Bus Layover and Driver Facilities

Public Transport Design Guidance

NZ Transport Agency Waka Kotahi

17 September 2024

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NZ TRANSPORT AGENCY WAKA KOTAHI

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1. Introduction

The bus layover and driver facilities topic provides guidance related to planning, design, implementation and monitoring for bus layovers and driver facilities.

Bus layover spaces and driver facilities are essential infrastructure for the delivery of a reliable and efficient bus service. This is because bus layovers provide space for buses to wait when out of service (between trips) and enable the next service to commence on time.

Where driver facilities are provided, layovers can allow drivers to take their designated breaks near the end of the route and not have to travel back to the depot saving on unnecessary travel time and fuel.

There are three key reasons why a layover is needed. These reasons inform the design and location of a layover and the type of driver facilities required.

- **Short break:** Provides a place for a bus to wait between services and for a driver to take a rest break during the shift. This improves service reliability and enables driver fatigue management. Typically, buses are only at this type of layover facility for up to 15 minutes.
- **Meal break:** Normally 30 minutes in duration which allows drivers to take a break from work-related tasks during a shift. For a meal break to be taken at a layover space, nearby driver facilities need to be provided. Alternatively, a bus driver may return to the depot for the driver to take a meal break.
- **Long break:** More common for long distance and low frequency services (for example intertown or intercity services) when there is a long wait between trips but is not practical to have the driver return to depot. Long term layover spaces are often co-located with coach parking spaces.

Layovers can also provide the opportunity for charging electric buses, please refer to the Battery electric bus charging guidance for advice on charging infrastructure.

PTDG: Battery electric bus charging

Note that bus layovers are different to bus stops serving as timing points. Timing points are locations where buses may stand, with passengers on-board, for a short period of time along their service's journey to help ensure the service runs to, rather than ahead of, schedule. Guidance on location planning for timing points is in the Bus stop topic.

PTDG: Timing point bus stops

1.1 Legal obligations, roles and responsibilities

Overview of workforce related legislation, and roles and responsibilities related to layovers and driver facilities.

1.1.1 Legislation

Providing adequate layover and driver facilities are an essential part of meeting legislative obligations.

Employment Relations Amendment Act

The Employment Relations Amendment Act 2018 ('the Act') provides employees with the right to rest breaks and meal breaks throughout the workday.

Prior to the 2018 amendment, the Act required that employees receive reasonable and appropriate rest breaks and meal breaks without specifying the number, duration or position of the breaks within the workday.

The Act's amendment provides greater clarity of rest break and meal break entitlements which benefits workplaces by helping employees to work safely and productively.

Bus drivers are entitled to paid rest breaks (10-minutes) and unpaid meal breaks (30-minutes) depending on the length of a shift. Breaks are generally for attending to personal matters and are a break from work-related tasks which could include eating, going to the toilet or taking a mental health break.

When an employee takes these breaks, they need to be able to reasonably attend to these personal matters. A safe environment should be provided in accordance with the requirements of the Health and Safety at Work Act 2015 which obligates protecting employees from workplace health and safety risks, so far as reasonably practicable.

Health and Safety at Work Act 2015

To enable bus operators to meet the obligations of the Employment Relations Amendment Act, public transport contracting authorities and road controlling authorities may need to establish new driver facilities at layover spaces for drivers to take their breaks. This is because many layover spaces do not currently have nearby driver facilities and therefore bus drivers are not able to reasonably attend to personal matters.

Land Transport Rule: Work Time and Logbooks

The Land Transport Rule: Work Time and Logbooks 2007 sets out the limits to work time for drivers of commercial vehicles including drivers.

Section 2.1(1) of this rule requires bus drivers to take a 30-minute rest break after a maximum of five and a half hours of continuous work time.

A break which is 30-minutes in duration may be classed as both a rest break under the Land Transport Rule and a meal break under the Employment Relations Amendment Act.

Land Transport Rule: Work Time and Logbooks 2007

Land Transport Management Act 2003 (LTMA)

Part 5 of the Land Transport Management Act (LTMA) sets out the regulatory framework for how public transport services are organised and delivered in New Zealand. The LTMA places a significant emphasis on the need for public transport authorities, territorial authorities, and public transport operators to work together in developing public transport services and infrastructure.

More specifically, section 115 of the LTMA identifies principles that stakeholders must be guided by when undertaking functions relevant to public transport. Among other things, the principles require functions to be undertaken in a way that:

- supports a robust public transport workforce to sustain and expand public transport services
- enables public transport authorities, territorial authorities and public transport operators to work together
- enables public transport to be efficient and give value for money.

Layovers and driver facilities are essential elements of public transport networks. These facilities form part of the working environment for personal and significantly impact the ability to attract and retain people within the public transport workforce. These facilities also play a crucial role in ensuring efficient and cost-effective operation of services. The LTMA requires a collaborative approach to planning and providing such facilities.

Land Transport Management Act 2003 No 118 (as at 01 January 2024)

1.1.2 Roles and responsibilities

Many organisations have statutory roles and functions relevant to organising and delivering public transport in New Zealand. Key roles and functions related to public transport, generally, are outlined in the Public Transport Framework.

Public Transport Framework: Regulation of public transport | NZ Transport Agency Waka Kotahi (nzta.govt.nz)

Roles and responsibilities more specifically relating to bus layovers and driver facilities are outlined in the below table.

Table 1: Roles and responsibilities related to bus layover and driver facilities

Organisation	Key responsibilities
Ministry of Transport	• administers transport related legislation such as the Land Transport Management Act.
NZ Transport Agency Waka Kotahi (NZTA)	• responsible for investing funds from the National Land Transport Fund in public transport services and infrastructure • licensing bus drivers and operators • providing public transport infrastructure on state highway • oversee the planning, operation, implementation, and delivery of public transport
Public Transport Authorities (PTA)	• public transport authorities are regional councils, unitary authorities and Auckland Transport, or any territorial authority to which the regional council has transferred relevant function and powers • responsible for the planning, management and contracting of public transport services within the city or region • may own and maintain public transport assets (bus shelters, off-street bus layovers and driver facilities) or these may be owned and maintained by the road controlling authority (dependent on arrangements)
Road Controlling Authorities (RCA)	• own, maintain and develop the local road network used by public transport services • responsible for providing bus stops, bus lanes, and other on-road infrastructure in coordination with PTA • typically provide and own on-street layover spaces
Bus operators	• contracted by PTA to deliver public transport services • typically responsible for assets to deliver services such as vehicles, depots, and workforce facilities. • responsible for employing people to deliver contracted services and for managing the employer / employee relations • responsible for scheduling and allocation of bus driver shifts (eg deciding which trips are allocated to each driver). This influences when and where bus layovers and bus driver facilities are needed

Responsibility for bus layover and driver facilities

The exact roles and responsibilities for funding, ownership and maintenance of bus layover or driver facilities will depend on context. Arrangements can vary from place to place but should generally be organised in accordance with the following principles:

- Operators are responsible for providing appropriate facilities at operator-controlled locations (e.g. driver facilities at depots).
- PTAs and local authorities are responsible for providing and managing appropriate facilities on the network, e.g. layover space within street corridors, or off-street strategic network locations leased or acquired by PTAs/RCA's.

It is important that the PTA, RCA, and operators work closely to ensure integrated provision of facilities that enable efficient operation of service, good customer experience and support public transport workforce.

Related advice

PTDG: Bus layover & driver facilities - Implementation

2. Bus layover

This section provides guidance on layovers in terms of operational considerations, location, configuration and signs and markings.

2.1 Operational considerations

The way a bus network is designed and operated can affect the number and location of bus layover spaces required. For example, the way in which the driver shifts and fleet are scheduled and location of depots in relation to termini can affect the need for and availability of bus layovers and driver facilities.

This section covers these issues and provides advice intended to manage the number of layover spaces needed to support reduced land and cost requirements.

2.1.1 Driver shifts and changeover

Driver changeover is when one bus driver leaves a bus (when they finish their shift) and a new driver takes over (usually starting their shift).

Scheduling solutions allow this changeover to occur either:

- part way through a trip (mid-route), or
- at the end of the trip (during layover).

Mid-route changeover typically allows earlier return to the depot to take a break, minimising physical infrastructure investment. This is most efficient when the changeover is scheduled to occur where the bus is closest to the depot, so that the drivers can walk between the changeover location and the depot. Potential disadvantages of mid-route changeover are passenger delay and bus stop congestion (Table 2).

When the changeover location is further from the depot, such as at a layover, a staff car is often used to shuttle the drivers between the bus and the depot. Consider how such vehicles can be accommodated in close vicinity to the bus stop or layover without adversely impacting the ability of buses to manoeuvre in and out of the space and while also balancing the general parking demand.

Public transport authorities and road controlling authorities need to work closely with operators to consider layover availability alongside bus drive shift scheduling. This is because bus operators determine driver shifts and sometimes driver changeover during layovers. This can also help them understand where parking space is needed to support driver changeover so they can apply appropriate parking restrictions.

Table 2: Advantages and disadvantages of mid-route driver changeover

Network planning consideration	Advantages	Disadvantages
Mid-route driver changeover	• No bus layover spaces are required because buses stay in-service. • Drivers can take their breaks at the depot where full facilities are provided.	• Changing drivers mid-route can create delay for passengers, especially if the new driver is late to meet the bus • Driver changeover can result in longer dwell times which can increase congestion at the bus stop. Avoid driver changeover at busy bus stops or interchanges unless dedicated space is provided.

2.1.2 Through-routing

Through-routing is the term for when bus routes are designed to run from one side of a town or city to the other without terminating, waiting and recommencing in the centre (Figure 1). Through-routing can be thought of as joining two bus routes together so that there is one bus route end to end rather than two overlapping bus routes.

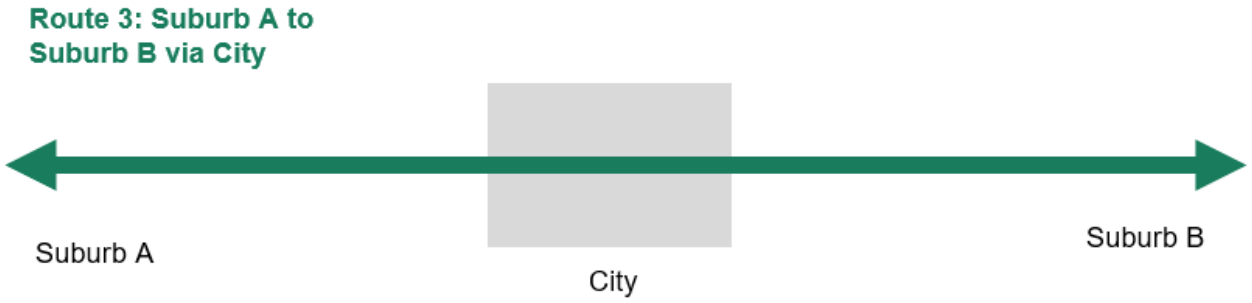


Figure 1: Diagram showing through-routing.

There are both advantages and disadvantages to consider for through-routing (Table 3).

Table 3: Potential advantages and disadvantages of through-routing

	Advantages	Disadvantages
Through-routing	• Reduced number of terminating buses in city centre with layover taken at suburban termini. This can reduce bus congestion and central space requirements • Reduced passenger transfers because customers have a “one seat” ride across the town or city. • Operational cost savings from having fewer overlapping services in town or city centre	• Can decrease service reliability, especially if route covers a long distance or operates without bus priority on roads prone to congestion. • May need relatively long ‘timing point’ stops (stops where buses wait if ahead of schedule). • May reduce opportunities for driver to take a break and access facilities, particularly on long routes.

2.1.3 Terminating routes

Terminating routes are services which terminate in the city centre (Figure 2).

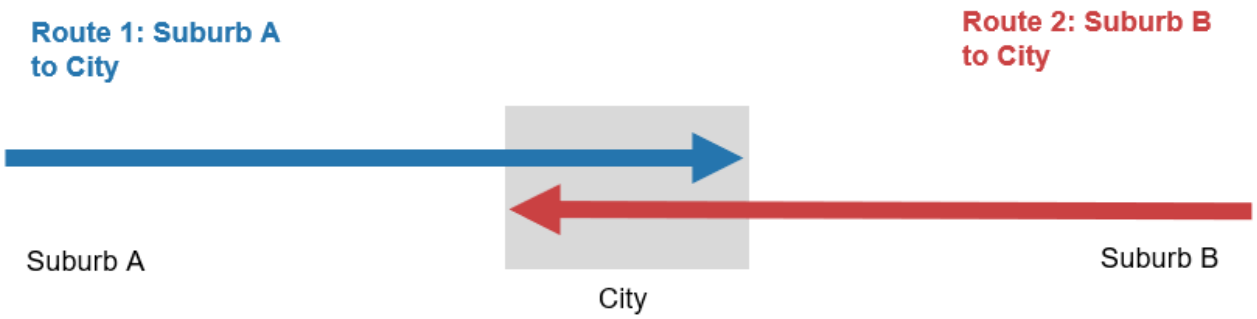


Figure 2: Diagram showing two partly overlapping routes which terminate in the city centre.

Terminating routes can affect layover provision and other operational aspects, as described in the below table.

Table 4: Potential advantages and disadvantages of terminating routes

	Advantages	Disadvantages
Terminating routes	• Increased service reliability as routes are shorter. • Drivers have access to town or city centre amenities when taking rest and meal breaks. • Simpler timetables than loop routes as only one direction of travel is shown to customers.	• Increased demand for layover space in town or city centre where street space is limited. • Less convenient for passengers making some cross town journeys which then require transferring. • Increased operating costs as routes double up town or city centre.

2.1.4 Loop routes

A loop route is when a bus route is designed to return to the same location where the trip started without terminating at the turnaround point (Figure 3).

Loop routes can be thought of as joining the inbound and outbound trips together so that layover is only undertaken at one end.

Loop routes operate most effectively when the route is short and/or bus priority is provided along the route to minimise the potential for delay.

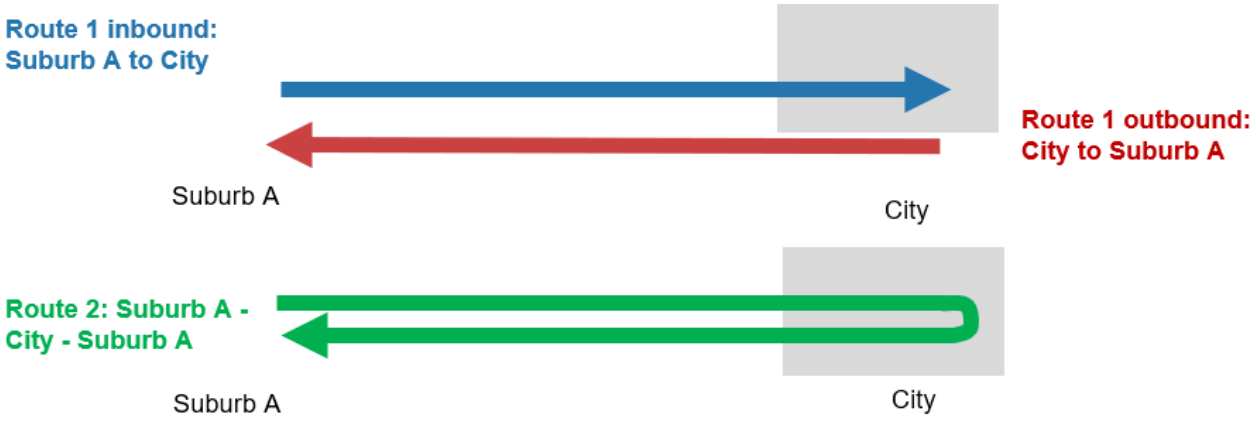


Figure 3: Diagram which first shows a service terminating at the turnaround point (in blue) compared with a loop route (in green) which does not terminate at the turnaround point.

Potential advantages and disadvantages of loop routes are described in the table below.

Table 5: Potential advantages and disadvantages of loop routes

	Advantages	Disadvantages
Loop routes	Can reduce quantity of layover and driver facilities required as the infrastructure can be consolidated to one end of route.	Opportunity to rationalise quantity of driver facilities could lead to reduced access to infrastructure like toilets. Can be issues with travel time reliability and bus bunching especially for longer bus routes. A timing point may be required at the turnaround point anyway to support schedule adherence.

2.1.5 Layover capacity

The number of layover spaces required to reliably and efficiently operate a bus service are affected by the following factors:

- the frequency of terminating buses
- the duration of the layover (related to function) by each bus
- whether buses are timetabled to arrive at regular intervals or pulse to meet other services (eg rail)
- how reliable the bus service is and whether buses regularly bunch together.

Generally, the highest demand for layover spaces occurs around the morning peak, early afternoon, and afternoon peak when drivers are scheduled to take meal breaks. Therefore, some layover spaces could be used for other purposes during off-peak times, including weekends.

Consider potential changes to the bus network such as likely expansion or reconfiguration to support future-proofed infrastructure.

Operational considerations like layover capacity requirements are important also to the configuration of layover spaces (as discussed in section 2.3, Layover configuration).

2.1.6 Electric bus charging

Consider electric bus charging requirements in planning and design of layovers to ensure that charging equipment can easily be installed as needed. This may include allowing space for charging equipment (eg pantograph, plug in or induction), installing electrical ducting, and considering the capacity of the local power grid. See: PTDG: Battery electric bus charging

Figure 4: Pantograph electric bus charging facilities, Reef Street, Wellington (Source: Lorelei Schmitt).

2.2 Locating bus layovers

There are several factors, discussed in this section, to consider in locating layovers.

These include:

- land use integration
- security
- road safety and access
- street furniture clearance
- off-street layover
- on-street layovers
- co-located or separated layovers
- temporary layover

2.2.1 Land use integration

Endeavour to minimise negative impacts on local communities while balancing the need to provide layover in a location suitable to meeting operational requirements.

To achieve this:

- Locate layovers near existing toilet facilities where possible.
- Try to avoid positioning layovers close to sensitive land uses, such as houses or businesses which front directly onto the street.
  - Where it is difficult to avoid sensitive land uses, identify locations where such buildings are set back from the street or have frontages without windows or entrances.
  - The noise from an idling bus engine can cause tensions with nearby property occupiers and therefore drivers should be reminded to turn off their engines whilst at the layover. This could be achieved through signs at the layover (Figure 5) or a note in the driver shift cards. Buses with older

diesel engines may need to idle for up to two minutes to allow the engine to cool down after which time the engine should be turned off.

- Avoid locating bus layover in a way that is incompatible with known future land use changes including proposed or consented developments.

Figure 5: Sign instructing bus drivers at a layover to turn off engines while waiting for their departure time. (Source: Lorelei Schmitt.)

Figure 6: Example of bus layover which is located away from street frontages and does not obstruct driveways from Quay Street, Auckland. (Source: Thomas Chu)

2.2.2 Security

The location of bus layover facilities should minimise the opportunity for criminal activity and enhance all elements of security for users and drivers. This is particularly relevant because bus services can operate late into the night and bus drivers may be required to carry cash boxes as part of their job.

Bus layovers should be in areas which:

- are clearly visible with unobstructed sightlines to and from surrounding mixed-use activities or passing pedestrians and motorists
- are well-lit, near street lighting or other sources of illumination
- have the possibility of security cameras to improve surveillance at the location.

The Bus Stop topic has more detailed guidance around safety, security and lighting including links to useful resources like lighting standards and more.

PTDG: Bus Stop: Safety, security and lighting | NZ Transport Agency Waka Kotahi (nzta.govt.nz)

2.2.3 Road safety and access

The location of bus layovers and driver facilities should not negatively impact on road safety or the efficient operation of the transport network. Consider:

- 'desire lines' (direct and desirable routes) for people on foot or bikes so that people do not walk or cycle through the bus layover area
- the walking route between the bus layover space and driver facilities if located apart
- how buses will access the layover and whether turning movements present a hazard to other road users
- whether parked buses or driver facilities will obstruct sight lines for nearby driveways, intersections or crossings
- the wider context of kerb space allocation and land usage, consider relevant competing demands such as parking bays and loading zones.

Layover spaces must not be located directly across driveways or in a way that might inhibit the safe and efficient access of drivers entering or exiting a driveway.

Avoid locating bus layover where vehicles will have to cross the centre line to pass unless vehicle volumes are low and there are clear sightlines for passing vehicles between each end of the layover.

2.2.4 Utilities

Keep bus movements and parking clear of utilities such as stormwater sump and service covers to avoid disruption to the layover during utility works.

A layover space must not be located in such a way that a parked bus would obstruct a fire hydrant as bus drivers may lock and leave the bus while taking their break which limits emergency service access.

2.2.5 Street furniture clearance

Layovers should be located and designed in such a way that street furniture, including but not limited to benches, bus shelters, cycle parking, and signage, is located back from the kerb to ensure adequate clearance to accommodate bus front or rear overhang.

More detail is covered in the Corridor clearance and Bus stop topic:

PTDG: Corridor Clearance

PTDG: Bus stop

Figure 7: Benches and a rubbish bin are located back from this bus layover on Kent Terrace in Wellington, but the signpost is too close to the kerb. This may be why the bus shown has not fully pulled in. (Source: Lorelei Schmitt)

2.2.6 Off-street layover

Off-street layover spaces are characterised by a separate off-road parking area dedicated to out of-service buses.

Key considerations for off-street layovers are:

- **Duration:** generally used in situations when there are long layovers.
- **Capacity:** often such facilities are designed to accommodate a high number of terminating buses which is useful where kerb space is limited, such as in city or town centres.
- **Facilities:** it is often easier to provide more extensive driver facilities compared to on-street layovers because there may be more space and less conflict with street frontages.
- **Urban integration:** good urban amenity outcomes are typically best achieved when an off-street layover is integrated into a wider development, with other land uses, or a public transport interchange.
- **Cost:** off-street bus layovers generally have higher costs than on-street bus layovers. This is because additional land may need to be purchased or leased for off-street bus layovers whereas road control authorities typically already control the road space used by on-street bus layovers. However, off-street layovers may provide operating cost savings due to less out of service running and potentially lower peak vehicle or driver requirements. Public transport contracting authorities and/or road controlling authorities should undertake a holistic cost analysis which includes both the potential costs and likely benefits when considering which type of bus layover to choose.

Figure 8: Example of off-street bus layover area. (Source: ACT Government).

Table 6: Potential quantifiable benefits and costs of off-street layovers.

Potential quantifiable benefits	Potential quantifiable costs
• Reduced out of service running • Lower peak vehicle or driver requirements • Improved service reliability if buses are being delayed whilst out of service • Reduced number of driver facilities required • Revenue from increase in paid on-street parking spaces • Provides greater opportunity for e-charging	• Land purchase or rent • Design and construction • Operating costs such as utilities and insurance • Asset maintenance and renewals

2.2.7 On-street layovers

On-street bus layovers are characterised by designated on-street parking spaces for out of service buses.

Key considerations for on-street layovers are:

- **Duration:** on-street layovers are typically used when the layover duration is only up to 30 minutes.

- **Capacity:** usually suited to a limited number of terminating buses or where there is ample kerb space available.
- **Amenity:** avoid streets with busy, active street frontages. There may be some benefits to street amenity by splitting up layover spaces rather than concentrating them to a hub. However, this might result in it being more difficult to provide driver facilities and could also result in a more out-of-service running.
- **Facilities:** on-street layovers can be used for meal breaks where appropriate driver facilities are provided and where stationary buses would not obstruct in-service buses.

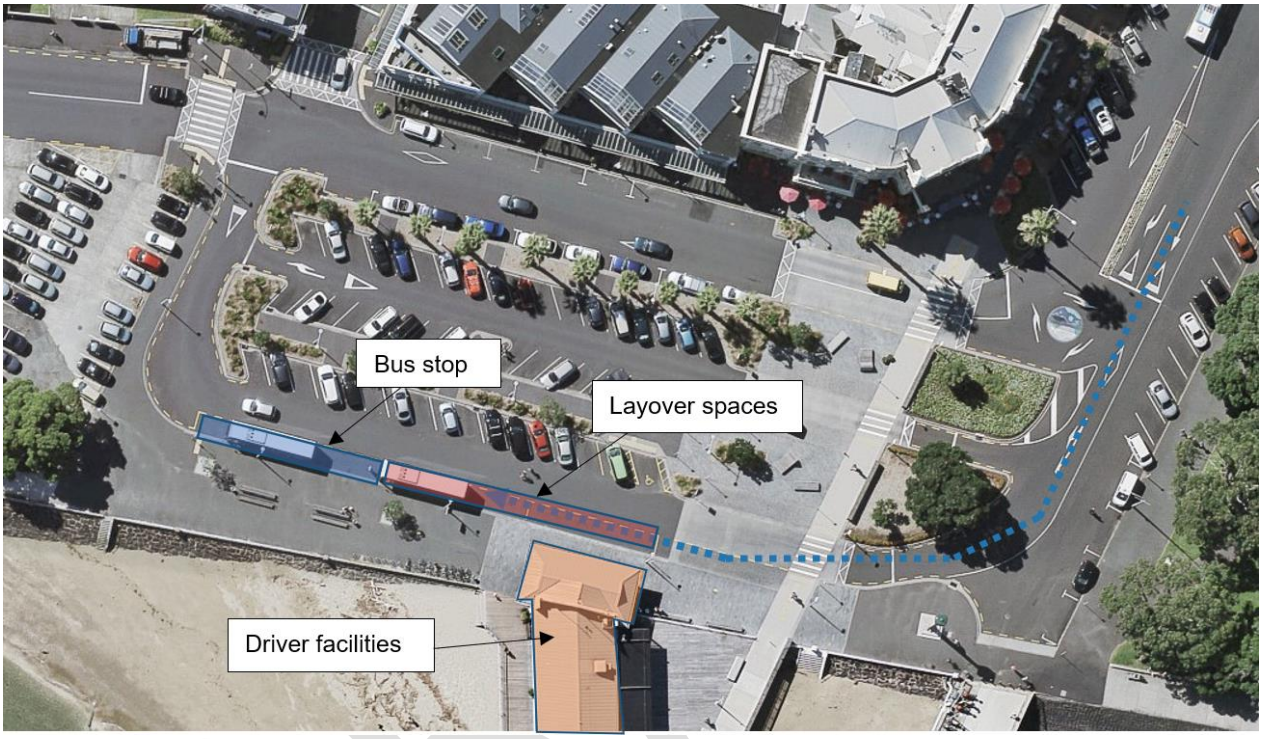


Figure 9: Example of on-street bus layover from Devonport, Auckland. (Source: LINZ, NZTA, Eagle Technology.)

2.2.8 Co-located or separated layovers

A bus layover space can either be co-located with the terminus bus stop or a separate layover space can be provided. The choice of where to locate the layover space depends on the characteristics of the services using the layover space as well as the requirements for workforce breaks.

It is best practice to separate the location of a layover space and a bus stop where possible and practical. A separate layover space allows the driver the opportunity to step away from their vehicle to take their break which may not be possible at co-located bus stops where passengers expect to be able to board and wait on the bus.

The decision-making flowchart below provides a general guide to determining whether a layover space can be located in a bus stop or not.

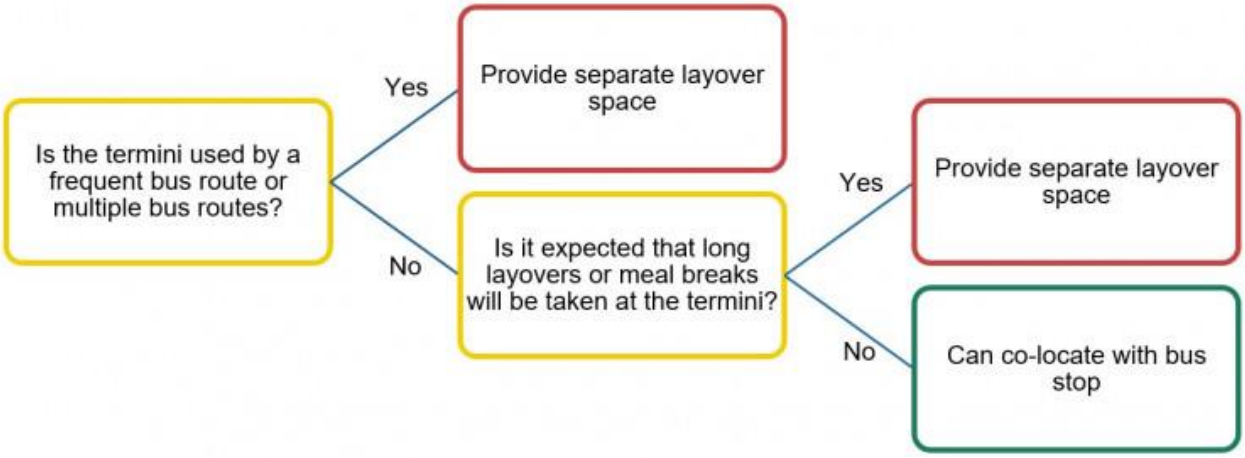


Figure 10: Guide to selecting whether an on-street layover can be co-located with a bus stop or not.

Follow these recommendations for co-located bus and layover stops:

- Layover must not be located at bus stops located on cycle lanes or across vehicle entrances and exits (Road User Rule 2004, sections 6.6 and 6.9)
- The Road User Rule 2004 requires that on-street layovers be designated and signed with bus parking, which can be time limited. This will also help reduce the risk of the space being used by other vehicles (such as private coaches).
- Provide sufficient overall length:
  - The stop should be of sufficient length to enable buses to pull in and out independently without other buses needing to be moved.
  - If the stop is designed to be used by more than one bus then the in-service buses should use the head of the stop and buses laying over should use the rear of the stop.

Follow these principles for separate layover spaces:

- The layover space: this should be a short distance from the commencement stop.
- Line of sight: ideally the bus driver should be able to see the commencement stop from the layover space to ensure it is clear before departing.
- Clearly defined spaces: the layover space should be in a less prominent location than the bus stop so that customers do not attempt to board from the layover space.
- Access: the layover space should be located for easy and safe access without complex manoeuvres; in the case of uncertainty use swept-path analysis and tracking.

Further information

For further information refer to the Land Transport (Road User Rule 2004), Sections 6.6, 6.9 and Definitions of ‘loading zone’ and ‘parking’:

Land Transport (Road User Rule 2004)

Further guidance on tracking and swept path analysis for buses:

PTDG: Bus dimensions and tracking

2.2.9 Temporary layover

A temporary layover is typically required when planning for a major event, such as construction projects or temporary service disruptions such as railway closures requiring bus replacement services. The temporary layover should be located as close as possible to the terminus stop and have enough capacity to accommodate the expected volume of terminating buses.

In establishing temporary layovers, engagement with key stakeholders such as bus operators and residents should be undertaken to ensure that operational needs are met whilst minimising any potential impacts.

2.3 Layover configuration

The configuration of layover areas should consider:

- the size and shape of the available land
- the number of buses that need to be accommodated
- how buses will circulate around the site
- opportunities to avoid reversing manoeuvres
- the location of access and egress points
- if driver facilities need to be provided on site.

Bus vehicle tracking should be undertaken during the design of layover sites to identify any potential conflicts between manoeuvring buses. It is recommended that the design of off-street layovers keep buses separate from general traffic, pedestrians and cyclists to avoid safety issues with manoeuvring buses.

For further information about vehicle dimensions, refer to:

PTDG: Bus dimensions and tracking

2.3.1 Parallel parking

Parallel parking is the most common type of bus layover, with buses parked parallel to the carriageway. Parallel parking is often used for on-street locations because it requires less road width than angled parking and avoids the need for buses to reverse out of the layover space.

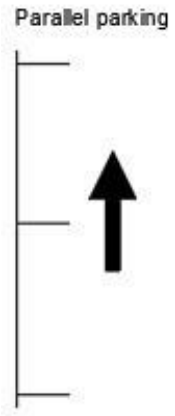


Figure 11: Parallel parking bus layover configuration.

Figure 12: Example of on-street bus layover with parallel parking. (Source: Flow)

Layover operations

The amount of manoeuvring space provided between layover spaces can limit bus operations. This is because buses that are parked close together may result in insufficient space to allow each bus to independently enter or exit the layover space.

There are three types of operations at bus layovers and while these refer to parallel parking arrangements, the general principles may also apply to other layover configurations.

Independent operation

Independent operation provides enough manoeuvring space for buses to enter and exit a layover space without requiring the relocation of other buses. Independent operation allows bus drivers to leave their bus during scheduled layovers without preventing other buses from using the layover space. Providing enough space for independent operation is recommended for layover spaces which are used by multiple bus routes, different operators or long layovers.

Figure 13: Layover space with independent operation.

Semi-dependent operation

Semi-dependent operation means that a bus can exit the layover space but another bus cannot enter the layover space without relocating other buses. This is because buses require more manoeuvring space to pull into a parallel parking space than to pull out into an adjacent lane. Semi-dependent operation may be appropriate if bus drivers are scheduled to start their layovers at the same time, such as after a rail connection.

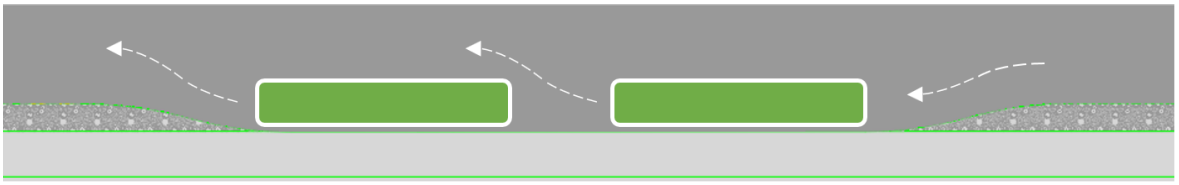


Figure 14: Layover space with semi-dependent operation.

Total dependant operation

Total dependent operation is where there is not enough manoeuvring space for a bus to enter or exit the layover facility without requiring the relocation of another bus. Total dependent operation is not preferred because it creates operational challenges and may result in poor service reliability from delays in leaving the layover space. Total dependent operation may encourage the driver of the last bus in the queue to attempt to reverse out of the layover space which can create safety issues.

Figure 15: Layover space with total dependent operation.

Typical layover dimensions

The recommended bus stop layout dimensions provided in the Bus stop guidance are also applicable for bus layovers.

One potential point of difference from a regular bus stop is the extent to which the layover needs to be able to accommodate independent bus operations.

Table 7 shows the minimum length that should be provided between layover spaces depending on the type of layover operation.

Table 7: Minimum length between layover spaces based on layover operations.

Type of layover operation	Minimum length between layover spaces (m=metres)	Comment
Independent operation	15m	A minimum of 15m is ideal for a bus to independently pull into or out of layover space. For constrained sites, an absolute minimum of 12m may be acceptable, subject to a swept path analysis.
Semi-dependent operation	9m	A minimum of 9m is ideal for a bus to pull out of a layover space. For constrained sites, an absolute minimum of 5m may be acceptable, subject to a swept path analysis.
Total dependent operation	1.5m	Recognises that buses do not park bumper to bumper and provides space for potential bike racks on front of buses

Related guidance

- PTDG: Bus dimensions and tracking
- The Requirement for Urban Buses outlines specifications for bike racks on buses
- PTDG: Bus stop: layout
- Traffic Control Devices Manual Part 13 (Parking).

2.3.2 Angled parking

Angled parking is where the bus layover space is at an angled of 45° or 60° which is generally used for off-street layover sites. The advantage of angled parking is that this arrangement requires less length per layover space which may increase the number of layover spaces that can be accommodated within the site.

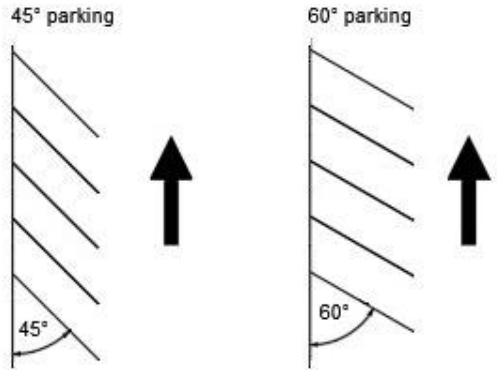


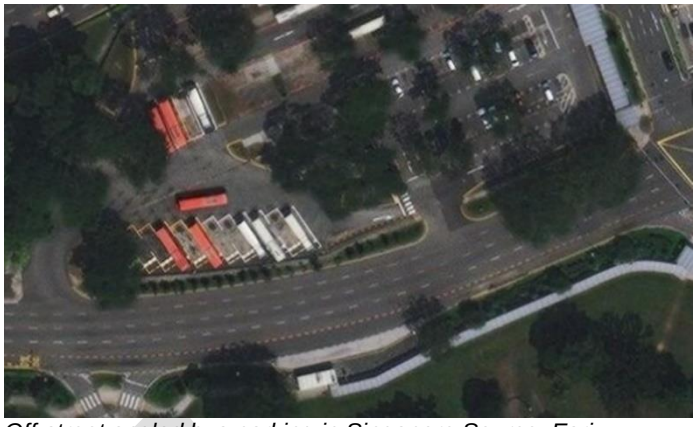
Figure 16: Angled parking bus layover configuration.

Angled parking can be arranged so that buses either reverse out or drive straight out through the layover space. For on-street layovers it is unsuitable to require bus drivers to reverse out of the space due to lack of visibility of other road users whilst reversing.

Off-Street angled bus parking, Onehunga, Auckland.
Source: LINZ, NZTA, Eagle Technology.

Off-Street angled bus parking, Northern Busway, Auckland
Source: Auckland Council.

Off-street angled bus layover parking in Canberra, Australia Source: ACT Government.



Off-street angled bus parking in Singapore Source: Esri Community Maps Contributors, SLA, Esri, HERE, Garmin, METI/NASA, USGS.

Figure 17: Examples of angled parking layovers for sites of different sizes and shapes.

2.3.3 Perpendicular parking

Perpendicular bus layovers are when the bus is parked at a 90° angle. Perpendicular parking further reduces the width of the layover space required compared with angled parking but a larger area for manoeuvring is required.

It is recommended that perpendicular parking only be considered for off-street layover spaces (such as inter-city services) or bus depots. Perpendicular parking is not appropriate for on-street settings due to the safety issues from manoeuvring buses. Furthermore, perpendicular parking requiring reversing manoeuvres is not recommended for off-street layovers which have a high bus turnover due to the difficultly of manoeuvring in and out of the layover spaces.

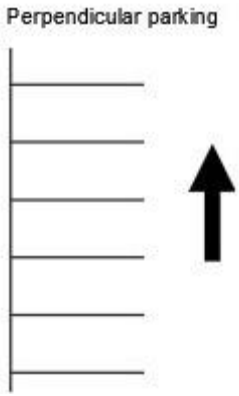


Figure 18: Perpendicular parking bus layover configuration.

Figure 19: Example of perpendicular bus layover parking. (Source: LINZ, NZTA, Eagle Technology).

2.3.4 Advantages and disadvantages of different configurations

There are advantages and disadvantages of different layover configurations as outlined below.

Table 8: Advantages and disadvantages of the three main configurations of bus layovers.

Layover configuration	Advantages	Disadvantages
Parallel parking	Requires the least amount of width and is therefore suited to long narrow sites including road corridors. Generally does not require a reversing manoeuvre.	Can restrict independent operation if insufficient space between layover spaces is provided.
Angled parking	Requires less length per layover space and is therefore better suited to shorter but wider off-street sites compared to parallel	If configured to require reversing, then this can lead to safety concerns
Perpendicular parking	Requires the least amount of length but the greatest width compared to parallel and angled and is best suited to wide off-street sites	May be difficult for drivers to manoeuvre buses in and out of layover spaces Safety issues should buses need to reverse out of layover spaces

No single layover configuration is right or wrong, rather bus layover configurations need to be designed in a way to meet site-specific constraints and operational requirements.

Considerations include the size and shape of the sites, the capacity and duration of layovers and the way in which they access and egress the facility. An example is Otahuhu Bus Station in Auckland which has been designed to fit within a constrained site. It allows drivers to proceed in and out of the layover spaces in a forward gear while also allowing in service buses to pass around the outside of the layover area unhindered by layover movements.

Figure 20: Example of constrained site at Otahuhu, Auckland. (Source: LINZ, NZTA, Eagle Technology)

2.3.5 Other considerations

In more complex layover situations, for example where the size of layover spaces or the duration of the layover varies, it may be necessary to allocate layover spaces to driver shifts and their specific vehicle type. This can help to manage the available layover spaces more efficiently and reduce buses circling to find layover spaces.

Technology such as sensors at layover spaces should also be considered as a way to efficiently direct bus drivers to available layover spaces particularly when spaces are dispersed across a wider area.

For layovers serving articulated buses, reverse manoeuvres should be avoided in design. Refer to the articulated buses guidance note for additional guidance on design of the bus box and associated entry and exit tapers.

PTDG: Network infrastructure for articulated buses

2.4 Signs and markings

On-street layovers on public roads should have appropriate signs and markings to ensure that the parking restrictions are legally enforceable. This is imperative to ensuring the layover can function as intended.

We generally recommend that layovers, especially those serving multiple bus routes and/or bus drivers to take meal breaks, be signed and marked as bus parking rather than as a bus stop. This is because under the relevant legislation (Road User Rule 2004), there are restrictions on parking at bus stops as bus stops are intended for loading and unloading of passengers. However, as discussed in the Locating bus layovers section there may be instances when it will be most pragmatic and suitable for short layover to occur in co-located bus stops.

When deciding on an appropriate sign, think synergistically about how the allocated space might be able to help serve other, additional, demands such as tour coach or charter bus parking. If sharing space would

be okay from an operational perspective this could potentially support outcomes like, for example, less aggregate kerbside space needed or better integrated customer journeys between inter-regional services and local public transport networks.

Figure 21: Example of a bus layover space with the recommended R6-53 bus parking sign (Source: Lorelei Schmitt).

Figure 22: Example coach parking signage on street.

In terms of off-street layover locations, access to and from the site can be controlled by various means such as barriers, signage or markings at the entrance or exit. The asset owner may also require signs within the site on a case-by-case basis.

2.4.1 Signs

Parking signs need to be used to establish an on-street layover space(s) in which the bus may be parked. These signs will need to illustrate the vehicle type(s) that may park (e.g. bus) and if appropriate any time limit on the length of time for parking.

Signs that should be used for layover locations as described by the Traffic Control Devices Manual and are shown in the table below.

Table 9: Signs for layovers

Type of restriction	TCD Rule sign reference	Use	Sign examples
Loading zone (bus stop) no parking	R6-71	To establish a bus stop and to indicate where no vehicle, other than a bus, may park, stop or stand provided the driver remains in attendance	
Parking reserved for described vehicle classes	R6-53 R6-53.2	To establish a bus layover space(s) and to indicate the permitted types of vehicle parking (and the extent of any parking time limit)	

2.4.2 Markings

Road markings for on-street layover spaces must be yellow and used in conjunction with the appropriate parking signs.

When parallel to the kerb or roadway edge, markings must be indicated by the provision of:

- continuous yellow lines at right angles to the kerb/road edge at each end
- broken or continuous yellow lines parallel to, and between 2m and 3m from, the roadway edge.

When marked at an angle to the kerb or roadway edge, markings must be indicated by continuous yellow lines on either side of the bus layover at the appropriate angle to the kerb or road edge.

Once markings are laid they should be captured in relevant maintenance contracts that the council has.

Further information

Specifications for signs and markings are described in the Traffic Control Devices Manual.

Traffic control devices manual (TCD manual)

Traffic Control Devices Manual Part 13 (Parking).

3. Driver facilities

This section provides guidance on planning and design considerations for bus driver facilities.

3.1 Function and features

Different driver facilities are required to serve different types of bus layovers depending on how long the driver will be stationed at the layover and whether a meal break will be taken.

The following table provides guidance on the types of facilities expected at each type of layover.

Table 10: Summary of driver facility provision based on break types to take at layovers

Driver facility	Short break (wait or rest break, generally up to 15 minutes in duration)	Meal break (generally 30 minutes in duration)	Long break (in-between shifts, often inter-regional)*
Toilets (Refer to the following section for further details)	Essential/Recommended	Essential	Essential
Showers and changing facilities	Optional	Recommended	Recommended
Hot water (Hot water can support driver comfort. The Building Code stipulates statutory requirements)	Optional	Essential	Essential
Lockers	Optional	Recommended	Recommended
Cooking facilities – kettle, microwave, toaster	Optional	Essential	Optional
Dining facilities – tables and chairs	Optional	Essential	Optional
Comfortable seating (couches)	Optional	Recommended	Recommended
Exercise equipment	Optional	Optional	Optional
Quiet/prayer room	Optional	Optional	Optional

*Recommended facility provision may vary based on context of facility reflecting the likely desired usage, for example, whether or not meals are likely to be consumed in the venue or not.

Building Regulations 1992(external link)

G12 Water supplies

3.1.1 Toilets

Of the driver facilities outlined above, the most basic yet important facilities are toilets. Access to good-quality toilet facilities is a key factor for driver health, wellbeing and satisfaction, and is recommended for all layover spaces and essential for some use profiles. Ensure that toilets are of a quality and design that would be comfortable for a range of demographics including, for example, female or gender diverse bus drivers. The Ministry of Education offers a useful resource for toilet and changing space design.

Toilet & Changing Space Design for Schools

Where driver rest or meal breaks are taken at the layover space, access to toilets is essential. This can be a designated driver-only toilet facility, a nearby public toilet facility or an arrangement to use nearby private toilet facilities (such as petrol stations).

For private toilet facilities it is recommended that the public transport contracting authority or operator enter into a formal arrangement with the facility owner to ensure continued access to these facilities. Consideration could be given to issuing keys to public transport operators if opening hours for public or private toilet facilities differ from public transport operating hours. Safety precautions should also be considered in these situations as late timetables can place a driver in an isolated or unmanaged facility or area.

It is recognised that many suburban bus layover locations do not currently provide access to nearby toilet facilities.

Methods to install toilets whilst maintaining residential amenity values can include:

- incorporating the toilet facilities in the design of nearby public buildings or structures
- locating toilet facilities behind bus shelters or in other less prominent locations
- utilising materials consistent with the surrounding area or providing murals to activate blank walls.

If it is not possible to provide driver toilet facilities at, or near, bus layovers then other responses may be considered, such as changing the design of a bus route, changing the scheduling or bringing drivers back to the depot. It is generally preferable to provide toilet facilities at layovers though as these other responses can be associated with increased out-of-service running, non-optimal routing and thus long-term operating costs (and other externalities) which need to be fully considered.

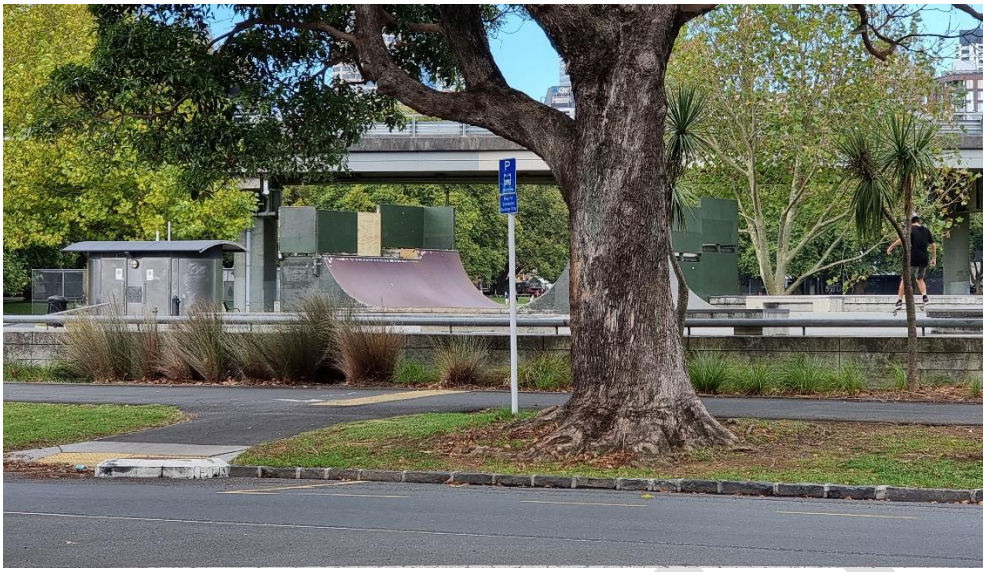


Figure 23: Example of toilet facility adjacent to bus layover which has been incorporated into Victoria Park, Auckland (Source: Thomas Chu).

3.2 Locating driver facilities

Driver facilities (including toilets, showers, kitchen, dining facilities and lockers) may be contained within a designated area of a public transport interchange or as a separate building. The advantage of locating all driver facilities within one area is that it can be separated from the public areas and is more convenient for drivers.

Figure 24: Example of driver facilities contained within separate building (top) and driver facilities located within public transport interchange (bottom) (Source: Auckland Transport).

Due to space and consenting constraints, it may be necessary to locate driver facilities separate from layover spaces. If the driver facilities are in a separate location, then the walk time to and from the driver facilities needs to be considered in the scheduling of driver breaks. Driver facilities need to be in a convenient location for bus drivers and therefore the recommended maximum distance between bus layovers and driver facilities is 300m.

3.3 Other design considerations

3.3.1 Safety and security

As noted in the bus layover section, safety and security are paramount in location planning. Bus services may operate late into the night and bus drivers are sometimes required to carry cash boxes as part of their job. Where the layover spaces and driver facilities are separated, the safe movement of drivers to and from the driver facilities needs to be considered. This could include provision of well-lit walkways (because driver facilities will be used after dark) and safe crossings of streets. Security cameras may be worth considering.

Like layovers, driver facilities should also be located in areas with good visibility and lighting to minimise the opportunity for crime and enhance feelings of safety (example image below).

Figure 25: Example of driver facilities in Lower Albert Street, Auckland, located to be clearly visible (Source: Thomas Chu).

3.3.2 Amenity

In order to minimise the potential impacts on amenity from driver facilities, the following should be considered:

- Avoid positioning driver facilities close to sensitive land uses, such as houses or businesses which front directly onto the street.
- Where it is difficult to avoid sensitive land uses, identify locations where such buildings are setback from the street or have frontages without windows or entrances.

- Avoid locating driver facilities in a way that is incompatible with known future land use changes including proposed or consented developments.

4. Implementation

Guidance on the consultation and consenting processes for implementing bus layover and driver facilities.

As noted in the section Legal obligations, roles and responsibilities, consistent with the Land Transport Management Act 2003 regional councils should work closely with territorial authorities and operators to agree roles and responsibilities to provide and manage layover and driver facilities. The appropriate entity to fund, own or maintain a facility will depend on the context.

4.1 Consultation

Consultation with stakeholders and affected parties is recommended prior to any formal resource consent or traffic resolution process. Consultation provides the opportunity to incorporate measures to avoid or remedy adverse effects in the site selection and design of bus layover and driver facilities. It is best practice to start the consultation process early to avoid needing to rework detailed designs.

The key stakeholders and affected parties for bus layover and driver facilities include:

- bus operators
- bus drivers
- public transport contracting authorities
- road controlling authorities
- residents and property owners
- businesses
- road users.

Please consult with a communications and engagement specialist if you require guidance on this.

4.2 Consenting

The consenting process for bus layovers varies greatly depending on the policies and rules contained in district plans and local authority bylaws.

On-street bus layovers may not require a resource consent depending on the classification of the road corridor in the district plan. However, it is likely that a traffic resolution would be required to approve a change in parking restrictions. Consider the process for seeking traffic resolutions, for example, the schedule of council meetings at which these can be sought.

In general, utilising reserve land for public toilets may be permitted but reserve land cannot be used for bus parking or other driver facilities.

It is likely that off-street bus layovers would require resource consent and therefore it is recommended that a consenting strategy be considered during the site selection phase.

In general, off-street bus layovers in business or industrial zones would be easier to consent than in residential zones due to these areas being less sensitive to potential noise and visual amenity impacts.

Site selection should balance the ease of gaining resource consent with the length of the out of service run required from the bus route terminus to determine the preferred layover location.

4.3 Costing

Costs to implement bus layovers and driver facilities are highly subject to scope, scale and context. For example, toilet costs can vary greatly from temporary, “portaloo” style, facilities to fixed permanent toilets. Location and site constraints can also strongly influence costs.

Activities such as tree trimming and connecting to existing underground utilities can be costly and might bring substantial changes to project cost. Therefore, cost estimation should be undertaken on a case-by-case basis and is recommended to be taken into consideration during the site selection phase.

5. Post implementation

Guidance on the maintenance and operations of bus layover and driver facilities so that they continue to meet the needs of bus operations.

5.1 Maintenance

5.1.1 Cleaning and general maintenance

Generally, it is the asset owner’s responsibility to clean and maintain bus layover and driver facilities. Where the asset is not owned by the public transport contracting authority or bus operator it is best practice to have an agreement with the asset owner documenting cleaning and maintenance requirements. This is because public transport contracting authorities have close relationships with bus operators who use layovers and driver facilities and can therefore report any issues to the asset owner.

5.1.2 Road pavement maintenance

There is the potential for wheel ruts or asphalt deformation to occur at bus layover sites particularly at high stress locations such as turning areas or where buses will be stationary for long periods. It is best practice to provide robust road pavement to reduce the maintenance required for bus layover areas.

It is recommended that pavement design is in accordance with Austroads Guide to Pavement Technology Part 2: Pavement Structural Design and/or NZTA technical advice note 17-01 on asphalt depths at high stress locations.

Austroads Guide to Pavement Technology Part 2: Pavement Structural Design

NZTA technical advice note 17-01 Asphalt depths at high stress locations for new pavements and renewals

5.2 Monitoring and enforcement

For on-street bus layovers, the enforcement of non-compliant vehicles in layover spaces is the responsibility of the road controlling authority. A road controlling authority must install the correct markings and the appropriate signage as noted in Section 2.4.

For off-street bus layovers, the enforcement of non-compliant vehicles in layover spaces is the responsibility of the asset owner.

The road controlling authority or asset owner enforcement action may ultimately involve towing non-compliant vehicles parked in layover facilities. Where tow away activity forms part of enforcement this must be appropriately signed and as noted above, the correct signs and marking must be provided in defining the layover space(s).

In each case, monitoring and enforcement of layover spaces should be included within a wider parking monitoring and enforcement programme.

Figure 26: Tow away area sign from Traffic Control Devices Manual.

For further details of the marking and signage requirements see: the Traffic Control Devices Manual:

Traffic Control Devices Manual Part 13 (Parking).

5.3 Information for drivers (documentation)

It is best practice to regularly update documentation of bus layover and driver facilities so that this information is readily available to bus drivers. Documentation of bus layover and driver facilities should include the following:

- Location of layovers
- Land and asset ownership
- Available capacity
- Applicable time restrictions
- Available nearby toilets and other driver facilities and whether they are dedicated (bus driver only) or shared (publicly accessible).

Typically, information on bus layovers and driver facilities is communicated to bus drivers using printed maps or incorporated into driver shift cards. Consideration should be given to communicating information using digital tools such as online maps or in vehicle navigation systems. The advantage of digital tools is that more detailed information can be communicated such as photos of the layover space and real time information on layover space availability.

As an example, Auckland Transport regularly updates its city centre bus/coach parking and toilet facilities map which is produced for bus drivers and is also available online for public use.

Figure 27: Auckland Transport bus/coach parking and toilet facilities map (Source: Auckland Transport).