Guidelines for Choosing Informal Bus Stop Locations

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Department of **Infrastructure, Planning and Logistics**

NORTHERN TERRITORY GOVERNMENT

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1	July 2019	Public Transport	Initial version.
2	November 2023	Public Transport	Update to new template, language modernised and external reference links checked and updated.
3	March 2024	Public Transport	Complete final edits to this draft. This review was endorsed by the industry stakeholder, Angela Dunkley, General Manager NT, CDC, and by the Program Director, Infrastructure Delivery (II&C) of the Department of Infrastructure, Planning and Logistics, who updated sightline data at page 7 table and Attachments A and B.

Acronyms	Full form
DIPL	Department of Infrastructure, Planning and Logistics
NT	Northern Territory

Contents

1. About the guidelines

Informal bus stops are commonly used on a daily basis throughout the Northern Territory (NT) for the purpose of picking up and dropping off passengers on school and public bus services that operate in rural areas. An informal bus stop is not an officially designated and sign-posted bus stop; rather, it is a location recognised as a suitable place for a bus to halt.

Ensuring safety on rural bus routes involves a multifaceted approach that considers factors such as road and roadside conditions, the behaviour of pedestrians and passengers, the conduct of motorists, and travel speeds.

Additional safety concerns emerge with regard to school bus services, as young children often lack the ability to make well-informed and safe decisions when crossing the road. Parents and caregivers have a crucial role to play in the safety of students as they travel to and from school and while waiting at bus stops.

Passengers, parents or caregivers of passengers, and bus operators can all contribute to risk reduction by jointly selecting safer locations for bus stops.

1.1. Scope

These guidelines are designed to assist bus operators, drivers, passengers, and parents / caregivers in making informed decisions regarding the selection of suitable locations for informal bus stops, with a specific focus on enhancing safety for:

- Passengers approaching, departing from, or waiting at bus stops.
- Bus operators and passengers on board.
- Other road users, including passing traffic.

It is important to acknowledge that in rural settings, achieving ideal road and roadside conditions can be challenging. Consequently, safety considerations may need to be balanced against other factors when determining bus stop locations.

The guidelines outline essential road safety factors that should be taken into account by all when deliberating on the placement of informal bus stops. Additionally, the guidelines provide a procedure for estimating sight lines to oncoming traffic, which, although not a formal standard or requirement, is regarded as a critically significant safety aspect.

These guidelines work in conjunction with the Code of Conduct for School Bus Travel (nt.gov.au), which offers a set of behavioral standards for parents / caregivers and students when using school buses, along with relevant procedures for bus operators, drivers, and schools. They also complement the Rules for catching a public bus | NT.GOV.AU for the public bus network.

In cases where an appropriate location cannot be identified, and safety concerns persist, alternative options will need to be explored. Parties with concerns are encouraged to reach out to Public Transport for assistance at 08 8924 7666 or via email at public.transport@nt.gov.au.

2. Responsibilities

2.1. Bus driver responsibilities

Bus drivers must exercise vigilance when passengers, particularly school students, are boarding and disembarking from the bus. To ensure safety, drivers should adhere to the following:

- Choose a stopping location that is safe and provides ample space for passengers to embark or disembark without obstructing traffic.
- Avoid stopping on road segments with unbroken center lines or in proximity to turns, curves, crests, or other sections with limited visibility for the bus and other road users.
- Ensure there is a sufficient distance between the bus and any nearby intersections.
- Wait until the bus is entirely stationary before opening the doors and wait for passengers to be seated safely before resuming travel.
- Maintain adequate distance for signaling and deceleration when approaching the stop (consult sight distances in Attachments A and B).

2.2. Passenger responsibilities

Passengers should take the following steps to ensure safety:

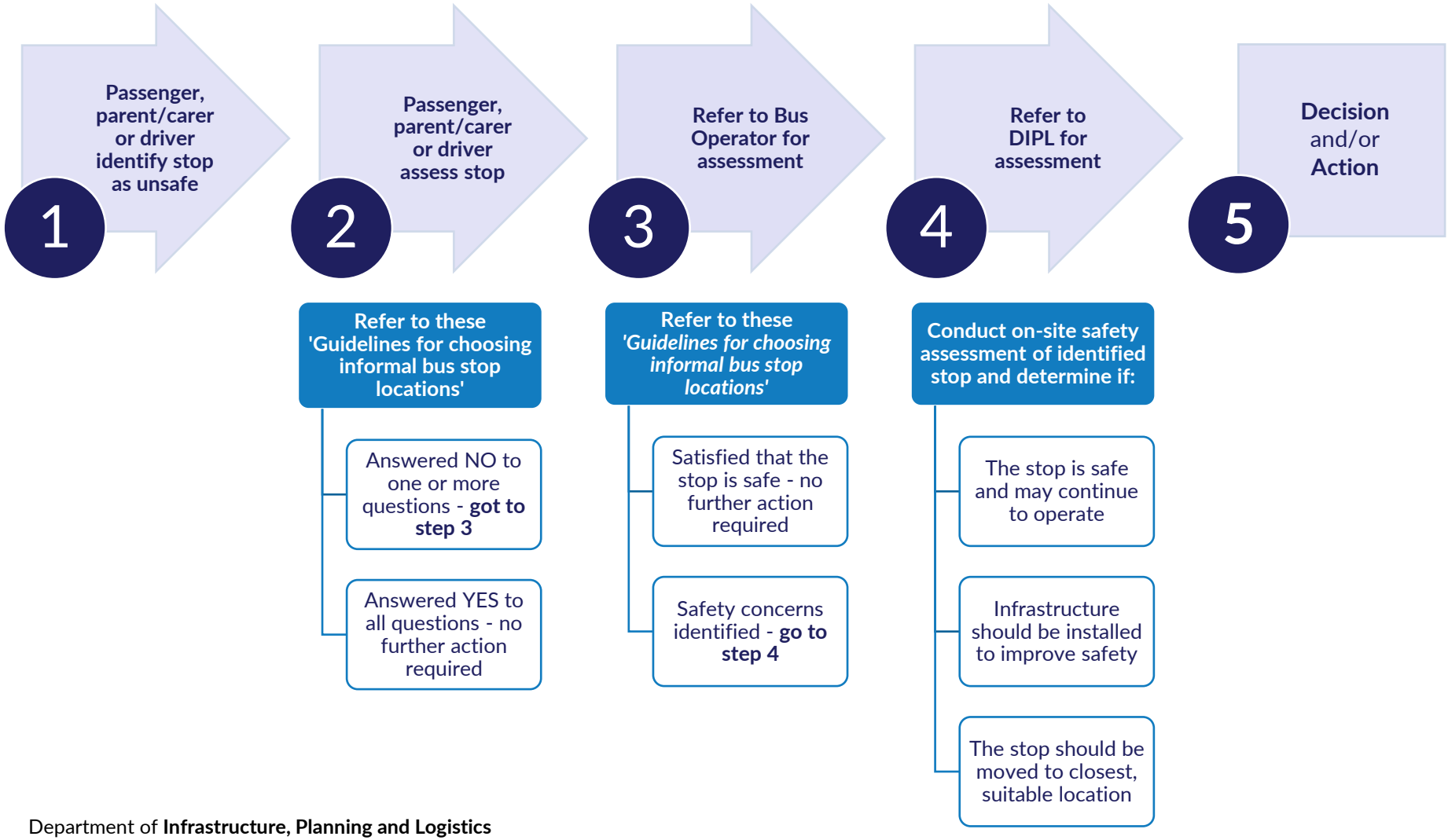
- Wait in an area where there is enough space along the roadside for the bus to stop safely and remain clearly visible to other traffic.
- Exercise caution when crossing the road near the bus. If disembarking, wait until the bus has departed safely.
- Familiarise themselves with and adhere to the Rules for catching a public bus | NT.GOV.AU.

2.3. Parent / carer responsibilities

Parents and caregivers should fulfill the following responsibilities:

- If they are meeting their child at the bus stop, they should wait in an area off the road where there is sufficient space for the bus to stop safely and is clearly visible to other traffic.
- Ensure that the student understands and complies with the Code of Conduct for School Bus Travel (nt.gov.au).
- Supervise students while they are waiting to meet or after they have disembarked from the bus.
- When meeting the child, cross the road with care on the side where the bus stops.

3. Procedure for assessment



4. Key safety considerations

Bus operators should refer to and complete column four of this table 'Observed Site Conditions' when making an assessment of any bus stop referred to them by a passenger, parent / carer or driver.

Issue	Considerations	Guidance	Observed site conditions
Sight line for vehicles approaching from behind the bus	• All bus stops should be sited so that they are clearly visible to motorists. • The better the sight line, the greater chance of motorists slowing in the vicinity of a bus with its lights flashing and taking action if pedestrians are on the road. • Higher speed zones need a longer sight line for motorists to make judgements, take action and stop when necessary. • Curves and crests, and roadside vegetation can all reduce sight lines. • The stopping distance is greater, and requires a longer sight line: - on a down grade - on unsealed roads - where there are frequent trucks, on curves with close roadside vegetation or other sight line obstructions. • Estimating sight lines by **timing** approaching vehicles is a simple task that can be safely undertaken from the roadside. It involves using a stop watch to time how long vehicles are visible on the approaches to a bus stop. A suggested process is provided as Attachment A. • Estimating or measuring sight lines in metres is more complex, and requires careful Work Health and Safety planning by the organisation and people involved. Sight distances in metres are provided in Attachment B.	The minimum timing in seconds relevant to the sign posted speed of the road that an approaching vehicle needs to be visible from the selected bus stop site beside the roadway can be found at Attachments A and B. Record in the observed site conditions column the time a vehicle has been visible from the selected bus stop site beside the roadway and against the value in Attachment A.	
Sight line for vehicles approaching from in front of the bus	• As above. • For traffic approaching from in front of the bus, the bus itself may block the line of sight to school students at the roadside.		

Issue	Considerations	Guidance	Observed site conditions
Safe area for a bus to stop clear of traffic	**Note:** Road shoulders in the NT vary from 0.5 metres wide to 2 metres wide and as such do not provide an adequate width for a bus to stop in. The area immediately adjacent to a road shoulder in flat terrain is known as the verge. This area in some locations, combined with the road shoulder may be sufficiently wide enough to accommodate a bus to stop. • The Northern Territory Road Rules require that, outside a built up area, heavy vehicles (including buses) must not stop on or partly on the road, and may only stop on a road shoulder. An exemption is in place that excludes buses from complying with this road rule. • Outside a built up area, the Road Rules prohibit stopping by any vehicles near curves or crests, on a road or road shoulder, where an approaching motorist cannot see them for at least 100 metres. • When a bus stops in a traffic lane or on a narrow unmarked road, the sight line from oncoming vehicles to school students approaching or crossing a road from behind the bus can be very much reduced. • If a bus stops close to a double barrier line or on a curved road with no centre-line, it may force passing traffic onto the wrong side of the road in a dangerous situation. • The width, shape and condition of the shoulder / verge must be suitable for safe pull-off and re-entering traffic.	Buses should stop clear of traffic lanes, on the road shoulder / verge, or at least 3 metres away from the road traffic lane edge line. Buses should not stop near crests or curves, where an approaching motorist cannot see them for 100 metres. The condition of the shoulder / verge must be considered, for both safe pull-off and re-entering traffic. It is not appropriate to stop within 3 metres of a double barrier centre-line. It is not appropriate to stop on curves or curve approaches, on a narrow unmarked road.	
Waiting area for school children	• Passengers must be able to wait in an area well clear of passing traffic. • The most hazardous roadside area on rural roads is on the outside of curves, where there is the greatest likelihood of a vehicle leaving the roadway. • The end of an overtaking lane is another hazardous roadside area. • Roadside hazards can include steep drains, poor draining ground, trip hazards, encroaching vegetation, snakes and other dangers.	A cleared, firm, preferably 8 metres from the edge of travel lanes, is desirable. A minimum of 4 metres is essential. Bus stops that involve waiting areas on the outside of curves and at the ends of overtaking lanes, should be avoided.	

Issue	Considerations	Guidance	Observed site conditions
Potential wet weather issues	• Wet weather can affect the usability of: - pedestrian access to a stop - the waiting area - the parking area, and - the bus pull-off area. • If any of these areas are adversely affected by wet weather, there may be an increased risk of pedestrian or vehicular conflict with passing traffic, especially when factors such as poor visibility, distraction and masking of sound can also affect a person's ability to be safe in wet weather.	It is desirable that bus stops be located in areas where wet weather will not affect: • pedestrian access • waiting areas • parking areas, and • bus pull-off areas.	
Location relative to intersections	• The consensus from road safety experts is that bus stops should be located on the departure from intersections, rather than on approaches, preferably 50 metres from the intersection. • A bus stopped on the approach to an intersection might obstruct sight lines between turning and oncoming traffic. • The closer a bus stops to an intersection, the greater the likelihood of blocking sight lines.	Bus stops should be located on the departure from intersections, rather than on approaches, preferably 50 metres minimum from the intersection and not obscuring intersection sightlines. A shorter distance (20-30 metres) is feasible if the bus stop area is 5 metres from the edge of the roadway and not obscuring intersection sightlines.	
Location relative to other bus stops	• Where there are bus stops on both sides of a road, they should be staggered so that there is a clear crossing area for pedestrians between the backs of buses that may stop around the same time. • Where there are bus stops close to one another on the same side of the road, they should be consolidated to the safer site, if access and other conditions are adequate.	Opposing bus stops should be off-set to allow for pedestrians from either side of the road to cross behind stopped buses. Opposing bus stops should be set as far back from travel lanes as possible, to maximise visibility for, and of, pedestrians.	

Issue	Considerations	Guidance	Observed site conditions
Warning oncoming traffic of the bus stop location	• If there is a designated area for an informal bus stop, it may be possible to install a specific signage of a bus stop at the required distance to speed limits. This would make it safer for the bus stop users.  SCHOOL BUS W6-204A W6-204B W6-204C  NEXT ...km W8-17-1A 600 x 400 W8-17-1B 750 x 500 W8-17-1C 900 x 600 W8-17-1D 1200 x 800	Location of signage to be approved before installation.	

Note: Table adapted from the Transport for New South Wales 'Advice for choosing locations of informal school bus stops' (December 2016)

5. Resources

- Austroads Guide to Road Design "*Safe Intersection Sight Distance*" Part 3 and Part 4a.
- Department of Infrastructure, Planning and Logistics (DIPL) Road safety and buses | NT.GOV.AU
- Department of Education Code of Conduct for School Bus Travel (nt.gov.au)
- DIPL Road Safety Rules for catching a public bus | NT.GOV.AU
- Getting to and from school: remote students | NT.GOV.**AU**
- **Monash** University Accident Research Centre Child pedestrians: factors associated with ability to cross roads safely and development of a training package (monash.edu) (November 2008)
- Transport for New South Wales Advice for choosing locations of informal school bus stops (December 2016)

Attachment A: Estimating sight distance

From Austroads Guide to Road Design Parts 3 and 4A.

Motorists must have an unobstructed line of sight to detect potential hazards, including pedestrians or stationary vehicles, on the road ahead. This ensures they have ample time to reduce speed or come to a complete stop when necessary.

For level, straight roadways, the required sight distances are as follows:

- 425 metres in a 130 km/h zone
- 340 metres in a 110 km/h zone
- 300 metres in a 100 km/h zone
- 260 metres in a 90 km/h zone
- 225 metres in an 80 km/h zone
- 190 metres in a 70 km/h zone
- 160 metres in a 60 km/h zone.

While sight distance is the primary measurement, it is acknowledged that it may be challenging to estimate in metres. In such cases, an estimation can be made by standing at the roadside and using a stopwatch to time approaching vehicles. Sight time is the duration in seconds from when an oncoming vehicle becomes visible from the measurement point to when it passes that point. To be considered a valid measurement, the oncoming vehicle must be traveling at the posted speed limit.

The required sight times for various speed limits are as follows:

- 16 seconds for 130 km/h
- 13 seconds for 110 km/h
- 11 seconds for 100 km/h
- 10 seconds for 90 km/h
- 8 seconds for 80 km/h
- 7 seconds for 70 km/h
- 6 seconds for 60 km/h.

Therefore, on a level, straight road, if an approaching vehicle is traveling at 100 km/h and remains in view for 11 seconds or more, the sight distance meets the requirement for 100 km/h. If not, the sight distance is inadequate.

Measuring sight time can be a task for either one or two people. Even when working roadside, wearing a high-visibility vest is strongly recommended.

Two-person task:

- When the road is free of traffic, Person 1 stands at the edge of the travel lane, where a child pedestrian might wait to cross the road.
- Person 2 approaches the bus stop in a vehicle at the speed limit (or the advisory speed for curves).

- Person 1 starts a stopwatch upon sighting the vehicle driven by Person 2.
- Person 1 moves into the bus stop waiting area, staying clear of traffic.
- Person 1 stops the stopwatch when the vehicle passes and records the time in seconds on the checklist.
- Repeat the process for the other side of the road.
- Compare the recorded times with the required times on the checklist, accounting for road conditions.

One-person task:

- Measure times as described above, but with live traffic.
- Time five vehicles to account for variations in speed (multiple measurements are necessary because traffic must be traveling at the speed limit or curve advisory speed for the test to be valid).
- Use the lowest time (corresponding to the fastest vehicle) as your recorded time.
- Repeat the process for the other side of the road.
- Compare your times with the required times on the checklist, factoring in road conditions.

It is important to note that for the one-person task:

- The test will not be valid if vehicles slow down when approaching the proposed bus stop due to parked vehicles near the roadway (a high-visibility vest is crucial for anyone working on the road).
- The test will not be valid if a bus is parked alongside the roadway, as it can affect approach speeds.

Attachment B: Sight distances in meters

Speed zone	Sight distance in meters	Additional lengths for road considerations		
		Unsealed road	Downhill grade*	Curves with frequent trucks
130 km/h	425 metres	+45 metres	+25-46 metres	+45 metres
110 km/h	340 metres	+35 metres	+20-45 metres	+35 metres
100 km/h	300 metres	+30 metres	+15-35 metres	+30 metres
90 km/h	260 metres	+ 25 metres	+15-30 metres	+ 25 metres
80 km/h	225 metres	+20 metres	+10-20 metres	+20 metres
70 km/h	190 metres	+15 metres	+10-20 metres	+15 metres
60 km/h	160 metres	+10 metres	+5-15 metres	+10 metres

*Depending on steepness of grade.

Adapted from Austroads Guide to Road Design *"Safe Intersection Sight Distance"* Part 3 and Part 4A.