

Canberra Pedestrian Forum comments on the Northbourne Avenue bus priority measures and Dickson major bus station feasibility study



Summary

1. Northbourne Avenue is a dangerous, dysfunctional anachronism.
 - It is a road danger Black Spot, especially for bus patrons and other pedestrians.
 - It is poorly suited to any human activity other than driving.
 - Its design derives from the desire of ancient dictators to be able to mobilise foot-soldiers to quell insurrections.
2. Locating Northbourne Avenue's motor vehicle carriageways adjacent to each other will improve safety, amenity and traffic flow.
3. Other changes can improve the safety and amenity of bus patrons and other pedestrians.

Recommendations

1. Transport planning should allow for the two carriageways of Northbourne Avenue to be located side by side in future, rather than being separated by a 27 metre wide reserve.
2. Re-program pedestrian traffic signals so that they are more likely to show green when it is safe to proceed.
3. Revise street lighting to improve safety.
4. More safe crossing points for pedestrians.
5. Locate bus stops near safe pedestrian crossing points.
6. 'Separated footpaths' for bicycles and pedestrians.
7. Use Clearways to allow maximum traffic flow at peak times, and to allow car parking at other times.
8. Consider a central 'tidal' bus lane, to permit express buses to transit quickly even in peak hour traffic, without the cost and space requirements of a two bus lanes – one for each direction.
9. Direct through-traffic around the CBD, rather than through it.

Northbourne Avenue is a dangerous, dysfunctional anachronism

Northbourne Avenue is a road danger Black Spot, especially for bus patrons and other pedestrians.

On the afternoon of Thursday 10 August 2006 a 12-year-old boy alighted from a bus on Northbourne Avenue, between Ipima St and Macarthur Avenue in Turner, and was struck and injured by another bus.

In the early evening of Wednesday 10 June 2009, 40-year-old Gunter Rauch of Reid died after being struck by a car on Northbourne Avenue in Braddon, near a bus stop 150 metres south of Ipima St.



Figure 1: Left: Location of Gunter Rauch's death, looking from directly across Northbourne Avenue, showing a memorial wreath (on pole near phone booth) and a bus stop. Right: Looking from the bus stop towards cars stopped at traffic signals at the nearest safe crossing. The memorial wreath and phone booth are at the right.

On the afternoon of Thursday 7 December 2006, 90 year old Leo Birkett of Dickson was killed by a car while crossing Northbourne Avenue at its intersection with Alinga St in Civic.

In the very early morning of Sunday 21 February 2010, a 19 year old woman was struck by a car and injured while crossing Northbourne Avenue outside the ICBM night club near Alinga St in Civic.

In the early evening of Friday 29 June 2007 a 52 year old man man was injured by a vehicle while walking along Commonwealth Avenue onto State Circle. The driver did not stop.

In the early evening of Saturday 25 August 2007, a 68 year old woman visitor from Austria was killed on the pedestrian crossing on Commonwealth Avenue, near Commonwealth Park.

These six injuries and deaths occurred in the 5 km stretch of Northbourne and Commonwealth Avenues, between Macarthur Avenue and State Circle.

On the basis of these casualties (and without even considering driver, passenger and cyclist casualties) this stretch of Northbourne and Commonwealth Avenues exceeds the minimum 'Black Spot' criterion of 0.2 casualty crashes per kilometre per annum, over the most recent five years.

Northbourne Avenue is poorly suited to any human activity other than driving.

Northbourne Avenue provides interstate visitors with their first impression of Canberra – a tree-lined avenue whose carriageways are unnecessarily wide for the traffic volume, and which is strangely devoid of human activities such as walking and shopping.

It normally takes about six minutes, plus half a minute waiting at traffic lights, to drive the 5 km from Macarthur Avenue to State Circle.

To walk the same route takes an hour of walking, plus an additional 5½ minutes waiting at traffic lights.

Northbourne Avenue is a barrier between its east and west sides – in particular between east and west Civic, and between Turner and the retail outlets of Braddon.

The centre of Northbourne Avenue contains ten hectares of woodland park, which is sadly underutilised because it is so difficult to reach, and because it is entirely within 15 metres of traffic noise and fumes.

The design of Northbourne Avenue derives from the desire of ancient dictators to be able to mobilise foot-soldiers to quell insurrections.

Wide urban avenues allowed dictators to quickly deploy their foot soldiers to quell insurrections. Wide streets were difficult to barricade, and permitted large military formations that could more easily defend themselves.

A democratic country should have no need to design its streets so that its government can deploy its army against its own citizens. Armies no longer need to travel to battle on foot.

Locating Northbourne Avenue's motor vehicle carriageways adjacent to each other will improve safety, amenity and traffic flow.

This relocation can be done by either:

- converting both existing carriageways to parkland, and building new carriageways in what is currently the central reserve, or
- converting one of the existing carriageways to parkland, and building a

new carriageway adjacent to the other existing carriageway, in what is currently the central reserve.

A raised median, between the carriageways, would provide a safe refuge for crossing pedestrians.

This relocation will increase traffic flow, decrease pedestrian crossing times, reduce the rate of potentially dangerous crossings by pedestrians, improve access to the reserve, and improve links between areas to the east and west of Northbourne Avenue.

Safety - crossing pedestrians

Pedestrians can rarely cross Northbourne Avenue in a single phase of the traffic lights. The lights typically change to red while they are crossing the 27 metre median. They cannot legally complete their crossing until the next cycle.

This delay contributes to a high rate of pedestrians choosing to cross either mid-block (31%) or against red pedestrian signals (42%). Such crossings are eight times as dangerous as crossing with a green pedestrian signal^{1,2}.

Safety - mid-block crossings

Most pedestrian casualties happen at night, and most happen as the pedestrian steps onto the roadway. Mid-block crossings are eight times as dangerous as crossing at green pedestrian signals^{3,4}.

The most common crash scenario involves a person crossing a road and a vehicle going straight. In most cases, nothing blocks the driver's view of the pedestrian, and no braking is reported⁵.

Pedestrians crossing Northbourne Avenue mid-block at night must step onto the first roadway from the relative darkness of the footpath, and then step onto the second roadway from the relative darkness of the median reserve.

If the two carriageways were located adjacent to each other, then a pedestrian crossing the second carriageway would be moving from a well lit median strip, rather than from a poorly lit median reserve.

Amenity - connecting east and west Civic

Canberra is one of Australia's very few cities whose CBD is bisected by a 50 metre wide, 60 km/h roadway. This barrier extends north and south of Civic, for 6 kilometres.

1 Ward H, Cave J, Morrison A, Allsop R, Evans A, Kuiper C and Willumsen L (1994)

2 King, Mark J. and Soole, David W. and Ghafourian, Ameneh (2009)

3 Ward et al (1994)

4 King et al (2009)

5 Insurance Institute for Highway Safety (2011)

Amenity - access to 10 hectares of parkland

Access to the 10 hectares of parkland along the centre of Northbourne Avenue is currently made difficult by the need to cross at least three lanes of 60 km/h traffic.

If the two carriageways were co-located on one side of Northbourne Avenue, then a substantial portion of the parkland would be more than 14 metres away from traffic noise and pollution.

Co-locating the two carriageways would make the reserve readily accessible from at least one side of the street, thus encouraging street cafes. People enjoying the parkland could access these cafes without having to cross and re-cross three busy lanes of 60 km/h traffic. This could be particularly beneficial for the residents of Braddon, which currently has no retail shops.

Traffic flow

Co-locating the two carriageways would reduce pedestrian crossing times by about two minutes.

It would also reduce vehicle delays at traffic lights by five per cent. Three of the four main traffic light phases at Northbourne Avenue intersections must each allow two additional seconds for cars to cross the 27 metre median. If the central reserve was adjacent to the two carriageways rather than between them, then the two minute traffic light cycle could be reduced by six seconds, thus providing for a 5% increase in traffic flow.

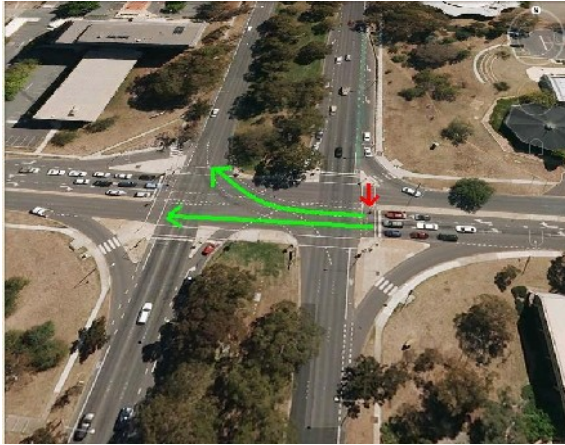
Other changes can improve the safety and amenity of bus patrons and other pedestrians

A combination of the following changes may allow Northbourne Avenue to safely accommodate future traffic demands without increasing its current six lanes of traffic, and possibly with only five lanes.

Safety - program pedestrian signals to show green when it is safe to proceed

Pedestrians walking along Northbourne Avenue often face completely unnecessary traffic signal delays of up to two minutes. They have responded with an extremely low rate of compliance with red pedestrian signals. Of 132 pedestrians observed near a Northbourne Avenue intersection, only six fully complied with red pedestrian signals.

A pedestrian walking towards Civic along Northbourne Avenue, who arrives at the Wakefield Avenue/Macarthur Avenue intersection and presses the pedestrian button before the Northbourne Avenue green phase commences, may legally commence the 20 second Wakefield Avenue crossing at any time during the 55 second green traffic light phase. That is enough time to safely and legally cross, return and cross again.



The pedestrian can also safely cross to the median of Wakefield Avenue during the subsequent Wakefield Avenue straight ahead/right turn phase (Figure 2), when approaching traffic on Macarthur Avenue faces red lights. The pedestrian can safely complete his or her crossing during the Macarthur Avenue straight ahead/right turn phase, when approaching Wakefield Avenue traffic faces red lights.

Figure 2: Intersection of Northbourne, Macarthur and Wakefield Avenues, showing permitted vehicle flows during the Wakefield Avenue phase.

If the pedestrian presses the pedestrian button one second after the commencement of the Northbourne Avenue green phase, the pedestrian light remains red for the remaining 54 seconds of the green phase, for the entire Wakefield Avenue phase and for the entire Macarthur Avenue phase – even though during these phases the potentially conflicting traffic streams face red lights.

This delay contributes to a high rate of pedestrians choosing to cross either mid-block (31%) or against red pedestrian signals (42%). These crossings are eight times as dangerous as crossing with a green pedestrian signal^{6,7}.

Only 27% of pedestrians at or near this intersection cross on green pedestrian signals. This compares with compliance rates of 35%, 60%, 86%, 87% and 90% at other Australian locations⁸.

If all pedestrians crossed with green pedestrian signals, then pedestrian crash risk would fall by up to 80%.

Mid-block crossings

Although legal mid block crossings are eight times as risky as legal crossings at traffic lights, they are encouraged by the large distances between safe crossing points, and by additional delays at those crossing points.

To walk across Northbourne Avenue means either:

- a risky 35 second mid-block crossing of six lanes of 60 km/h traffic and two bicycle lanes, or
- a detour of up to 2½ minutes (200+ metres) to a safer 35 second pedestrian signal controlled crossing of up to eleven lanes (including two

6 Ward H, Cave J, Morrison A, Allsop R, Evans A, Kuiper C and Willumsen L (1994)

7 King, Mark J. and Soole, David W. and Ghafourian, Ameneh (2009)

8 Soames Job, Haynes et al (1998) report pedestrian traffic signal compliance rates of 60% to 86%; Catchpole (1998) reports compliance rates of 87% and 92%, and cites his other papers which report compliance rates of typically 60% to 80%, and one with compliance rates “as low as 35%.”

bicycle lanes and up to two slip lanes and a right turn lane) plus one additional delay waiting for the lights to change to commence the crossing and another delay because the pedestrian lights usually go red while you are crossing the median.

Direct through-traffic around the CBD, rather than through it.

Since Sir Colin Buchanan's landmark 1963 *Traffic in Towns* report, one of the pillars of town planning has been to direct through-traffic around city centres rather than through them.

Directing through-traffic around Civic would improve traffic flow both along and across Northbourne Avenue, and might permit the width of the carriageway to be reduced.

Reduce the speed limit, especially through Civic.

Canberra has introduced 50 km/h speed limits in residential streets and 40 km/h speed limits in school zones, and is trialling 40 km/h speed limits near suburban shopping centres.

Northbourne Avenue is the major road through Canberra's CBD. It has a history of pedestrian and other road fatalities. Yet its speed limit remains at 60 km/h.

Revise street lighting to improve safety

Safety may be improved by redirecting street lighting to the road verges, or by turning it completely off.

The carriageways of Northbourne Avenue are so brightly lit that – even without the benefit of a car's 100 watts of quartz halogen headlights – a pedestrian on the road, wearing dark clothes, is highly visible against the bright background.

Drivers' eyes adjust to the bright roadway. This makes it harder for them to see pedestrians approaching from the relative darkness of the footpath.

The UK Highways Agency has found that the safety benefits of motorway lighting are one third less than previously thought, and that traffic volumes and accident rates are often so low that there is no general long-term safety benefit to operating the lights during certain periods. In a trial of midnight to 5am switch off of road lighting at six selected motorway sites, reported accidents were below numbers previously experienced at those sites⁹.

More safe crossing points for pedestrians

Safe pedestrian crossing points on Northbourne Avenue are currently up to 700 metres apart. The detour to the nearest safe crossing point adds up to 700 metres (almost nine minutes) to the 50 metre (35 second) crossing from footpath to footpath.

⁹ UK Highways Agency (2011)

Pedestrians generally prefer direct routes. More closely-spaced safe crossing points will also improve access and amenity. They will reduce the temptation to make mid-block crossings which are eight times as dangerous as crossing at a green pedestrian signal¹⁰.

Locate bus stops near safe pedestrian crossing points

Locating a bus stop near a safe pedestrian crossing point allows patrons to cross safely and conveniently to and from bus stops. A mid-block crossing to a bus stop is eight times as dangerous¹¹.

Several Northbourne Avenue bus stops are located 150 metres or more from the nearest traffic lights. Walking to or from a bus stop, directly across Northbourne Avenue, takes 35 seconds. A 150 metre detour to traffic lights adds another 3½ minutes – equivalent to a driving detour of 2.5 km.

Consider a central 'tidal' bus lane

Buses reduce demand for road space if they induce commuters to switch from car travel. Bus-only lanes make bus travel more attractive because they reduce delays for bus passengers.

A central 'tidal' bus lane would permit express buses to transit quickly even in peak hour traffic, with half the cost and space requirements of a separate bus lane for each direction.

The lane would be located between the northbound and southbound carriageways. It would operate into Civic in the morning peak, and out of Civic in the afternoon peak.

Bus stops would be located at traffic lights, with Safety Zones like those used for Melbourne trams. The adjacent pedestrian signals would allow bus patrons to safely walk to and from the Safety Zones.

Other buses could use the left lane of the carriageway, as they do at present.

Separated footpaths for bicycles and pedestrians.

Road Rules 239 and 249 provided for separated footpaths for bicycles and pedestrians. They allow pedestrians to proceed without the danger of sharing their footpath with high speed cyclists. They also allow cyclists to proceed without the danger of sharing space with high speed motor vehicles, or the inconvenience of being impeded by slower-moving pedestrians.

Clearways

Clearways prohibit on-street car parking during peak times, and allow parking at other times. Cars that remain on the Clearway at peak time are removed, to facilitate traffic flow. Their drivers pay a fine that covers the cost of the car's

10 Ward et al (1994)

11 Ward et al (1994)

removal and storage.

Clearways offer maximum traffic flow at peak times, on-street car parking at other times, and potential parking meter revenue.

Clearways have two road safety advantages, and one road safety drawback.

By narrowing the working carriageway by one lane at off peak times, the clearway has a psychological effect that reduces driving speeds.

Compared with a street on which parking is prohibited, a Clearway introduces the possibility a person appearing suddenly in the roadway from behind a parked vehicle. "Dart outs" account for about one in ten pedestrian fatalities or serious injuries. The most significant risk factor appears to be driver behaviour: in half or more of all pedestrian crashes, including cases with no visual obstruction, drivers fail to brake or swerve to avoid a collision^{12, 13}. On-street parking is permitted on most Canberra streets.

Pedestrians can cross more safely and conveniently because they have one less lane of moving vehicles to cross.

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Convenor

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¹² Insurance Institute for Highway Safety, 2011, p.3.

¹³ Vaughan, 1998.

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