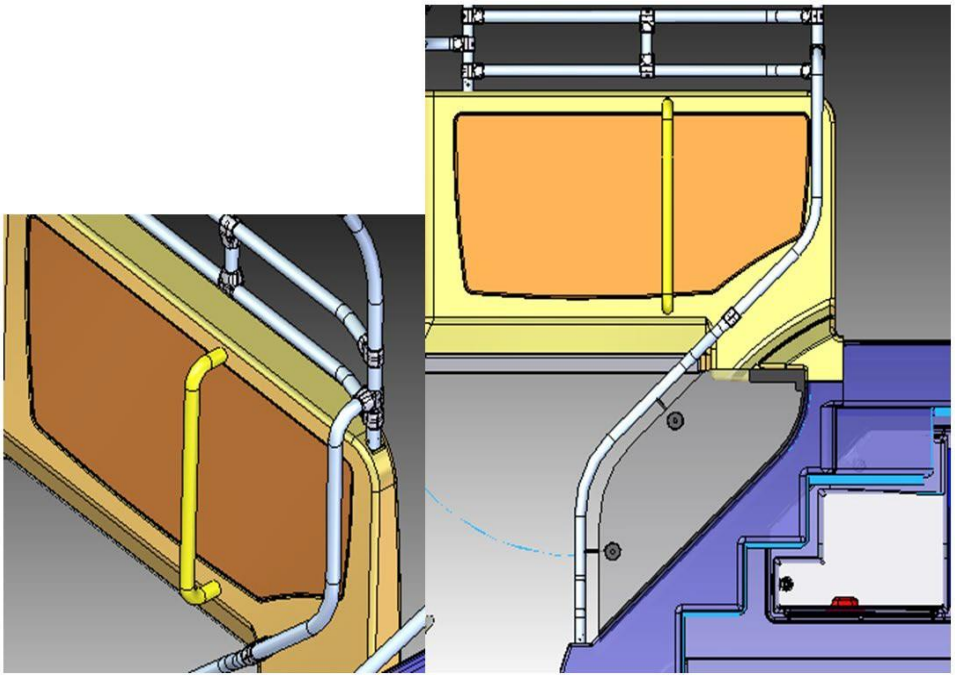
All materials must be vandal, fire, stain, and odour resistant. They must also be hard-wearing and easy to clean.

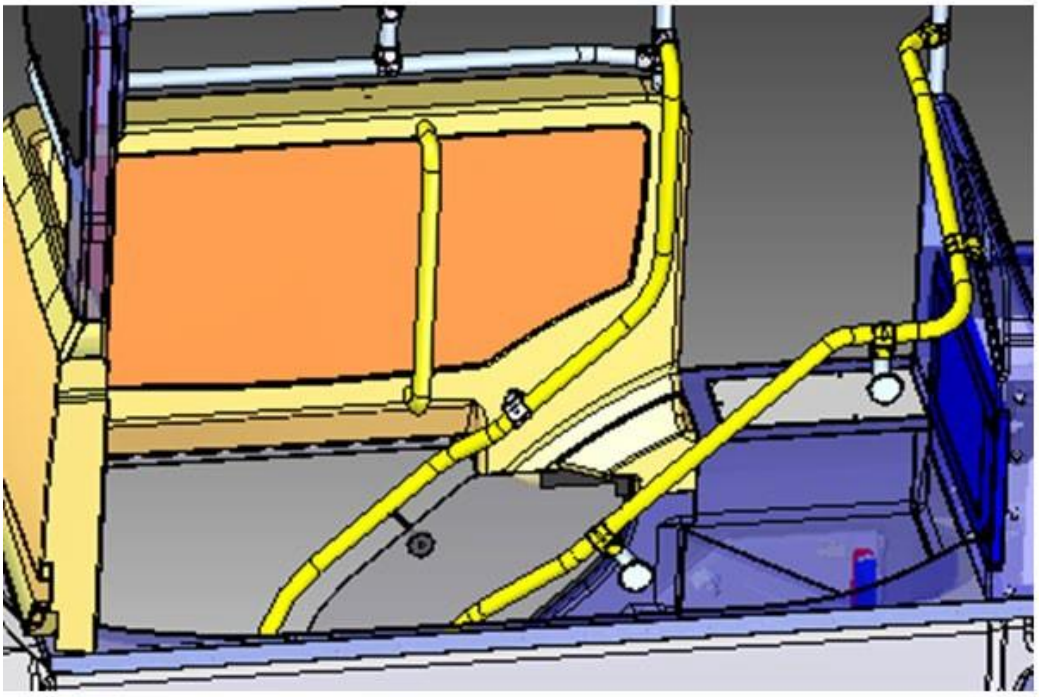
Seat width	Single seat: ≥425mm.
	Double bench or paired: ≥875mm.
	Parent/caregiver and child, on front wheel arch: ≥760mm.
Spacing	Forward facing: ≥690mm.
	Facing: ≥1300mm. Note: the forward-facing seat in the set must have a stanchion on the aisle side and a horizontal handrail on the wall. This may compromise the aisle width in this location, however as it is a safety feature it will take precedence over aisle width requirements.
Seat cushion depth	≥350mm.
Seat cushion height from floor (may be reduced at wheel arches)	Between 450mm and 500mm for priority seating section or 400mm to 500mm everywhere else. (Can be reduced to 350mm at wheel arch and engine compartment.)
Seat back height from floor (excluding grab handle)	Between 850mm and 950mm.
Rear seats	The rear row of seats must be constructed so that there are no gaps between the seats and the rear wall, and around the sides or between separate seat sections.

4.8. Stanchions/handrails

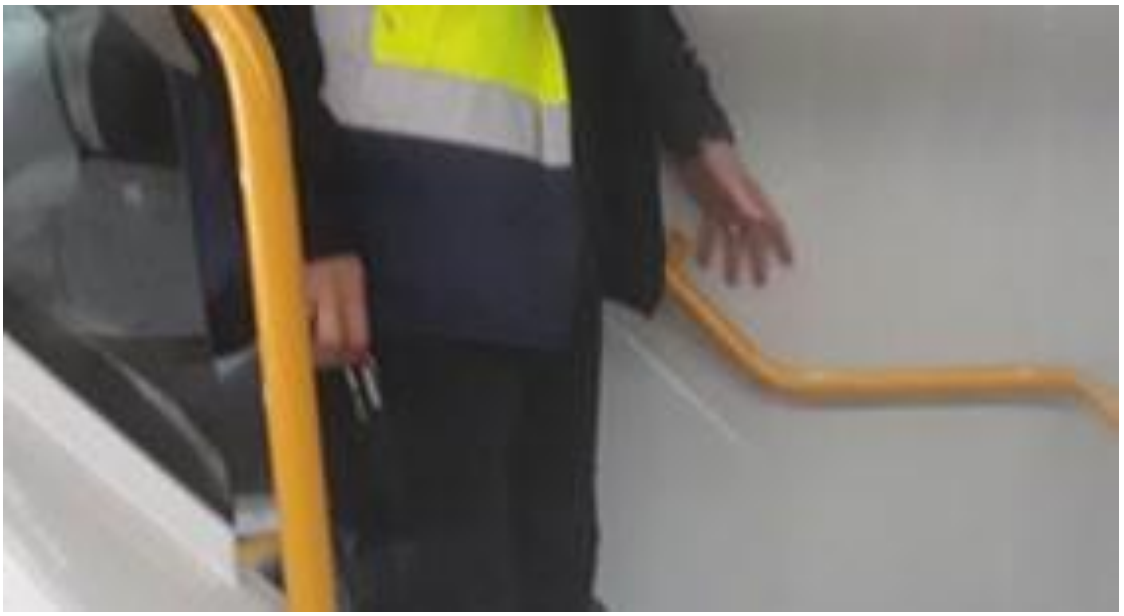
Location	Vertical high-visibility contrasting yellow colour (see Visual contrast (section 7.2)Visual contrast) stanchions from either floor to ceiling or seatback to ceiling, as location dictates, shall be fitted throughout the length of the bus and close to the aisle, but not impede movement along the aisle or within the wheelchair/multi-use space (e.g. floor-mounted stanchions can hinder wheelchair users' manoeuvrability). There must be no finger trap points in any location where a passenger may use a stanchion, handrail, or modesty panel to hold onto. A minimum finger space range of 35-45mm must be provided in these situations. Seat back stanchions must not be placed within 150mm of the centre line of the seating position to avoid possible head strike (see diagram below). 
Spacing on seats	Except in the multi-use/wheelchair space and priority seating area, the stanchions must be spaced at alternate seats left and right of the aisle, and so that a passenger can stand safely or walk/move through the remainder of the bus while able to hold a stanchion with one hand at all times. This includes in the rear saloon, and upper saloon area for a DD. Additional overhead horizontal handrails are allowed (see paragraph below).
Measurements	Overhead contrasting colour handrails must be at a minimum of 1900mm from floor level to the underside of the lowest part of the rail; if higher, they must be fitted with fixed strap hangers spaced at approximately 380mm apart. Stanchion/handrail maximum cross-section dimension must be in the range of 30–35mm and must be of a circular or elliptical cross section. For stanchions and handrails, e.g. on the doors, in the fare paying area or on the top face of the front wheel arches, or within the multi-use/wheelchair space, they must have a finger/hand clearance space of between 35 and 45mm between any part of the vehicle, and all parts of a handrail other than its mountings.

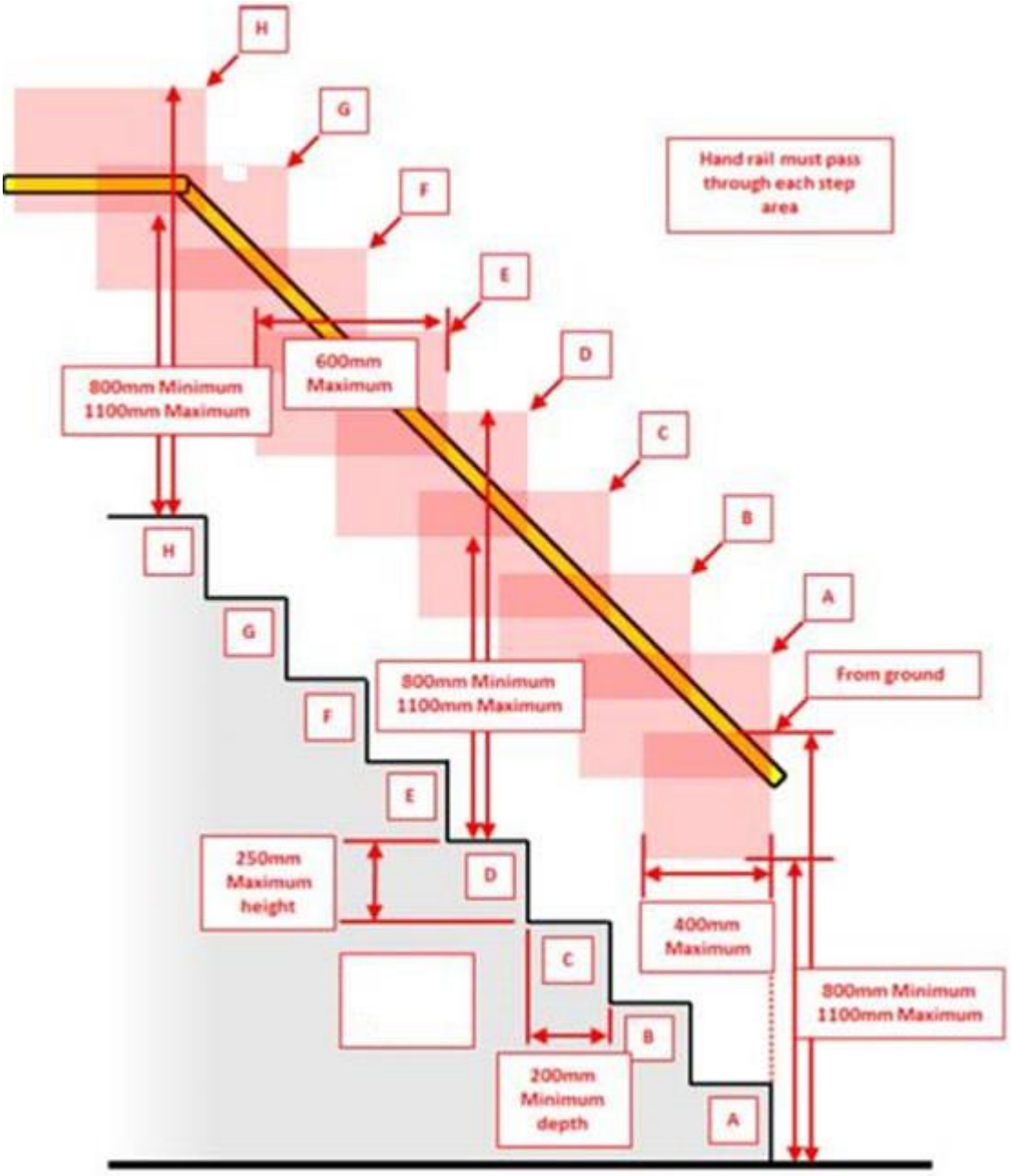
Handrails	In entry and exit areas, and the fare paying area, or areas where vertical stanchions are impractical, contrasting colour handrails must be provided in the following locations: • Front dashboard. • Sidewall between facing seats and wheelchair areas. • Modesty panels. • Front doors. • Horizontal handrail in exit and wheelchair area. • Wheel arch/luggage area.
Double decker	For DD – A modified stairwell handrail or alternative solution to reduce the risk of passenger falls. This must include: • Vertical stanchions fitted in the stairwell and immediately next to it on top and bottom decks (pics 1, 2 and 3 below). • Fitment of additional vertical handrail on sides of the stairwell. • All other handrails in the staircase to be continuous to stop passengers having to let go of the supporting handrail while walking up and down the stairs. Note: Handrails as per sample pictures from Auckland and Hong Kong buses below would be acceptable. Vertical stanchions on both sides of the stairwell are required.  Handrails and their ideal positions





In this example below, the fitment of the handrail is too low. The fitment of handrails in the stairwell must be at an appropriate level to avoid passengers walking down the stairs having to reach down, which changes their centre of gravity.





The diagram above shows required measurements for the handrail in the DD stairwell.

4.9. Grab handles on seat backs

All forward or rearward-facing seats must have a grab handle that is accessible from the aisle side. Additional grab handles on the faces of wheel arches can also be beneficial.

Design	As with stanchions and handrails, all grab handles shall be of the same high-visibility yellow colour material. For contrast refer to guidance for step and plinth edges (see Visual contrast (section 7.2)Visual contrast.

Measurements	Grab handles should have a circular or elliptical cross section. Finger and hand clearance space must be 35 to 45mm. The length must be at least 120mm, which is easier to grasp in a moving situation.

4.10. Internal lighting

Lighting type	• Energy-efficient, substantially white lighting is required.
Measurement height	• These should be measured at a height of 1000mm above the floor level (or each step in a DD stairwell) throughout the aisle of the bus. (Commercially available self-calibrated lux level meters are the recommended measurement method.)
Specifications: doorway steps	• For all doorway step areas, and externally downwards and outwards for ≥300mm beyond the step edge to a level of ≥100 lux. Extinguished on door closure and prior to moving off. Note: this should be measured at ground level below the doorway centre point and on the step edge to ensure maximum visibility.
Fare paying area	• ≥ 65 lux - extinguished on door closure and prior to moving off. • The light should be directed away from the driver in this area.
General Saloon	• Light levels in the general saloon area (including top deck), from immediately behind the driver's modesty panel, should be adjustable by the workshop. From a minimum of 20 lux to a maximum of 100 lux.
DD stairwell	• ≥65 lux. Upper saloon of DD 40 lux.
Lighting system control	• Must be fitted with automatic sensors to ensure the interior lighting is automatically switched on/off to maintain the minimum requirements. • The lighting system must not be controlled from the driver's position. • The interior lighting must be activated when the exterior lights are turned on. • Lights to increase in general saloon to ≥65 lux when doors open to allow passengers to easily locate their seats and dim again once doors are closed. • A driver-controlled button is required that dims the interior lighting for 2 minutes (and can then be pressed again) in case of excessive interior reflections. This should re-set when the door is opened.

4.11. Security and safety

CCTV	**General**	NOTE: it is important that the guidelines on the use of CCTV systems produced by the Privacy Commissioner are followed, including warning signs. The CCTV system shall, without any requirement for manual intervention or downloading, store recorded images from all cameras at the required frame rates and resolutions for a period of not less than 21 days at 10 hours operation per day. Where a CCTV system is installed on a bus operating a continuous/near to continuous service, the system requirement shall extend to a minimum of 14 days of the extent of the service. The CCTV system shall commence recording using all cameras within three (3) minutes whenever the bus's ignition is activated and is to continue recording for a period of at least fifteen (15) minutes after the ignition has been deactivated. Recordings may be overwritten when the storage medium reaches its recording capacity, unless tagged because of a duress (panic) alarm. Overwriting of recordings shall occur with the oldest recorded video overwritten first, ensuring that the most recent recording is preserved.
	Digital video recorder (DVR)	A warning light must be installed within the normal field of view of the driver as a warning if the DVR and CCTV is not operating. The DVR shall utilise hard-disk or solid-state recording media that does not require routine replacement or exchange in order to meet the storage requirements. In replaying video from any camera, it shall be possible to clearly identify the following information from the image and/or embedded data: • Bus on which the recording was made. • Camera location on the bus. • The date and time of the recording. • The status of the duress alarm. The DVR and cameras must be capable of the following minimums for day and night recording: • Analog cameras D1 (704 x 576) @ 25 fps, and • IP cameras 720 p (1280 x 720) @ 25 fps.
	Cameras	Cameras and their housings shall be mounted in such a manner to ensure that they are: • visible and identifiable as a camera • unlikely to be accidentally knocked by passengers during normal boarding procedures • not adversely affected by the use or repositioning of sun visors, mirrors or other equipment • not susceptible to misalignment of the field of view. CCTV cameras shall provide colour video where the scene luminance is above five (5) lux and may switch to monochromatic images to maintain the quality of recorded image where the available light falls below the day/night threshold of the camera.
	Camera placement	VSB/SB - A minimum number of cameras installed so the field of view and configuration enables monitoring of the following areas: 1. Entrance platform and passenger/driver interface.

		2. From the front of the saloon area looking rearwards covering rear seated areas. 3. Forward facing to road ahead of the bus. 4. Kerb-side camera facing towards the rear monitoring door activity. MB/LB/VLB – a minimum number of cameras installed so the field of view and configuration enables monitoring of the areas above plus the following areas: 5. Exit area providing the driver with an unobstructed view of rear door to ensure passengers are well clear of the door before it is operated - mounted above the door looking down, so that the door is completely visible up to the 'no standing line. 6. Rear of interior seated area looking forwards, covering rear seated areas. 7. Between the rear door and the front door of the bus - mounted either at the front looking rearwards or at the rear door looking forwards (or ideally both) and covering the wheelchair spaces. DD - a minimum number of cameras installed so the field of view and configuration enables monitoring as for MB/LB/VLB above, plus the following areas: 8. From the rear of the upper saloon area looking forwards covering rear seated areas. 9. The top of the stairwell directed down the stairwell. 10. From the front of upper saloon seated area looking rearwards.
	Audio recordings	A microphone shall be installed in the vicinity of the driver's cab and connected to the audio input of the DVR, such that audible sounds of conversations and other activity that occur within 2 metres of the driving seat. Whenever audio is recorded on the CCTV system, it shall be synchronised with the digital video recording and able to be played back with the video.
	Driver's monitor	The CCTV system must incorporate a 7" monitor, as a minimum, into a console within the field of view of the driver. This driver monitor may be used as a reversing camera monitor through automatic switching of the rear camera. The driver's monitor must have a test button or similar facility to allow the image from all cameras to be checked at any time. The monitor to be configured to allow the monitoring of all the views below simultaneously. DD Rear and/or front door open: • Stairs • Top level • Rear door inside Doors closed and driving: • Top deck view that also covers the entrance to the stairs • 3x blind spot cameras (reverse cameras) Single deck: • Rear and/or front door open • Rear door inside • Rear internal camera that looks forward • Wheelchair position Doors closed and driving

		• 3x blind spot cameras (left flank, right flank and reverse cameras) • One camera providing an internal view of the saloon must be provided, to give the driver an alternative view to what he/she can see through the internal mirror.
Reversing system	Buses must be installed with a reverse monitoring system which includes: • Reversing camera (this could be part of the CCTV system but does not need to be recorded). • Reversing sensors. • Reversing buzzers. • Hazard light activation upon the engaging of reverse gear.	
Blind spot camera system	Buses are to be fitted with an external blind spot camera system. These cameras need not be recorded by the CCTV system but can be shared with the CCTV and reversing systems. The images are to be provided in real time to the driver at all times. This requires: • Cameras that can provide a rear looking view of both sides of the bus from at least the front axle rearward. • A rearward looking view from the rear of the bus.	
DD upper body protection	Upper deck 'tree guards' on both sides of the bus to deflect obstacles and offer protection to the bus superstructure are mandatory.	
DD passenger safety	Contrasting, easily seen signage (visible at the bottom and top entry points to the stairwell) with the words: 'Passengers must not stand in the stairwell when the bus is in motion' must be fitted. An upper deck passenger counting system is required so that passengers on the lower deck know if any seating positions are available on the upper deck before entering the stairs. There must be an indicator at the bottom entry to the stairs that indicates the number of seating positions available on the upper deck. A duplicate indicator is to be fitted so that it is visible to the driver. A driver reset is required. Contrasting easily seen signage (visible at the bottom entry point to the stairwell and at the top of the stairs) with the words: 'Passengers must not stand on the upper deck' must be fitted.	
Fatigue Management	See Future Intention – Section 8 – below, for intent. New buses must be manufactured with wiring for future fitment of a fatigue management system, details of wiring specification to be advised by the council.	

4.12. Heating, ventilation, and air conditioning (HVAC)

Full air conditioning climate control is mandatory for all new urban buses.

Requirements	• There must be provision of a separate air conditioning system in the upstairs saloon of the DD. • Provision of effective climate control is of greater priority in the upper saloon area because of the lower ceiling height and generally more confined/enclosed nature of the environment. Ensure vents are not directed at passengers.
Driver control	• Systems that are independent of the driver adjusting settings are required. The driver must not have control over vehicle HVAC settings.

Temperature: saloon	• The set-point of the temperature within the saloon areas is to be maintained at a temperature of 20ºC +/- 2ºC, when the bus is operating in an environment from 0ºC to 30ºC. • This temperature must be achieved within 20 minutes of vehicle start-up.

4.13. Demisting

Requirements	Demisting should be achieved within 20 minutes in the main saloon front and rear door glass and all windows and maintained during service at all times.

4.14. Phone charging facilities

Requirements	On-board USB phone charge points shall be fitted to vehicles. As a guide, the USB system should have full protection against overloads and short circuits, and will shut down if faulty equipment is plugged in. As a placement guide, USB phone charge points should be positioned not less than every second row of seats on both sides of the aisle (including upper saloon of LBDD). Ports are also to be located on both sides of the bus near the front luggage racks / standing area and in the priority seating area, next to both wheelchair positions.

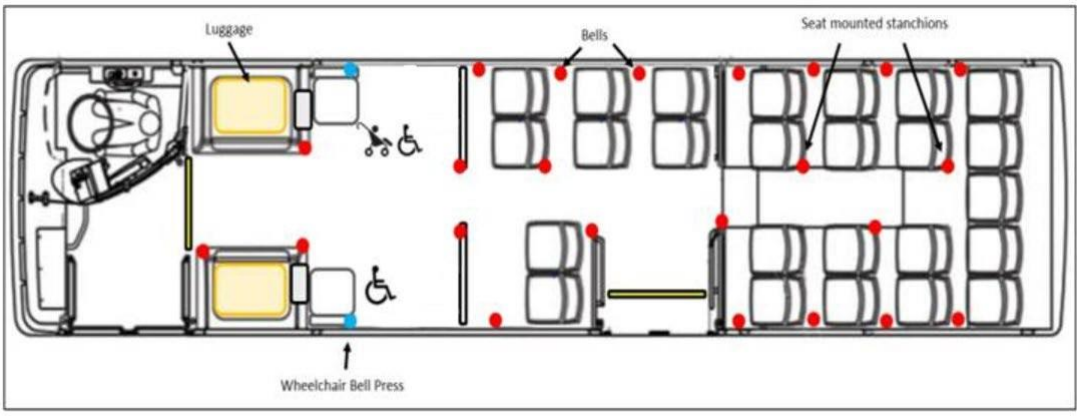
5. COMMUNICATION

5.1. Requirements

Requirements	• The two-way radio communication system shall enable communication between the bus and back to base depot and to any central information or control centre. The system must be capable of broadcasting to all or to individual buses from the base depot, central information or control centre. • A covert panic duress button must activate the system to tag the CCTV and start the audio recording. In addition, for fleets with more than 5 buses, open a radio channel to enable the operator control centre to hear the conversation on the bus. Note this channel must not be broadcast beyond the affected bus and the operator control centre. • A public-address system capable of broadcasting driver announcements to passengers.

5.2. 'Bus stopping' electronic signs and buttons

All buses must be fitted with dual-indicator bus stopping signalling and acknowledgement display devices that are easily seen and heard by the driver and the passengers in all areas of the bus saloon. (This includes the upper saloon of an DD). Signalling devices must be in easy reach of all passengers whether seated or standing.

Placement of buttons	Bus stop buttons must be in easy reach (but not able to be accidentally triggered) of all passengers whether seated or standing as follows: • Easily reached by any person seated in a priority seating area or wheelchair area without having to stand up, e.g., fitted on side walls below the window frame or on stanchions or horizontal handrails. • Easily used by elderly and disabled people with poor hand and finger function or dexterity. • Shall be mounted to the walls or window ledge, between every row of seats and adjacent to and not less than every second row of seats on both sides of the aisle (on stanchions) as depicted by the image below.  • On the vertical stanchions at a minimum of 1100mm and a maximum of 1600mm above floor level. • Must not be activated by horizontal cordage.
Audio-visual indication to driver	The device shall trigger both an audible and visual indication to the driver, and passenger. For the passenger saloon there shall be at least two illuminated bus stopping signs (to meet

	the needs of people with a visual impairment, a mix of upper and lower-case characters is strongly preferred) with associated audible acknowledgement signals. The signs shall consist of one rearward facing to the saloon adjacent to the driver's area and a second forward and rearward facing repeater located near the rear door to acknowledge the request. This sign shall remain illuminated until cancelled by the operation of the door controls. The driver's dashboard indicator shall have two components: a general signal and a second signal to indicate to the driver that the signal has been made by a passenger occupying the wheelchair position to enable the driver to prepare for ramp deployment at the next stop.
Design	Bus stopping request devices shall be installed on the high-visibility yellow stanchion, with a high-visibility mounting holding a red push signal button, for example, the picture below depicts a button with braille on it for blind or vision-impaired passengers.   Bus stopping request devices in the wheelchair space shall be of a high-visibility yellow mounting holding a dark blue push signal button clearly marked with a wheelchair icon to prevent unintentional activation by able-bodied passengers.

5.3. External destination display

Clear information of the bus route, destination and intermediate points form an essential part of generating passenger confidence.

Specifications	• Signs must be of the electromechanical or electronic matrix style, fitted with amber or white (front only) LED/LCD displays, with emphasis on high visibility during all light levels. • Rear sign must be amber LED/LCD displays. • Signs must be able to be easily read by the majority of sighted current or potential passengers as the bus approaches or departs. For visibility requirements, refer to 7.2. • Signs must be able to switch between secondary destinations.

	• All letters must be in lower case, except for the first letter, e.g., Lower Hutt. • Dot matrix must not be used.
All buses	All buses shall have the following signs: • Front forward-facing three digit/character route-number and destination combination sign a minimum of 1500mm wide viewing area, located at or above the top of the windscreen. • Near side, as close as possible to the front entrance, a route number and destination display, at a height of not less than 1.2 metres to the lower edge of the display characters and not more than 2.5 metres to the upper edge of the display characters measured from the ground and, if fitted with a kneeling system, with the vehicle in the normal condition for vehicle travel. At the back of the bus a three digit/character route-number and destination combination sign a minimum of 1500mm height and a maximum height of 2500mm above ground level and central or left of centre, i.e. toward the nearside of the bus, and a minimum width of 1350mm wide viewing area (for clarity, viewing area is the display of the characters). Front forward-facing • The glass fitted in front of all destination signs must be clear. • The destination display light sensor must be fitted so that it has access to direct sunlight. Shading caused by the surround must be taken into account.
Message configuration	Front and rear route number characters must be a minimum of 200mm high. Front and rear primary destination characters must be a minimum of 125mm high and secondary destination characters a minimum 90mm high. Side route number and destination characters must be a minimum of 70mm high. Message scrolling needs to be full word, not by character. Where information cannot fit onto a single screen, additional information should page (alternate), not scroll.
Extra destinations	The sign must be controlled by the driver from the driving position and be capable of storing a range of different route and destination information as well as displaying whether the bus is not in service, on charter, school or special work.

5.4. Exterior promotional area

Advertising must not interfere with ventilation grills. Emergency exit windows must not be prevented from working, legally required lights must not be covered, and bus (fleet) numbers must be clearly visible at all times. Consideration must be given to passenger comfort and medical conditions, for example, dot matrix can cause epileptic seizures.

5.5. Internal information

Buses must be equipped with provision for power and cabling to allow for LCD screens to enable visual and audible automated progressive route and journey-related information and announcements. Progressive route and journey-related information presented on an electronic information display provides vital information on the route being taken

and the current location of the bus. This information provides confidence to the user and helps to ensure they do not find themselves getting off at the wrong stop which also may present safety issues, particularly at night.

Electronic information display	• Mounting location for an LCD screen size to range between 20-22” (510-560 mm). • Draw cables to be easily accessible for the retrospective laying in of cables between the passenger information screens and media enclosure. • Speakers to be fitted and wired back to the media enclosure. • The media enclosure needs to allow a space of 300mm wide, 300mm deep and 200mm high for a media unit. The future location of screens will be as follows and there shall be an enclosure provided for the future fitting of a media player. **Screen placement locations –** Single deck – 3 screens: • One screen fitted to the rear of the driver’s partition facing rearward. • Two screens - one facing forward visible to the rear-facing wheelchair passengers in the wheelchair bays, and one facing rearward, fitted to the offside of the bus. DD – 4 screens: • One screen fitted offside of the bus facing rearward (at the back of the stairwell). • One screen fitted to the side of the stairwell, facing the wheelchair position. • Two screens on the upper deck, one fitted to the front windscreen and the other to be fitted to the rear of the stairwell, facing rearward. Note that the positions selected for the screens must avoid reflection on the windscreen that is visible to the driver.
Audio announcements	• Except on a VSB eight speakers are to be fitted equally spaced throughout the bus on each level directly above the seats. There needs to be a speaker directly above wheelchair positions, priority seats, and the second row of seats from the rear of the bus of both decks of the bus. • Speakers are not to be fitted in or near the driver’s compartment. • The speakers for a DD bus need to be wired so that the volume can be set at different levels for upper and lower decks. The speakers are to be connected to the media enclosure.

6. EXISTING BUSES

6.1. Introduction

Many buses used in the urban bus fleets have been purchased over the last 20 years. Some of the more recent ones will meet or exceed all or most of the criteria listed in this document for new buses, but many of the earlier purchases will not.

NZTA encourages operators to speed up the replacement of the older less user or environmentally friendly vehicles, and to retrofit as many of the features in the previous sections as is possible.

Existing buses aged between 20 and 23 years old may be used for school only use with prior local authority approval, providing evidence is provided of a planned replacement programme.

6.2. Existing bus standards

Existing buses: all buses currently used in urban services shall meet the following requirements (also refer to sub-section 1.2.3):

Acceleration	0-50km/h ≤30 seconds.
Emissions	As per the RUB when bus entered urban service, Euro 3 emissions standard a minimum.
Transmission	LB automatic.
Suspension	LB Full air with levelling.
Doors	VSB/SB: 1. MB/LB/VLB: 2 mandatory - if ≥36 seating positions. Front door width ≥700mm.
Step height	≤370mm.
Floor and levels	Non-slip material in boarding and aisle area. No more than two steps in the aisle along whole internal length of vehicle excluding any footrest plinth to the rear seats.
Step edge	Highlighter to top edge of nose.
Stanchions / Handrails	One close to each door plus at least two in each saloon area, i.e. forward of rear door and behind rear door.
Grab handles	On aisle side of all seat backs.
Heating and ventilation	Drivers area plus ≥2 saloon heaters.
Demisting	Front windscreen and front door windows.

Bus stop request	Bell push within reach of seated and standing passengers in every second row of seats. Illuminated bus stopping display with audible signal.
Destination	Front route no - three characters ≥100mm in height. Front and side destination characters ≥60mm in height.

6.3. Midlife refurbishment requirements

At the midlife of a bus (8-10 years), it is expected that buses are refurbished to the requirements of this version of the RUB 2024. This may be negotiated between the operator and regional council. The bus will remain in the same size category after this refurbishment, independent of the number of seats, while it is operating in the same authority.

Required	**At midlife refurbishment, the following must be updated to this version of the RUB:** 2.3 Performance (only the hold brake/interlock/fire suppression) 3.1 Ramp 3.2 Ticketing/fare collection area 3.3 Sensitive edge on front and rear doors 3.5 Step and plinth edges 4.1 Driver compartment 4.2 Driver operational communication 4.3 Priority seating area 4.4 Wheelchairs 4.5 Floor coverings 4.6 Aisle coverings 4.8 Stanchions/handrails 4.9 Grab handles on seat backs and elsewhere 4.10 Internal lighting 4.11 Security and safety 5.1 Requirements 5.2 'Bus stopping' electronic signs and buttons 5.4 Internal information **Further clarification:** 4.1 Driver compartment – except for seatbelt. 4.5 Floor coverings – require replacement unless council decide that it's in good condition (contrasting colour, resistance, branding compliance) – if not in degraded condition, replacement may be deferred. 4.6 Aisle width – increase aisle width by removing items that obstruct aisle width, to meet accessibility requirements within the structural parameters.

Optional (at council's discretion)	• Wall lining • Ceiling panels • Seat upholstery • Seating design

7. APPENDIX

7.1. Items not included

NZTA is also aware that there are other issues that are as important as vehicle design and construction. One example is the quality of the infrastructure that enables use of a public transport system, e.g., bus stop location and design, kerb heights and facilities (e.g., in terms of weather protection), information, suitability for use by persons of all ages and capabilities, and ease of transfer opportunities. However, defining the infrastructure requirements is not included as part of this document, nor is driver training.

As part of a programme of work designed to improve the effectiveness of public transport, NZTA has developed bus stop infrastructure guidelines to apply nationally which borrow heavily from the extensive work completed by Auckland Transport on bus stop design and facilities. This document can be found on the NZTA website by searching for 'guidelines for public transport infrastructure and facilities'.

NZTA worked with the BCA back in 2011 to develop and roll out a customer service training programme for bus operators to use for driver training. The resources and tools are available through the BCA and are free to its members.

7.2. Visual contrast

Seventy percent minimum visual contrast is required. Greatest contrast is achieved by choosing opposite (not adjacent) colours of the colour wheel. For example, red and orange are not contrasting whereas red and green are contrasting. For more information, refer to RTS 14 section 5.3.

The Blind Foundation and the Association of Blind Citizens of New Zealand recommend the use of safety yellow as the colour that is most easily distinguished by the visually impaired (refer to subsection 3.4), and for this reason it is mandatory.

The bus steps' high-contrast nosing in the horizontal and vertical planes is to be within the range of 45–50 mm. See the Blind Foundation's Accessible signage guidelines (https://blindlowvision.org.nz/how-we-can-help/businesses-and-professionals/accessible-signage-and-buildings/).

7.3. Bicycle racks

Bike racks are optional (at regional council/Auckland Transport's discretion), but if fitted, they must meet relevant regulatory requirements and must meet the following:

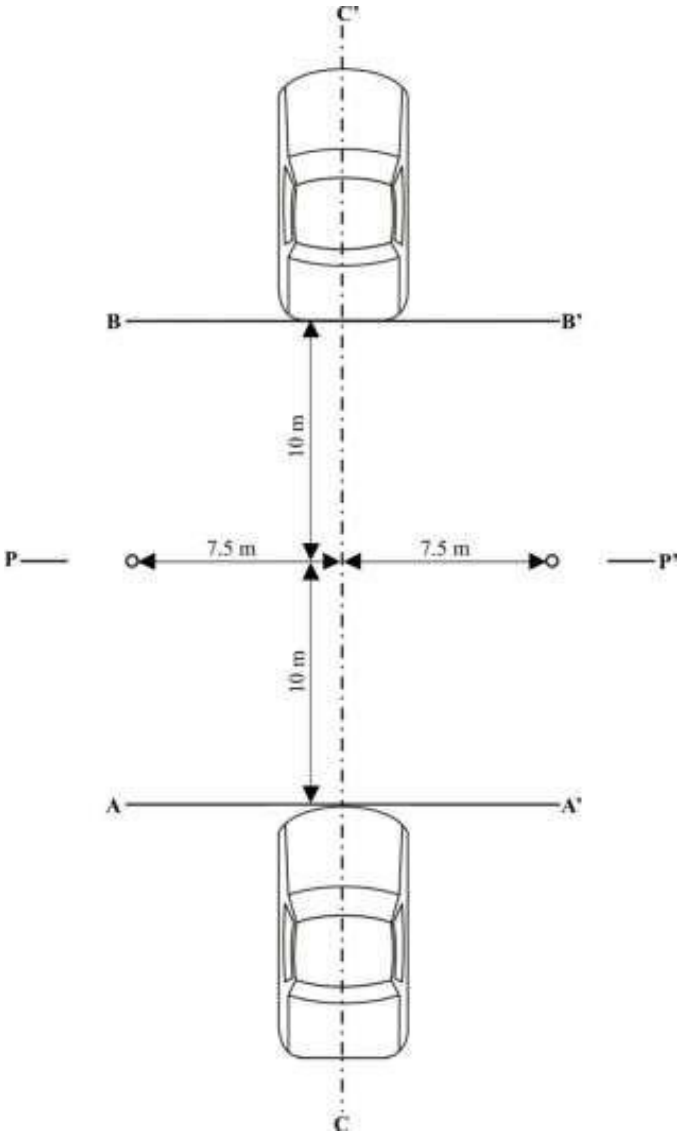
Location of rack and measurements	Bicycle racks must be placed on the front of the bus with the number plate and/or school sign clearly showing (as shown in the pictures below).  
Weight and type restrictions	Bike racks must carry a minimum of two standard bikes at a time. They must accommodate a bike of up to 25kg and wheels between 40.5 cm (16") and 75 cm (29") diameter. The following bike types and accessories do not have to be accommodated on the racks: • Cargo-type bikes - they do not fit in the bike racks. • Bikes with fat tyres - they also do not fit in the bike rack.

	• High-backed child seats, or any bikes/bike accessories that can obstruct the driver's visibility are not allowed for safety reasons.

7.4. Noise measurement

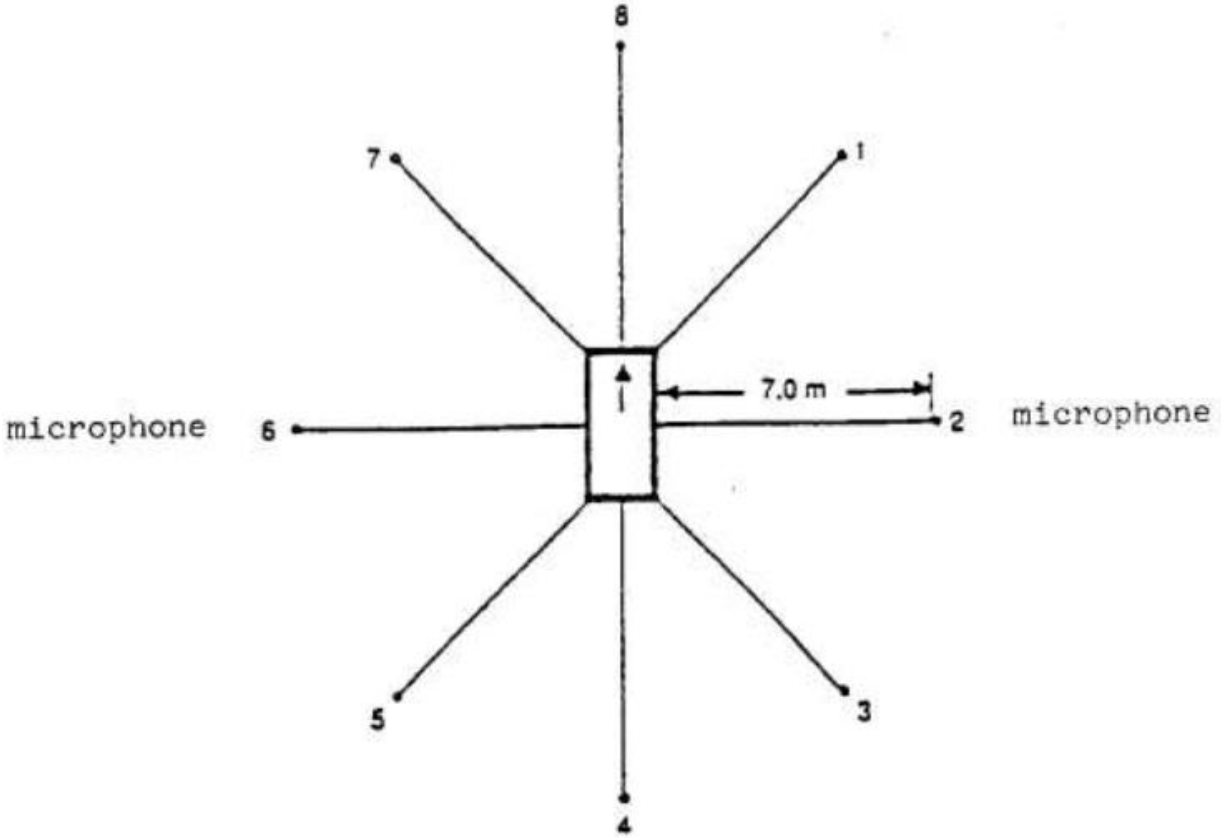
7.4.1.1. External noise measurement for vehicles in motion:

At least four measurements shall be made on each side of the vehicle. The microphone shall be located at a distance of 7.5m ± 0.05m from the reference line CC' of the track and 1.2m ± 0.02m above the ground.



Microphone placement diagram from UN/ECE Reg. 51, Annex 3 – Appendix, Figure 1.

7.4.1.2. Air brake noise measurement: microphone positions from UN/ECE Reg. 51, Annex 5 – Appendix, Figure 1.



7.5. Process for seeking an Exemption to these requirements

An exemption to the RUB is an approval given to an applicant to not meet an aspect of the RUB.

7.6.1 RUB and NZTA procurement rules

The RUB is a NZTA requirement through the Procurement manual, procurement rule 10.31, and the second part of the rule enables approved organisations to seek approval from not meeting a RUB, as follows.

Procurement Rule 10.31.1
If an approved organisation wishes to vary a vehicle standard, from those set out in the RUB, it must have written approval from NZTA. The process for applying for approval, and the criteria that the variation will be assessed against, are described in the RUB.

7.6.2 Guidelines

The RUB was developed with regional councils, BCA, operators, bus builders and suppliers. User groups were also consulted as part of its development.

It is the standard for all urban buses in New Zealand and that the dimensions and features in the RUB are accepted by all regional councils as a prerequisite for receiving NZTA investment.

Any regional council, wanting to depart from the requirements of the RUB must first apply to the NZTA Manager, Public Transport for approval via email (Public.Transport@nzta.govt.nz) using the template contained in APPENDIX 1: EXEMPTIONS APPLICATION TEMPLATE. The template can also be found on the NZTA website: https://www.nzta.govt.nz/resources/requirements-for-urban-buses.

The approval process will be administered by NZTA and may involve subject matter experts as needed. Decisions to agree/decline an exemption will be made by the NZTA Manager, Public Transport. A record of all changes will also be maintained.

8. FUTURE INTENTION

8.1. Future technologies intended to be required (in no particular order):

- Fatigue Management system. Fatigue/distraction detection and a driver alert system will likely be required in the future, pending trials. Parameters could be eyes closed for 1.5 seconds and driver looking away from the road for 4 seconds and includes:
    - Real time eye detection, which monitors both driver fatigue and driver distraction.
    - Real time alert system which notifies the driver of a fatigue or distraction event.
    - Real time notification system, which notifies the operator if the bus driver is experiencing multiple fatigue and/or distraction events during a driver duty.
    - Notification if the system is unable to detect the driver's face (which will alert and record when the driver's face is not within view of the camera, or if the camera becomes covered during the operation of the vehicle).
    - Data storage and uploads to enable monthly reports of fatigue and distraction events.
- Cyclist detection system.
- Acoustic vehicle alerting system on electric bus to alert blind and low-vision pedestrians.
- Autonomous braking.
- Lane-keep assist.

9. APPENDIX 1: EXEMPTIONS APPLICATION TEMPLATE

Part A: Application (Approved Organisation to complete)

The 'Requirements for urban buses in New Zealand for consistent urban bus quality (2024)' (RUB) is a NZTA requirement through the Procurement manual, procurement rule 10.31[1]. Failure to comply with these procurement procedures for urban public transport services is considered a breach under section 36 of the Land Transport Management Act 2003 (LTMA).

The Rule also provides that "*if an approved organisation wishes to vary a vehicle standard, from those set out in the RUB, it must have written approval from NZTA.*" A departure from the RUB is also a departure from the Procurement Manual.

This form is to be used whenever an approved organisation wishes to vary a RUB vehicle standard (referred to as an exemption).

A separate form is required for each exemption application.

Before submitting an application for an exemption, it would be good practice for an approved organisation to test what it is proposing with NZTA. Approved organisations should initiate those discussions with the relevant NZTA Public Transport team point of contact, or email Public.Transport@nzta.govt.nz.

If following the discussion it is determined that an exemption will be pursued, approved organisations should submit this form to the NZTA Manager, Public Transport for approval via email to Public.Transport@nzta.govt.nz.

Any queries regarding the exemption process and/or this form, should be directed to Public.Transport@nzta.govt.nz.

Name of Approved Organisation

1. Exemption requested to RUB version [insert version number and issue date] by [insert name, eg X Regional/City/District Council] and dated [insert date].

Details of proposed varied RUB vehicle standard

2. The proposed exemption concerns the following section(s) of the RUB:

   [list RUB section(s) reference, e.g. '2.2. Maximum vehicle age and fleet average age profile']

   The purpose of this section is to identify affected sections of the RUB.

3. The proposed exemption is to [state specifics of what the approved organisation is seeking to vary and for how long; e.g. 'vary the maximum age requirement of 20 years to 22 years, through to contract end on 30 June 2025'] and the implications of the proposal are [state what the proposal will and will not achieve with respect to the RUB and the significance of the proposed change; e.g. in regard to the latter, is an increase of two years to the maximum age significant?].

   The purpose of this section is to explain how the exemption contributes (or otherwise) to the objectives of the RUB.

4. The exemption is being sought because [state reasons].

   The purpose of this question focussing on reasons is to uncover as much helpful information as possible for identifying benefits, value, options and other information relevant to the statutory tests in section 25 of the Land Transport Management Act.

1

5. The contract(s) affected by the proposed exemption are:

   [list including:

   - name of unit and the contract commencement and expiration dates;
   - contractor;
   - vehicle registration and fleet number;
   - route;
   - frequency;
   - previous exemptions if relevant; and
   - any other relevant information].

Options considered

6. The purpose of this section is help with the s25 assessment by comparing the **preferred option** to other available options [describe at least one other option in addition to the preferred option].

   Option one – status quo (i.e. do not implement a change to a RUB vehicle standard)

   [describe option].

   Option two – preferred option (i.e. implement a change to a RUB vehicle standard)

   [describe option]

   Option three – [e.g. any other option as determined by the approved organisation]

   [describe option]

Fit with Procurement Manual

7. In council's view, the **preferred option** contributes to the goal of obtaining best value for money, enabling fair competition and encouraging competitive and efficient markets in the following ways:

   [Best value for money state here]

   *Best value for money – describe if and how the **preferred option** achieves best value for money in terms of the use of funds from the National Land Transport Fund, compared to the other options. You may wish to describe this by referring to how the exemption contributes to the 5 objectives of the LTMA (i.e. assisting economic development, assisting safety and personal security, improving access and mobility, protecting and promoting public health, ensuring environmental sustainability), and/or by describing other benefits that will result, and/or the alternatives/options assessed above, i.e. which one (decline or approval or exemption on approval) provides the best value for money.*

   [Enabling fair competition state here]

   *Enabling fair competition – explain whether the **preferred option** enables fair competition for the right to supply outputs required for the affected passenger service(s), compared to the other options.*

   [Encouraging competitive and efficient markets for supply state here]

   *Encouraging competitive and efficient markets for supply – explain whether the **preferred option** will encourage competitive and efficient markets for the supply outputs required for the affected passenger service(s), compared to the other options. Where possible, this should be quantified, e.g. size of local/regional market and the share that a supplier will have under this proposal (if applicable).*

Financial

8. The current cost of the contract is $[state here].

The exemption is anticipated to cost $[state here].

The purpose of this section is help with the value for money assessment

Future exemptions

9. [state here].

Supporting information

10. Further supporting information is attached in the form of [describe or delete this section if not relevant].

Contact information

Name of person submitting application: [state]

Role of person submitting application: [state]

Contact phone number: [state]

Contact e-mail address: [state]

Part B: Assessment of application (NZTA to complete)

Action	Comments
NZTA Public Transport Advisor processing application	*(Enter name)*
Assessment by NZTA Public Transport team (qualitative) Required: Yes ☐ No ☐	*(Enter assessment of application, name of assessor and date)* *How does the exemption proposal contribute (or otherwise) to the objectives of the RUB and is that significant?*
Assessment by technical external advisor Required: Yes ☐ No ☐	*(Enter assessment of application, name of assessor and date)*
Assessment by NZTA Regulatory Technical team Required: Yes ☑ No ☐	*(Enter assessment of application, name of assessor and date)*

Action	Comments
Assessment by NZTA Procurement team Required: Yes ☑ No ☐	*(Enter assessment of application, name of assessor and date)*
Further information requested of AO	*(Enter date of request; can record multiple requests)*
Date clarification received from AO	*(Enter date)*
Recommended response and reason(s)	*(Enter recommended response, names of moderating assessment panel and date of moderation)*
Manager Public Transport approves/not approves	*(Enter decision and date of decision)*
Date approved organisation notified	*(Enter date of advice)*