A New Zealand national minimum standard for urban buses

NZ TRANSPORT AGENCY
WAKA KOTAHI

Contents

Section one: General arrangement **3**
1.1 Legislative provisions 3
1.2 Purpose and scope 3
1.3 Applicability of requirements 5

Section two: Design and performance **7**
2.1 Introduction 7
2.2 Maximum vehicle age and fleet average age profile 7
2.3 Engine 7
2.4 Transmission 8
2.5 Suspension 8
2.6 Braking 8
2.7 Chassis 8

Section three: Accessibility **9**
3.1 Introduction 9
3.2 Doors 9
3.3 Step height/depths 10
3.4 Floors 10
3.5 Aisle width 10
3.6 Seating configuration 11

Section four: Passenger safety **12**
4.1 Introduction 12
4.2 Step and plinth edges 12
4.3 Stanchions/handrails 12
4.4 Grab handles 12
4.5 Seat protection (chin guard) 13
4.6 Fare paying area 13
4.7 Lighting 13
4.8 Security 13

Section five: Passenger comfort and use **14**
5.1 Introduction 14
5.2 Seating 14
5.3 Heating, ventilation and air conditioning 14
5.4 Demisting 15
5.5 Bus stop signals 15
5.6 External destination display 16
5.7 Internal Information 17
5.8 Luggage/stroller/prams/mobility devices 17

Section six: Facilities for passengers with disabilities **18**
6.1 Introduction 18
6.2 Provision 18
6.3 Wheelchairs 18
6.4 Boarding or alighting 20
6.5 Ramp 20

Section seven: Driver compartment **21**
7.1 Introduction 21
7.2 Mandatory features 21

Section eight: Existing buses **23**
8.1 Introduction 23
8.2 Existing bus standards 23

Annex A: Options for wheelchairs **25**

Section one: General arrangement

1.1 Legislative provisions

This NZ national minimum standard for omnibuses that are operated in urban services within New Zealand is to be known as the *National vehicle quality standards* (NVQS), Version 1, issue date [date to be inserted].

It is issued under the authority of the NZ Transport Agency (NZTA) and contains both mandatory and desirable requirements.

This standard does not replace or have precedence over any other existing national legislative documents, eg Land Transport Rules such as:

Passenger Service Vehicles 1999	Rule 31001
Heavy Vehicles 2004	Rule 31002
Vehicle Exhaust Emissions 2007	Rule 33001/2
Vehicle Dimensions and Mass 2002	Rule 41001

Applicability:

The standard will come into force on 1 January 2010.

1.2 Purpose and scope

Through this standard, the NZTA's aim is to 'enhance the attractiveness of urban public transport vehicles in order to encourage increased usage, with a particular emphasis on improving accessibility'.

At a national level, this will have significant impacts on:

- the requirements for funding for roading and passenger transport
- minimising the rate of increase of urban traffic congestion
- vehicle emission levels and carbon footprints
- vehicle usage and energy requirements from fossil-based fuels
- national attitudes to the use of buses for all urban travel, including commuter, shopping, school and recreational activities travel.

The standard will specify requirements that apply to all new buses to be used in urban service as described below from the date of introduction, and may also include standards for existing used buses that must be met now or from the date indicated. In this manner, an improvement in the standards of buses will be achieved on a progressive basis without significant impacts on existing fleet profiles, where many of the existing buses have been procured using some local and national public funding received via contract or concessionary fare scheme payments.

For the purpose of this standard, a bus type is described as follows:

New bus

- Brand-new manufacture from any source, ie NZ or overseas.
- An imported used bus from any source if date of first registration in New Zealand is later than the date of introduction of these standards.

Used bus

- A bus that must already have been registered in New Zealand on the date of introduction of these standards, and being operated in a contracted urban service.

The standard seeks to detail mandatory minimum requirements for all buses that are to be used in the delivery of any urban passenger services that might be operated under any regional authority as a tendered/contracted service or negotiated under a Public Transport Service Agreement.

The standard will in some areas set requirements over and above the minimum requirements contained within the national transport regulations; it is therefore assumed that all vehicles will already satisfy all of the legislative requirements applicable at any time.

However, in setting these standards, the NZTA has recognised that when compared to other countries whose trends/standards we like to follow/adopt and who are often the suppliers of the buses we use, that New Zealand regulations especially related to vehicle dimensions and weight can impact on the ability to meet some criteria that might be desirable, but a sensible compromise has to be reached on just what is possible under the local situation.

Nothing in this standard will preclude regional authorities specifying higher vehicle quality standards for bus services within their particular region but they will not be eligible for any public funding in the event that a lower standard is specified.

The national goal is to increase the overall ‘quality’ of the vehicles in operation on scheduled urban bus services. This is one of the major factors identified by existing and potential public transport users as a vital ingredient to the growth of patronage.

The NZTA is also aware that, as well as the need for setting standards for the buses, the quality of the infrastructure that forms a significant part of being able to use a public transport system is just as important, ie bus stop location and facilities in terms of weather protection, information, suitability for use by persons of all ages and mobility.

Defining the infrastructure requirements is not included as part of this standard.

1.3 Applicability of requirements

Under the Passenger Service Vehicles Rule 1999, a ‘passenger service vehicle’ means a motor vehicle used or available to be used in a passenger service and includes a motor vehicle that has more than 12 seating positions, which in the Transport Services Licensing Act 1989 is described as a large passenger service vehicle or LPSV.

For clarity of purpose in this standard, a ‘bus’ means an LPSV capacity/style of vehicle used to provide urban fare-paying services rather than the converted or larger van style often called the ‘minibus’ or ‘taxibus’ with 9–12 seat capacity.

The NZTA appreciates that the larger and smaller regional authorities may have differing requirements to be met in terms of vehicle dimensions and carrying capacity that best meets their local needs and infrastructure, and that the ‘one-size-fits-all’ concept will not be appropriate to implement in all of the regions that might be funding public urban bus transport services. Where there is a need to further delineate the bus by size in terms of seated capacity, this standard will use what is known in the industry as a small (SB), medium (MB) and large bus (LB). This will be determined by need and/or the limitations on vehicle design or performance characteristics.

Small bus (SB)	13–21 seated passengers and including the driver
Medium bus (MB)	21–39
Large bus (LB)	over 39

Requirements are for all bus sizes unless specifically referred to the size category in the relevant sections that follow.

Arrangement of requirements

The standard is arranged under the following general features headings:

Section one	General arrangements
Section two	Design and performance
Section three	Accessibility
Section four	Passenger safety
Section five	Passenger comfort and use
Section six	Facilities for passengers with disabilities
Section seven	Driver ergonomics and other general
Section eight	Existing fleet

Dimensions

All dimensions are in millimetres (mm).

The use of the two symbols < and > also includes the equal to or greater/lesser than etc.

Unless specified, measurement methods are those of the relevant New Zealand or Australian regulation, rule or standard, eg Passenger Service Vehicles Rule 1999.

Section two: Design and performance

2.1 Introduction

This standard is not aimed to be an engineering design or full performance specification, but the NZTA wants to ensure that buses in urban service are seen to be of a modern design incorporating the latest technologies so that they give a very good quality of ride and comfort, and are capable of stopping, starting and moving into and out of traffic streams in a way that they are not seen to be any impediment to the general traffic performance.

The NZTA also wants to see the use of buses optimised wherever possible by ensuring they are capable of remaining on the road and in service throughout an extended day period without the need to return to their operating depot to refuel.

Hence, the NZTA has included such items as engine power, acceleration, range, braking and ride quality as they are all features of interest in terms of the ability of the bus to complete its allotted task reliably throughout its life when under the many differing loading, environmental and geographical conditions that exist around New Zealand.

2.2 Maximum vehicle age and fleet average age profile

The maximum permitted vehicle age <20 years.

The fleet profile for any urban bus company operating under the conditions of this standard is:

From date of applicability of standard, 1 January 2010

<12.5 average years.

From the above date plus five years, ie 1 January 2015

<10 average years.

2.3 Engine

All sizes.

Power/weight	>15 bhp/tonne
Acceleration	0-20 km/h >4 secs 0-50 km/h >25 secs
Range without refuel	>400 km or 15 hours
Emission	Current LT Rule 33001/2
Noise	External <80 dBA for rear and mid engine, +4 dBA for in-service

	degradation by ISO 5130 stationary test. The benefits of a drive-by test are recognised, but at this time the NZTA recognises that the difficulties in carrying out the test and costs do not warrant such a requirement. The NZTA reserves the right to introduce a drive-by test requirement at some future date. Internal <75 dBA stationary and empty.
Compartment insulation	Non-flammable, noise and heat insulation material. Fire retardancy ISO 3795 (1998) or FMVSS 302 US standard.

2.4 Transmission

SB	Fully automatic or electronic shift
MB and LB	Fully automatic or electronic shift plus retarder

2.5 Suspension

SB	Air suspension including kneeling capability is desirable
MB and LB	Air suspension ECAS–electronically controlled including self-levelling. ESC–electronic stability control is desirable. Kneeling at front door > 60 mm drop/lift, driver controlled with in-use indicator/drive-off protection.

2.6 Braking

MB and LB	EBS and ABS–electronically controlled braking system with brake blending and anti-lock braking system. Vehicle movement above 5 km/h is inhibited while rear door is open or the kneeling system is activated.

2.7 Chassis

The chassis and associated components will be of a 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.

Section three: Accessibility

3.1 Introduction

The ease and speed of accessibility for passengers of all ages, sizes and mobility capability while both boarding and alighting a vehicle, as well as movement within the vehicle, is of prime importance because:

- it removes the perceived barrier that buses cannot be easily used by all members of the public whether able bodied or not
- boarding and alighting times are much reduced, which can have a significant impact on the overall travel times and consistency of journey time of a bus service when compared with that of the alternative choices, ie using a private or company vehicle, cycling or walking.

Doors and aisle width, step heights, interior floors, seating configuration and revenue collection all impact on accessibility.

For the purpose of this standard, it is assumed that boarding and revenue collection for all passengers of any mobility, including those using wheelchairs, is through the front door. Alighting and any electronic revenue system using 'tag on–tag off' may be through either door, although the NZTA is aware that some regional councils currently intend to restrict electronic ticketing system 'tag on' to the front door only.

Note: The requirements for minimum dimensions are given in the Passenger Service Vehicles Rule and the ones below are in addition.

3.2 Doors

Number	SB	1
	MB	1 Note: Two desirable if over 30 seats
	LB	2 Note: Bus operators may apply to the NZTA for an 'exemption' to the two-door requirements for larger vehicles (LB) that will be specifically used on longer-distance urban express/limited stop style services providing they will be fitted with superior semi-coach style seating. Supporting concurring evidence from the appropriate regional council will be required. If subsequently to be used on other urban services, they would need to meet this standard.
Location		Front door must be as close to the front of the bus as possible, preferably forward of the front axle and immediately opposite and in full view of the driver.

Widths		Clear space excluding any grab handles on the door.
	Front door SB	>850 mm single
	MB/LB	>1000 mm double
	Rear door	>700 mm single

3.3 Step height / depths

Height

First step	Measured from the ground to top of step nosing (without kneeling in operation)
SB	< 300 mm
MB/LB	Front <350 mm Rear <360 mm With kneeling: Front <280 mm
Any additional steps including aisle or seat plinths	Steps (maximum two) <220 mm Plinths <200 mm Step depths >300mm

3.4 Floors

Non-slip flooring material, with contrasting colours for front and rear door entry/ exit areas and wheelchair and priority seating areas. (See section six.)

SB	Flat floor from front entry to rear of priority seating area and desirably to immediately forward of rear axle.
MB/LB	Flat floor from front entry to rear door or immediately to front of rear axle if only one door, no seat plinths. Behind the rear door or rear axle stepped (maximum two) or sloping floors are acceptable.

A gradual transverse axis sloped area in the front entrance to the edge of the flat paying area adjacent to the driver is permitted but not preferred.

Maximum slope <5 degrees.

3.5 Aisle width

Front door entrance, fare paying and turning area, and unimpeded through to rear of priority seating area – >760 mm.

Rear of priority seating area for remainder of flat floor area/to rear door – >440 mm.

3.6 Seating configuration

The NZTA appreciates that different urban operations and chassis design configurations may demand different seating configurations and so forward (preferred choice for most passengers), rearward and inward-facing single, wide single mother and child, double and wider three or more person bench style are all acceptable.

However, to ensure passenger confidence along the route as well as speedy accessibility, the seating layout should include forward-facing seats as follows:

- >60 percent of the seated capacity of the bus, may be towards the rear, plus
- >50 percent of the seats in the priority area.

To increase the standing/seated passenger ratio and to facilitate wheelchairs, forward, rearward fold-up as well as inward-facing fixed or fold-up seats may also be fitted forward of the rear axle including the priority seating area.

Any fold-up seats are to be designed so they can be folded up unaided by any person with a disability or in a wheelchair.

There is no requirement that the seat unlocking mechanism should be capable of being operated by a person with a disability or in a wheelchair but it must be such that most able passengers can release the mechanism.

See section six for further details related to priority seating and wheelchair carriage.

Seat spacing between forward-facing seats should be >670 mm.

Inward-facing seats must have a clear space to the aisle when in use.

Seat height:

- The height from the floor to the top of the front of the seat cushion should be >400 mm and <500 mm.

The height to the top of the seat back excluding any grab handle should be >900 mm.

Section four: Passenger safety

4.1 Introduction

Passenger safety, speed and security of movement while boarding, accessing and leaving seated positions, and alighting is paramount to the provision of a service that is attractive and timely to the public, and one in which they can have confidence.

There are a range of features that contribute to the overall safety performance and ease of use of a bus and these are detailed in this section.

4.2 Step and plinth edges

All steps at door entry and exits or within the vehicle must have full width step edges and faces fitted with a distinctive high-visibility, non-slip/trip style nosing that contrasts, ie a solid band of contrasting colour, with the immediately adjacent flooring material.

The nosing dimensions in the horizontal and vertical planes must be within the range 45-50 mm in width. Sharks tooth style is not preferred.

Plinths must have a minimum of similar nosing on the horizontal edge.

4.3 Stanchions/handrails

Vertical high-visibility contrasting colour stanchions from either floor to ceiling or seatback to ceiling, as location dictates, should be fitted throughout the length of the bus and close to the aisle so that they are spaced at alternate seats left and right of the aisle, and a passenger can walk/move the length of the bus while able to hold a stanchion with one hand at all times.

Additional stanchions are required immediately adjacent to doorways and in priority seating or wheelchair areas if not already fitted as above.

In areas where seating may have been reduced to provide for more people to stand, priority seating or wheelchair positions, or is of the folding style, then overhead contrasting colour handrails are required. These should be no higher than 1900 mm from floor level.

Stanchion/handrail maximum cross-section dimension should be in the range of 30-35 mm and may be of a circular or elliptical cross section.

For handrails, they should have a clear space of not less than 45 mm between any part of the vehicle and all parts of a handrail other than its mountings.

Knurling is not encouraged for general cleanliness and hygiene reasons.

4.4 Grab handles

As with stanchions and handrails, all grab handles should be of the same high-visibility contrasting colour material, and have a circular or elliptical cross section of 30-35 mm on the maximum section.

In addition to the mandatory grab handles required to be fitted to doors, grab handles are also required in the following:

- Any priority seating area located to be readily accessible to any seated or wheelchair passengers, eg on the side walls where experience indicates short handles do not provide the assistance necessary.
- Fare paying area.
- Integral to all seatbacks (except for rearmost seats) on the aisle side of any forward or rearward facing seat and should be such that there is >45 mm finger clearance to the handle.
- On the underside of any folding seat located to provide a firm handle to any wheelchair passenger when manoeuvring into, out of or occupying a wheelchair space.

4.5 Seat protection (chin guard)

The top of any seat back whether it has an integral top or raised separate bar must be protected with suitable soft style padding to reduce the danger of injury to a passenger from a fall, a bus sudden braking movement or accident impact.

4.6 Fare paying area

A clear space area for fare paying must be located at the front entrance, immediately to the left of the bus driver. It must be:

- flat at same level as first step unless the entry has a sloped area
- >500 x 500 mm in area.

4.7 Lighting

Lighting must be provided:

- for the internal entry and exit doorway step areas and externally downwards and outwards for 500 mm beyond the step edge to a level of >100 lux measured at 100 mm out from the step level
- fare paying area >65 lux
- general saloon >20 lux.

4.8 Security

Provision (including wiring and mounting) for installation of internal CCTV automatic security/video cameras is required as follows:

SB	One located immediately to the rear of driver.
MB and LB	Two, one located as above and the second close to rear door or rear axle area.

See section seven for additional security measures for the driver.

Section five: Passenger comfort and use

5.1 Introduction

Comfort and ease of use of both the bus and the route features highly in the evaluation process of any potential passenger when comparing the attractiveness of the private motor vehicle to travel by urban public bus transport, eg:

'Do I know that it is going to where I want to go?'

'Can I normally have a regular expectation of a seat if my journey time is more than 10 minutes?'

'Is it comfortable?'

'Will I know when it gets there?'

are some of the questions/factors that local and overseas research has shown to be important when making the choice of whether or not to use public transport buses.

It is therefore essential that we meet or exceed these expectations within the bounds of affordability and best value for money.

5.2 Seating

Our passengers are getting heavier, bigger/wider, older and less mobile, so good easily accessible seating is a requirement for passengers be they short distance hop on hop off or using the longer suburban routes and express/motorway services which may mean a journey of up to an hour.

Seating – a fabricated frame or moulded shell with flat bench style or a 'minimally contoured to body shape' squab or padded insert style seat using a fire retardant inner and covering material that is hard wearing, vandal, stain and odour resistant and easy to clean.

Seat width	single seat	>425 mm
	double bench or paired	>875 mm
	mother and child, on front wheel arch	>810 mm
Spacing	forward facing	>670 mm

5.3 Heating, ventilation and air conditioning

Regional climatic differences would favour not further specifying any requirements. However, with the movement of vehicles around the country, either within an operator's own fleet or between operators, some requirements are necessary if passenger comfort is to have some conformity and be of an acceptable quality throughout the country.

Ventilation/window requirements are covered in the PSV Rule.

SB	A combined heating, cooling and opening window system that maintains the internal temperature of the bus saloon while in service within a range of 15-25^{o}C at all times.
MB/LB	Climate control, preferably fully automated and preset air conditioning that will maintain the saloon temperature at 22 +/-5^{o} C at all times when in service and carrying passengers. Fully automated air conditioning is preferred.

5.4 Demisting

A demisting system that ensures the following are kept clear at all times when the bus is carrying passengers:

- the driver's windscreen
- all quarter light windows if fitted
- front door windows.

It is also desirable to ensure that all side windows and door windows forward of the rear axle are kept clear.

5.5 Bus stop signals

All buses must be fitted with twin driver indicator bus stop signalling and acknowledgement display devices that are easily seen by the driver and the passengers and in easy reach of all passengers whether seated or standing. Generally, this means:

- they can be reached by any person seated in a priority seating area or wheelchair area without having to stand up, eg on side walls or the underside of folding seats
- they are adjacent to and not less than every second row of seats on both sides of the aisle
- they indicate to the driver whether the signal has been made by a passenger occupying a wheelchair or priority seat position.

The device triggers both an audible and visual indication to the driver as well as at least one illuminated 'Bus stopping' sign (as illustrated, a mix of upper and lower case characters is preferred) rearward facing to the saloon to acknowledge the request. This sign will remain illuminated until cancelled by the operation of the front door controls.

Bus stop request devices must be of a high-visibility contrasting colour to the surround and with the surface on which surround is mounted and may take the form of a mix of the following:

- Finger/thumb/knuckle push buttons on the vertical stanchions at a height of >1300 mm and <1600 mm above floor level.

- Finger/thumb/knuckle push buttons on the bus side panels at a height of >850 mm and <1050 mm particularly in the priority seating area or on the undersides of folding seats.
- Horizontal cordage along the windows of each side of the bus at a height >1200 mm above floor level.
  Note: Cordage alone is not acceptable.

Due to the incidence of false signal calls experienced with many full/large palm push style call systems, these are not preferred.

5.6 External destination display

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

Signs are to be of the electronic LED/dot matrix style with emphasis on high visibility during all light levels that can be easily read by the majority of sighted current or potential passengers as the bus approaches or departs. Signs should have the capability to display multi-line information in a mix of upper and lower case characters and also frequently changing displays to facilitate additional route information, eg via station.

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.

All buses require the following signs:

- front forward-facing three route number and destination combination sign >1500 mm wide located at or above the top of the windscreen
- near side, as close as possible to the front entrance, a ‘destination only’ at a height >1200 mm from ground level
- rearward-facing route number only sign at a height 1500 mm and <2500 mm above ground level and central or left of centre, ie toward the nearside of the bus.

SB	Front and rear route number characters must be >125 mm Front destination characters must be >100 mm Side destination number characters must be >60 mm
MB/LB	Front and rear route number characters must be >150 mm Front destination characters must be >125 mm Side destination characters must be >60 mm

5.7 Internal information

PA system

A PA system capable of broadcasting driver announcements and pre-recorded messages.

Information

A display panel behind/adjacent to the driver compartment suitable for displaying printed or electronic projected material relating to general public transport information or local events.

Wiring/mounting provision for the instalment of progressive route or travel-related automated or driver-initiated audio and or video announcements is required.

5.8 Luggage/stroller/prams/mobility devices

Provision is required towards the front of the saloon area for easy access/safe/secure storage of:

- luggage, ie suitcase, carryall, backpack or similar package
- folded pram/stroller/mobility frame/aids
- folded wheelchair.

The area above the wheel arches immediately above both front wheels is in most configurations the most suitable luggage location but alternatives behind modesty panels at the front or rear door are also acceptable.

In total, sufficient space must be capable of accommodating 2 x folded prams/strollers/mobility frames and 2 x pieces of luggage, each of the luggage pieces being capable of being carried by one person, ie <25 kg with dimensions <800 mm x 300 mm.

Section six: Facilities for passengers with disabilities

6.1 Introduction

Urban passenger transport's role is to provide/offer mass transport for both the able bodied and passengers with disabilities. However, there are practical limitations to the scale of disability that can be accommodated for design, safety and affordability reasons on an urban bus without introducing unacceptable limitations to bus capacity, boarding and alighting time etc which impact on the overall running times of the service, or the loss of passenger capacity (seated and standing) due to both weight and space requirements.

The aim of this standard is to provide for the majority of those with a disability or other limitations be they the elderly, parents with young children, people with mobility and/or sight or hearing impairment and those who may need to use wheelchairs for part or all of their daily movement requirement.

6.2 Provision

Provision is to be made as follows for passengers with a disability:

- Priority seating area(s) well to the forward end of the saloon with at least four preferably all forward facing seats identified for passengers with disabilities. These seats may be of the folding type in order to facilitate wheelchair access and stowage.
- A separate space to accommodate at least one wheelchair (see para 6.3).
- 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 the elderly or disabled passengers or mothers with small children.'

Minimum front door and aisle widths, initial step heights and fare paying areas have been already specified in section three and make due allowances for wheelchair and stroller/pram access.

6.3 Wheelchairs

Wheelchairs are described as both manual self/caregiver propelled or powered versions of preferred dimension as follows:

- Weight <220 kg including passenger.
- Footprint to be provided for forward or rearward facing stowage 700 mm width x 1200 mm length.
- For transverse stowage with handles and foot rest capable of being folded or stowed 700 mm width x 900 mm length.

These criteria should provide for the greater proportion of wheelchairs users.

Note: this standard specifically excludes ‘powered motor scooters’ on the grounds of weight, size and manoeuvrability as well as their independent greater range capability of up to 30 km.

Some overseas transport operations give different wheelchair standards, eg AS 1428.2 (1992) stipulates a larger footprint requirement of 800 mm x 1300 mm whereas ISO S7193 requires 700 mm x 1200 mm.

The NZTA is aware and accepts that forward- or rearward-facing stowage has an impact on the overall seat capacity and seat design as well as speed of loading and provision of other seats within the priority seating area.

Space must be provided, preferably adjacent/opposite to the priority seating area, for the carriage of an occupied wheelchair/pram as specified above as follows:

SB	to carry one wheelchair, forward or rearward facing
MB	to carry one forward- or rearward-facing wheelchair
LB	to carry a minimum of one forward- or rearward-facing wheelchair preferably on the nearside, and desirably a second wheelchair that may be transverse facing utilising the space designated as ‘priority seating area’. See possible Options Drawings Annex A.

The space may be provided using fold-up seats that can be used by able passengers when the wheelchair facility is not in use, but the design must be such that where inward-facing fold-up seats are provided in conjunction with forward- or rear-facing wheelchair positions, the wheelchair footprint must not significantly encroach into the aisle space beyond the normal bench seat width and thus create a potential hazard to other passengers.

First line security is provided by wheelchair users applying the wheelchair brakes whenever in position on a bus. Rearward, forward and inward facing wheelchair users must be restrained either by a full passenger and wheelchair lap seat belt or using their own chair lap restraint and a wheelchair frame restraint. AS 2942–1994 Amendment 1 – 1998 refers.

Any wheelchair provision must provide a ‘backrest/ironing board’ as per the requirements in section 8.4 of the Passenger Service Vehicles Rule 1999, Amendment 2007.

Wheelchair symbols in the floor material are required and signage requiring vacation of any seats in the wheelchair-designated areas to enable the area to be used by a wheelchair occupier. This may be part of the priority seating area signage.

Externally two international wheelchair symbols for accessibility are required on the front left and side of the bus by the front door entrance as well as on the bus internal wall in the designated wheelchair area.

6.4 Boarding or alighting

In sections 2.3 and 3.2, the requirement for kneeling at the front door is specified as this can be of benefit to many passengers whether on foot, with or without a disability, in a wheelchair or accompanied by one or more small children.

MB/LB are required to have a kneeling capability.

Because of the time taken to kneel and recover as well as the extra air and therefore fuel used, the capability shall be on request rather than at every stop.

The following will be provided on the exterior of the bus adjacent to the front door:

- A sign stating ‘this bus kneels on request’.
- A kneel/wheelchair ramp request call button.

6.5 Ramp

A manually operated flip-over style ramp is required at the front door that will be deployed and recovered by the driver on request from either wheelchair, pram users or any other mobility-disabled passengers where the kneeling facility proves to be insufficient.

In the unlikely event that the driver fails to deploy the ramp, wheelchair passengers can use the ‘kneel/wheelchair request call button’.

While drivers may be requested to provide additional boarding and alighting assistance to manual or powered style wheelchair passengers, or caregivers with prams etc the driver is not obliged to and may decline due to his or her own personal physical ability. Therefore it is highly preferable that occupants are sufficiently able to load and secure themselves or ensure they have the support and assistance of a caregiver when they travel.

Section seven: Driver compartment

7.1 Introduction

The role and responsibility of the urban bus driver in coping with the levels of urban traffic and congestion, the various requirements of passenger loading, revenue collection, unloading and dealing with the range of passenger requests for assistance and information is a demanding one. Any features that make the task easier and safer to carry out will be to the overall benefit of the public bus transport industry.

The bus driver's compartment is in fact his/her workplace and they can spend the majority of their working day in that compartment.

7.2 Mandatory features

Climate

In addition to any overall bus climate control system, provision must be made to provide the drivers with some personal driver-controlled form of heat and cooling including to the foot area.

Comfort

- A fully sprung driver's seat with adjustment for all three planes of driving position.
- For MB and LB, the driver's seat suspension should be capable of being 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.
- Sun-blinds to the full width of the front windscreen and for the driver's off-side windows.
- A coat/jacket storage, eg hook.
- Out-of-sight storage for personal belongings such as bag/lunchbox.
- Screens or blinds such that windscreen reflections from internal lighting are kept to an acceptable minimum.
- Ticketing equipment and till stand should be ergonomically located.

Communication / positioning / ticketing

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

For the smaller regional centres, a hands-free cellphone is an acceptable alternative providing the operator can provide evidence of a company safe driving policy that must be followed with respect to hands-free use.

Wiring/mounting for such items as:

- global positioning system (GPS)
- real-time passenger information system (RTPIS)
- reversing and internal camera display
- covert emergency alarm within the radio system
- electronic ticketing.

On-board security

Barrier protection panel to prevent any form of assault from behind, either directly by a passenger or by a thrown object.

A covert visual and audio alarm system, eg a hidden easily activated switch/button capable of activating the four-way flashers and the horn for use in case the driver feels a threatening situation is developing.

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, eg to the ticket issuing equipment stand.

Section eight: Existing buses

8.1 Introduction

There are a large number of buses used in the urban bus fleets that 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.

The NZTA encourages operators to speed up the replacement of the older 'less user or environmentally friendly' vehicles.

Therefore, the following will be the minimum standards acceptable for existing buses that are less than 10 years old submitted for service in any type of urban tender or bus operation as described in section 1.1 with effect from the date of introduction of this standard.

Further, with effect from 1 January 2012, all used buses must meet the minimum standards listed below.

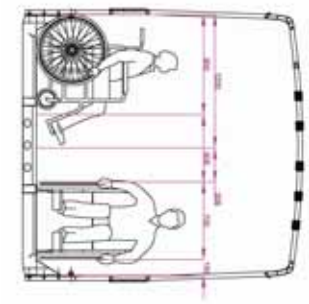
8.2 Existing bus standards

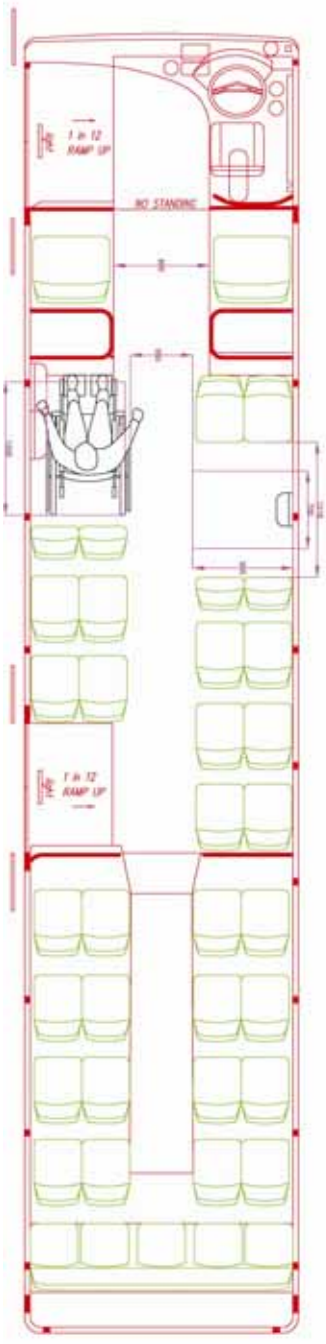
Power to weight ratio	14 bhp/tonne
Acceleration	0–20 km/h 5 secs 0–50 km/h 30 secs
Range without refuelling	300 km or 15 hours operation
Emission	Euro 2 or equivalent
Transmission	MB/LB automatic
Suspension	MB/LB Full air with levelling
Doors	SB/MB 1 LB 2 Width >700 mm
Step height	<370 mm
Additional steps or seat plinths	<230 mm
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.
Step edge	Highlighter to top edge of nose.

Stanchions/handrails	One close to each door plus at least two in each saloon area, ie 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 or cord within reach of seated and standing passengers in every second row of seats. Illuminated ‘Bus stopping’ display.
Destination	Front route no - three characters >100 mm in height. Front and side destination characters >60 mm in height.
Luggage	Space allocated towards the front of the vehicle to safely stow 2 x folded prams or 1 large backpack/suitcase or similar sized piece of luggage or package

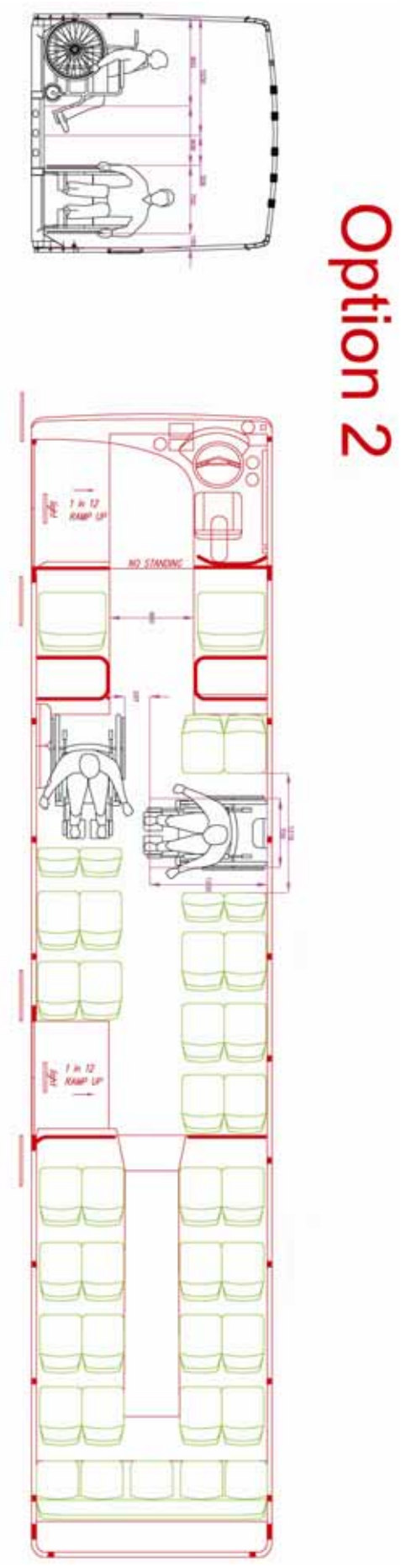
Annex A: Options for wheelchairs

Option 1





Forward-facing position on the nearside, and transverse-facing position on the offside.
Note: The seating in the transverse position can double as priority seating, ensuring passengers with other disabilities and/or mobility issues can access priority seating at the front of the vehicle.



Rearward-facing position on the nearside, and transverse facing position on the offside.

Note: The wheelchair in the transverse position is 1200 mm in length, which means it encroaches into the aisle. We do not recommend that a wheelchair of this length is situated in the transverse position for safety reasons.