

Table summary of changes

Comparison of RUB 2014 with RUB 2021 Versions 4.0 and 4.1

RUB 2014	RUB 2021 Version 4.0	RUB 2021 Version 4.1
Front page photo	Updated with photo of Island Bay no 1 bus.	
Contents page	Contents page updated.	
Record of amendments	Record of amendments – updated for RUB review 2020.	Changed to Aug 2021
Abbreviations	Abbreviations – updated to ‘abbreviations/definitions’ with new Australian Design Rules for technical specifications and definitions included to align with the Public Service Vehicle Rule. Items not referred to in the document taken out of the list.	
1. Introduction	No change to title.	
1.1 Introduction	<ul style="list-style-type: none"> Updated 1.1.2 to include evolution of the RUB and to include information on effectiveness, from RUB project definition document. 	

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	<ul style="list-style-type: none"> • Updated 1.1.3 - Strategic context to include 2018 GPS priorities. • 1.1.4 Implementation remains unchanged. • Added 1.1.5 Verification of RUB requirements as requirement for inspection organisations and vehicle inspectors appointed by Agency to conduct inspections and certifications for entry into service or in-service periodic inspections. 	
1.2 Scope	<ul style="list-style-type: none"> • No change to 1.2.1 Regional Council/Auckland Transport contracted urban bus services. • Updated 1.2.2 - What does 'new to service' mean? 	
1.2.3 Special exemption for some existing bus orders.	1.2.3 Does the RUB apply to new, used and existing vehicles in the fleet?	
	Updated 1.2.4 Special exemptions for	

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1.2.4 Exemption for contracted school and rural services	some existing buses. Exemptions for school buses to include new dates for RUB.	
1.2.5 Land transport rules	Updated 1.2.5 RUB compliance and variation for rural services or inter-city commuter services . Took out reference to school buses, added Very Small Bus, inter-city services. Instead of an exemption, made a variation for rural or inter-city commuter services.	
1.2.6 RUB and the Transport Agency's procurement rules	1.2.6 Land transport rules – took this paragraph out and provided a link to LTR. Note: Procurement moved to Appendix: Section 7.5	
1.2.7 Does the RUB apply to new, used and existing vehicles in the fleet?	Moved to 1.2.3 as it relates to new and existing age of buses.	

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1.2.8 Regular reviews of the RUB	Changed to 1.2.6 Regular reviews of the RUB – no changes made.	
1.2.9 Interpretation and good practice - deleted 1.2.10 Items not included - moved to bottom appendix.		
1.3 Definitions concerning buses	1.3 Bus sizes – amended within section and definitions moved up to abbreviations/definitions.	
1.4 Process for seeking a variation	Updated and moved to Appendix: Section 7.5	
2. Design and performance	No change to title.	
2.1 Introduction	2.1 Introduction – no change.	
2.2 Maximum vehicle age and fleet average age profile	2.2 Maximum vehicle age and fleet average age profile – remains at 20 years and midlife defined as 10 years, and midlife refurb reference. Added in maximum average age of bus as 10 years.	

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<p>2.3 Engine</p>	<p>2.3 Performance –</p> <p>Added in “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”.</p> <p>now includes specs relating to:</p> <ul style="list-style-type: none"> • Acceleration – changed to Minimum: 0-50 km/h ≤ 18 seconds. • E-bus range – range without refuelling changed to “An E-bus must be able to meet operational requirements without the need for an additional bus or additional bus costs as required under the contract with council”. • Transmission – moved from Section 2.4. Added to with: “Fully automatic or electronic shift, plus retarder (does not apply to EV buses)”. 	<p>2.3 Performance –</p> <ul style="list-style-type: none"> • Acceleration – updated <p>An E-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.</p> <ul style="list-style-type: none"> • Hold brake/interlock – updated <p>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.</p> <p>Additional option – engage the hand brake system before doors can be opened.</p> <p>Passenger doors must not be able to be opened if the vehicle is moving.</p> <p>If a passenger door is open the brakes must be activated, the engine throttle returned to</p>

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	<ul style="list-style-type: none"> • Suspension (all buses except VSB) - moved from Section 2.5. Added to with: “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 moved from Section 2.6. Added to with: “ESC/ESP is required for DD buses”. • Vehicle Braking - moved from Section 2.7. Simplified and added to with: “Anti-lock braking system and electronic braking system is required”. • Hold brake/interlock - added • General safety, fire resistance, sticker information, ‘kill switch’ - added <p>Deleted Interpretation section.</p>	<p>idle, and the door fully closed before the vehicle can move off.</p> <p>It must not be possible for the brakes to be released unless done so by the driver, in the driver’s seat.</p> <ul style="list-style-type: none"> • General safety, fire resistance and suppression – updated <p>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.</p> <p>If a manufacturers declaration is provided, individual parts do not need to be marked as compliant.</p> <p>Engine compartment for diesel: fire retardancy ISO 3795 (1998) or FMVSS 302.</p> <p>Fire suppression for engine and high-voltage battery compartment is mandatory: must be compliant with Australian Design</p>

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		<p>Standard 5062-2006 (Fire protection for mobile and transportable equipment) or an equivalent internationally recognised standard, such as UN/ECE reg 107.</p> <p>Battery packs & EV systems: must comply with UN/ECE reg. 100 (or technical equivalent) for EVs.</p> <p>Hydrogen fuel cell vehicles: UN/ECE no.79/2009 (or technical equivalent).</p> <ul style="list-style-type: none"> - 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 to be placed on external panels identifying where battery packs are located.

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2.4 Transmission - Moved to Section 2.3	2.4 Environmental – new section created <ul style="list-style-type: none"> Emissions – changed to Euro VI C-stage Use of defeat or cheat devices are prohibited. Ongoing compliance with standard. Contains specs on external and internal noise also. 	
2.5 Suspension - Moved to Section 2.3		
2.6 Stability and steering - Moved to Section 2.3 2.7 Braking - Moved to Section 2.3		
3. Access	3 Vehicle entrance and exit – heading changed <ul style="list-style-type: none"> introduction taken out changed to reflect entry and exit to the vehicle. 	4
3.1 Introduction to the priority seating area – moved to Section 4.3	3.1 Ramp <ul style="list-style-type: none"> legal requirements, measurements, design features and signage. 	Ramp gradient improved to enable people in a wheelchair to alight and disembark safely from the bus:

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		<p>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.</p> <p>The maximum ramp gradient must be 1:8 / 12.5%, from an infrastructure design standard kerb.</p>
<p>3.2 Doors - Moved to Section 3.3 (interpretation removed)</p>	<p>3.2 Ticketing/fare collection area – heading changed</p> <ul style="list-style-type: none"> changed to incorporate ticketing technology and placement of machine for disabled people. 	
<p>3.3 Step height/depths - Moved to Section 3.4</p>	<p>3.3 Doors</p> <ul style="list-style-type: none"> changed to reflect different bus sizes safety system included – door entrapment prevention hold brake added weather screen added 	
<p>3.4 Floors - Moved to Section 4.5. Interpretation removed.</p>	<p>3.4 Step height/depths</p> <ul style="list-style-type: none"> kneeling is a requirement, except for VSB (Very Small Buses) 	<p>3.5</p>

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	<ul style="list-style-type: none"> • Changed: “≤370mm at normal ride height. Kneel height at the front door to be between 245–280mm”. • ground clearance added – in line with PTDG guidance 	
3.5 Aisle width - Moved to Section 4.6	3.5 Step and plinth edges <ul style="list-style-type: none"> • moved specs on slip resistant and contrasting colour performance to Appendix. 	
3.6 Seating configuration - Deleted		
3.7 Seating design - Moved to Section 4.7		
3.8 Luggage/stroller/prams/mobility devices - moved to Section 4.3		
4. Vehicle interior, entrance and exit	4. Vehicle Interior	
4.1 Introduction	4.1 Driver compartment <ul style="list-style-type: none"> • includes detailed info on comfort and onboard security. 	Minor updates: Provision of: <ul style="list-style-type: none"> • A fully sprung driver's seat with adjustment for all three planes of driving position. The driver's seat suspension should be capable of being adjusted to cater for varying driver weight.

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		<ul style="list-style-type: none"> • 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. <p>Personal driver-controlled form of heating and cooling, including to the foot area. Can be part of the bus climate control system, but the driver must be able to control the flow and direction.</p>
<p>4.2 Step and plinth edges - Moved to Section 3.5</p>	<p>4.2 Driver operational communication</p> <ul style="list-style-type: none"> • 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. 	
<p>4.3 Stanchions/handrails - Moved to Section 4.8</p>	<p>4.3 Priority seating area</p> <ul style="list-style-type: none"> • diagram changed to include two wheelchair spaces and 2 sideways-facing, single fold-up seats for mothers with children or carers. 	<p>Reference to 'double-barrelled hand holds' removed.</p>

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	<p>Information updated to include DD bus.</p> <ul style="list-style-type: none"> • Added info on mobility devices:” The mobility device must be stable, i.e. must not fall over if not supported”. • priority seats put behind Double-barrelled hand holds to ensure safety. 	
<p>4.4 Grab handles on seat backs and elsewhere - Moved to Section 4.9</p>	<p>4.4 Wheelchairs</p> <ul style="list-style-type: none"> • measurements changed to improve wheelchair manageability • picture added of double-barrelled hand holds to ensure safety and space for a guide dog • reqs for VSB added • restrictions on powered mobility devices and segways added 	<p>Changed to future proof the RUB and enable people with a disability to take mobility devices onboard buses, as long as they fit within the weight and height dimensions:</p> <ul style="list-style-type: none"> • 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 three-yearly RUB review, if evidence that more suitable (weight and dimensions) mobility scooters have become more widely available.

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4.5 Lighting -- Moved to Section 4.10	4.5 Floors – interpretation removed <ul style="list-style-type: none"> • slip resistant specs added • contrasting colours • signage reqs added • VSB added 	
4.6 Security and safety – moved to Section 4.11	4.6 Aisle width <ul style="list-style-type: none"> • Specs for VSB added • Swept path increased for MB/LB • Aisle width and shoulder room reqs added 	
4.7 Heating, ventilation and air conditioning - Moved to Section 4.12	4.7 Seating design <ul style="list-style-type: none"> • specifies measurements and material • spacing increased from $\geq 670\text{mm}$ to $\geq 690\text{mm}$ for forward facing seats 	
4.8 Demisting - Moved to Section 4.13	4.8 Stanchions/handrails <ul style="list-style-type: none"> • spacing measurements and placement in DD stairwell improved following fatalities • includes pictures showing best practice for stanchion placement and DD stairwell design 	<p>Improvement to the handrail in the DD stairwell – is now continuous on the left side going up the stairs to enable people to hold onto the railing and not have to let go.</p> <p>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</p>

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	<ul style="list-style-type: none"> • picture added to show measurements for stairs in DD stairwell • interpretation removed 	<p>strap hangers spaced at approximately 380mm apart.</p> <p>Stanchion/handrail maximum cross-section dimension must be in the range of 30–35mm and must be of a circular or elliptical cross section.</p> <p>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.</p>
	<p>4.9 Grab handles on seat backs</p> <ul style="list-style-type: none"> • increased spacing from 30-35mm to 35-35mm to make it easier to grasp in a moving situation and also to enable people with arthritis more space to grip. 	
	<p>4.10 Internal lighting</p> <ul style="list-style-type: none"> • general saloon lighting changed to “from a minimum of 20 lux to a maximum of 100 lux”. • specs for DD stairwell added: “≥65 lux. Upper saloon of DD 40 lux”. 	

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	<ul style="list-style-type: none"> • specs for lighting control system added 	
	<p>4.11 Security and safety</p> <p>Detailed information added on:</p> <ul style="list-style-type: none"> • number and placement of CCTV cameras, and privacy issues addressed through warning signs • digital video recorders – warning light added and capability for minimum recording • 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 specs added • reversing system • blind spot camera system • tree guards 	<ul style="list-style-type: none"> • Fatigue management moved to Future Intention Section 8. 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.

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	<p>4.12 Heating, ventilation and air conditioning (HVAC)</p> <ul style="list-style-type: none"> temp changed to “The set-point of the temperature within the saloon areas is to be maintained at a temperature of 20°C +/- 2°C, when the bus is operating in an environment from 0°C to 30°C. This temperature must be achieved within 20 minutes of vehicle start-up”. 	
	<p>4.13 Demisting</p> <ul style="list-style-type: none"> 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. 	
	<p>4.14 USB Power Ports</p> <ul style="list-style-type: none"> USB ports must be provided for passengers to use. There should be a minimum of 12 ports distributed through the bus, ideally at every second seat there should be a double port be easily accessed and label. Also, ports to be located on 	<p>Section changed to ‘Phone charging facilities’ - 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.</p> <p>As a placement guide, USB phone charge points should be positioned not less than</p>

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	both sides of the bus near the front luggage racks / standing area	every second row of seats on both sides of the aisle (including upper saloon of LDBB). 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. Communication	
5.1 Introduction	5.1 Requirements – <ul style="list-style-type: none"> • relating to communication with passengers and the driver. • spec for two-way radio, covert panic duress button to active system and tag the CCTV to start audio included. 	
5.2 Bus stopping signals	5.2 “Bus stopping” electronic signs and buttons <ul style="list-style-type: none"> • updated to include placement in priority seating area, general saloon, and picture of stop button with braille. 	
5.3 External destination display – made into a table, interpretation deleted.	5.3 External destination display <ul style="list-style-type: none"> • Signs must be of the electromechanical or electronic matrix style, fitted with amber or white (front only) LED/LCD displays, 	<ul style="list-style-type: none"> • Minor clarification that the display size related to the viewing area of the destination signage <p>All buses shall have the following signs:</p>

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	<p>with emphasis on high visibility during all light levels.</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. <p>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).</p>
<p>5.4 Internal information – made into a table.</p>	<p>5.4 Exterior Promotional Area</p> <ul style="list-style-type: none"> • Advertising must not interfere with ventilation grills. Emergency exit windows must not be prevented from 	

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	<p>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.</p>	
<p>5.5 Driver operational communication – moved to Section 4.2</p>	<p>5.5 Internal information – audio-visual announcements</p> <ul style="list-style-type: none"> • 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. 	

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6. Facilities for passengers with impairments – moved to Section 4.3	6. Existing buses	
6.1 Introduction – section moved up to Section 4.3	6.1 Introduction	
6.2 Priority seating area – moved to Section 4.3	6.2 Existing bus standards	
6.3 Wheelchairs – moved to Section 4.4	6.3 Midlife refurbishment requirements At midlife refurbishment, the following must be updated to this version of the RUB: <u>2. DESIGN AND PERFORMANCE</u> <u>2.3. Performance (only the hold brake / interlock / fire suppression)</u> <u>3. VEHICLE ENTRANCE AND EXIT</u> <u>3.1. Ramp</u> <u>3.2. Ticketing/fare collection area</u> front and rear doors <u>3.5. Step and plinth edges</u> <u>4. VEHICLE INTERIOR</u> <u>4.1. Driver compartment</u> <u>4.2. Driver operational communication</u> <u>4.3. Priority seating area</u> <u>4.4. Wheelchairs</u> <u>4.5. Floors</u> <u>4.6. Aisle width</u> <u>4.8. Stanchions/handrails</u>	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

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	<p><u>4.9. Grab handles on seat backs and elsewhere</u></p> <p><u>4.10. Internal lighting</u></p> <p><u>4.11. Security and safety</u></p> <p><u>5. COMMUNICATION</u></p> <p><u>5.1. Requirements</u></p> <p><u>5.2. 'Bus stopping' electronic signs and buttons</u></p> <p><u>5.4. Internal information</u></p> <ul style="list-style-type: none"> • Wall lining • Ceiling panels • Seat upholstery • Seating design 	<p><u>4.8 Stanchions/handrails</u></p> <p>4.9 Grab handles on seat backs and elsewhere</p> <p>4.10 Internal lighting</p> <p>4.11 Security and safety</p> <p><u>5.1 Requirements</u></p> <p>5.2 'Bus stopping' electronic signs and buttons</p> <p>5.4 Internal information</p> <p>Further clarification:</p> <p>4.1 Driver compartment – except for seatbelt.</p>
		<p>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.</p> <ul style="list-style-type: none"> • 4.6 Aisle width – increase aisle width by removing items that obstruct aisle width, to meet accessibility requirements within the structural parameters. • Wall lining • Ceiling panels • Seat upholstery

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		<ul style="list-style-type: none"> • Seating design
<p>6.4 Boarding and alighting – moved to Section 3</p>		
<p>6.5 Ramp – moved to Section 3.1</p>		
<p>7. Driver compartment – moved to Section 4.1</p>	<p>7. Appendix</p> <p>7.1 Items not included 7.2 Visual contrast (for floors and stanchions) 7.3 Bicycle racks 7.4 Noise measurements 7.4.1 External noise measurement for vehicles in motion 7.4.2 Air brake noise measurement: Microphone positions from UN/ECE Reg. 51</p>	
	<p>7.5 Process for seeking a variation to these requirements</p> <p>7.5.1 RUB and the Transport Agency's procurement rules 7.5.2 Rule 7.5.3 Guidelines</p>	

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	7.6 Bus condition assessment	
8. Existing buses – moved to Section 6	<p>8. Future intention</p> <p>8.1. Future technologies intended to be required (in no particular order):</p> <ul style="list-style-type: none"> • Fatigue Management system • Cyclist detection system. • Acoustic vehicle alerting system on electric bus to alert blind and low-vision pedestrians. • Autonomous braking. • Non-carbon fuelled buses, e.g. electric and hydrogen-fuelled. • Lane-keep assist. 	<p>Additional information about telematics:</p> <p>Fatigue and driver distraction can be serious safety concerns in public transport operation and Waka Kotahi supports the investigation and trial of these systems.</p> <p>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.</p> <p>Fatigue/distraction detection and driver alert system should be installed and actively monitored. Parameters are, eyes closed for 1.5 seconds and driver looking away from the road for 4 seconds and includes:</p> <ul style="list-style-type: none"> - 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

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		<p>and/or distraction events during a driver duty.</p> <ul style="list-style-type: none"> - Notification if the system is unable to detect the drivers face (which will alert and record when the drivers 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.
8.1 Introduction – moved to Section 6.1	9. Appendix 1: Appendix 1: Procurement variation application template	
8.2 Existing bus standards – moved to 6.2		
Appendix 1: Procurement variation application template – moved to Section 7.5		
Appendix 2: Procurement variation – internal memo seeking approval template – moved to Section 7.5		