

# Trees in Medians and Roadsides in the Urban Environment

## Operational Instruction 19.8

October 2024



**Government of South Australia**  
Department for Infrastructure  
and Transport

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## Publication details

### Document information

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Version number	Date changed	Nature of amendment
10	14 October 2024	Amended median set backs; sight distance to signs and other TCDs clarified; changes to requirements for maintenance of clearance envelopes; species list removed and referred to separate document; Appendix A includes additional information to clarify the clearance zone associated with signals; Appendix B added to include checklist to ensure tree planting design meets requirements

### Approvals record

Approvers	Position	Date	Signature
Transport Strategy Planning and Policy Executive Committee endorsement		18 July 2024	Ref #21295985
Stephen Pascale	Manager, Traffic Services	10 October 2024	Digital Approval No. 41751

We acknowledge the Traditional Custodians of the Country throughout South Australia and recognise their continuing connection to land and waters. We pay our respects to the diversity of cultures, significance of contributions and to Elders past, present and emerging.



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# 1. Scope

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This Operational Instruction has been developed to provide direction to traffic engineering practitioners, landscape architects and planners when considering tree planting in raised medians and roadsides within the Department for Infrastructure and Transport's (the Department) road corridors.

The Department's approach to planting and maintenance of trees and vegetation in urban road corridors aims to balance the safety risk to road users with the Department's and the community's goals for an attractive, shady, liveable city that encourages use of active travel and public transport. The requirements of this Operational Instruction have been informed by multi-criteria assessment against the key principles and objectives (described in section 2).

## 2. Key principles and objectives

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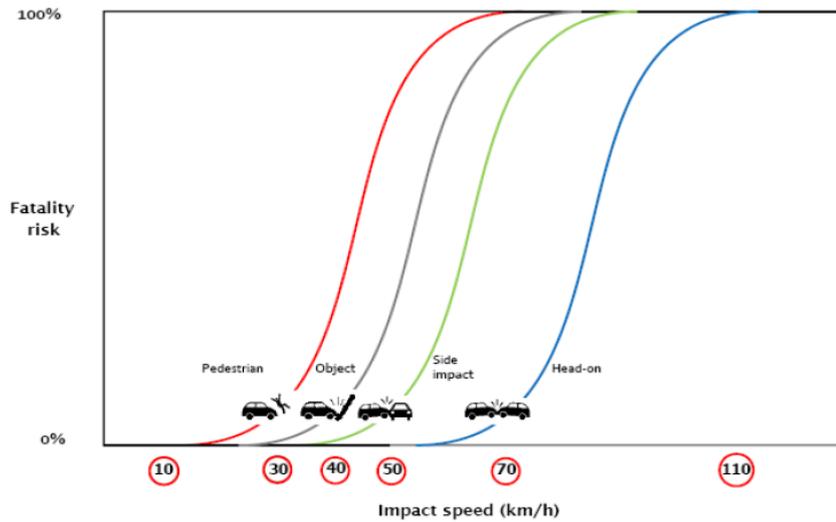
### 2.1. Safe System principle

The *National Road Safety Strategy 2021 – 2030* sets a target of at least a 50% reduction in lives lost and at least a 30% reduction in serious injuries. This strategy is founded on the internationally recognised 'Safe System' approach formally endorsed by the Organisation for Economic Cooperation and Development (OECD). A Safe System recognises human factors and human frailty and the need to provide forgiving engineered systems as part of a shared responsibility.

South Australia's *Road Safety Strategy To 2031* adopts the targets of the *National Road Safety Strategy 2021 - 2030* and stresses that those engaged in designing, building and upgrading road infrastructure, and planning maintenance have a responsibility to provide a safe road network.

The main objective of the Safe System is to ensure that in the event of a crash, the impact forces are within the boundaries of human tolerance. Figure 2.1 illustrates the estimated crash impact speeds based on the safest vehicles, where the forces are likely to exceed the tolerance of a human body and where chances of survival decrease rapidly beyond this impact speed. Safe System speed threshold for car/pedestrian crash and car/tree are 30 km/h and 40 km/h respectively.

Decisions regarding the placement of new trees in medians and roadsides should be informed by a risk assessment which takes into consideration road users' exposure, crash likelihood and severity outcomes in the event of a crash; and appropriately weighs up the risk to pedestrians against vehicle occupant safety in various urban road environments.



IMPACT SPEEDS ABOVE WHICH CHANCES OF SURVIVAL DECREASE RAPIDLY		
Crash Type	Impact Speed	Example
Car/Pedestrian or Cyclist	30 km/h	Where there is a mix of vulnerable road users and motor vehicle traffic..
Car/motorcyclist		
Car/Pole or Tree	40 km/h	Where unprotected road hazards exist within defined clear zone.
Car/Car (Side impact)	50 km/h	Where there is a likelihood of side impact crashes (eg, intersections or access points).
Car/Car (Head-on)	70 km/h	Where there is no separation between opposing traffic streams

Source: Fact Sheet, RTA, NSW, 2011

Figure 2.1: Safe System speed thresholds

## 2.2. Sight distance and visibility

To minimise the risk of crashes, streetscapes should be designed (and maintained) to provide clear sight lines to:

- approaching vehicles and pedestrians (particularly in the vicinity of high risk locations such as intersections, curves, pedestrian facilities, and driveways);
- traffic lanterns, traffic control devices and other approved road signs.

## 2.3. Liveability and climate resilience

A key part of the Government’s climate change response is to drive a shift in passenger travel from high to low emission travel modes. In order to encourage more people to walk, cycle or catch public transport, it is necessary to provide a comfortable environment. Areas with low canopy cover can be considerably hotter on sunny days, making them unpleasant for pedestrians, cyclists, and public transport patrons. These conditions are predicted to worsen under climate change. Increasing canopy cover in these areas is therefore an important climate adaptation strategy.

As well as improving amenity for active travel and public transport patrons, increasing canopy cover in road corridors can also reduce the urban heat island effect and improve climate resilience for the wider community.

The department has set a target to deliver a 20% increase in canopy cover on departmental managed land in Metropolitan Adelaide by 2045 (measured from the 2018/19 baseline). To realise this target and maximise benefits to pedestrians and cyclists, new planting should:

- incorporate the largest size (at maturity) trees for the space available, having regard to site constraints
- create suitable growing conditions to enable faster growth rates, increased tree canopy size and longer lifespans (for example through provision of sufficient soil volume and passive irrigation)
- aim for  $\geq 50\%$  canopy cover over footpaths and bikeways
- be prioritised in areas with low canopy cover and/or high urban heat and areas recognised as important pedestrian or cyclist corridors
- utilise species that are suited to projected future climate conditions<sup>1</sup>.

## 2.4. Community values and expectations

Tree plantings within road reserves positively contribute to the visual amenity of urban environments, helping to create vibrant, successful places. The community's preference for tree-lined streets is evidenced by consistently higher property values in areas with higher canopy cover<sup>2</sup>.

To meet community expectations for visual amenity it is desirable to incorporate large amenity trees into streetscapes – particularly in road corridors identified as having high place value. Where this is not possible (e.g. due to safety or other constraints), it is desirable to incorporate alternative vegetation options (e.g. frangible trees, ground-covers, grasses) into the streetscape.

## 2.5. Maintenance considerations

The type of vegetation and its location relative to road infrastructure significantly influences ongoing maintenance requirements. To minimise maintenance costs:

- Low maintenance vegetation which requires minimal ongoing irrigation and pruning, and which does not trap litter is generally preferable.
- Where vegetation is planted in close proximity to pavements and other infrastructure, the design must carefully consider measures to mitigate and prevent damage to adjacent infrastructure.

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<sup>1</sup> The '[Which Plant Where](#)' tool provides information on species' suitability for future climate conditions

<sup>2</sup> BDO, 2020, Costs and Benefits of Urban Tree Canopy Options for Minor Infill Development in the Planning and Design Code: A report to the Attorney-General's Department

## 2.6. Maximising environmental benefits

Trees provide considerable environmental benefits, such as filtering air pollution and dust, storing carbon, reducing storm water run-off and providing wildlife corridors, habitat and food for native fauna species.

Design of streetscapes should seek to maximise these benefits, for example by incorporating Water Sensitive Urban Design (WSUD) features such as kerb breaks or tree net inlets to provide water to trees, and by incorporating a variety of locally native species to increase biodiversity.

## 3. Tree setbacks

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A minimum setback of 0.6 m is required between face of the kerb and the anticipated face of the tree trunk or plant at maturity, for all vegetation types (except groundcovers and grasses) to enable pedestrians, including small children, to observe the traffic from the refuge of the verge or median, and so that pedestrians and signs can be seen by other road users.

In some circumstances, larger setbacks are required for non-frangible trees to reduce road-users' exposure, crash likelihood and severity outcomes in the event of a crash. Table 3.1 presents the minimum tree setbacks adopted by the Department. Section 11 illustrates how these setbacks are measured.

In addition to the setbacks in Table 3.1, tree planting in road corridors must achieve the minimum sight distances for intersections, pedestrian crossings, traffic signals and other traffic control devices and approved signs, as prescribed in:

- *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*
- *Austroads Guide to Road Design Part 3: Geometric Design*
- *Austroads Guide to Traffic Management Part 10: Transport Control of Devices*, Section 6.3.7 "Letter Size and Legibility". See Section 4 for details
- *Australian Standard AS 1742.2 Manual of Uniform Traffic Control Devices Part 2: Traffic control devices for general use*. See Section 4 for details
- *Operational Instruction 14.2 Traffic Signal Faces* – Section 3 Vehicle Displays – Aiming Distance Requirements. See Appendix A for diagram showing the clearances which achieve optimal line of sight to traffic signal lanterns.

When assessing potential tree locations to confirm warning distance visibility of signals can be achieved the tree canopy at all stages of tree maturity must be considered.

Table 3.1 - Minimum Tree Setbacks in Urban Environments

Speed limit (km/h)	Minimum tree setbacks from vertical face of kerb <sup>1,2</sup>										Minimum tree setbacks from edge line or edge of pavement without kerb
	Verge		Intersection without slip lane <sup>3</sup>		Median			Slip/merging lanes		Driveways <sup>6,7</sup>	
	Lateral		Lateral	Longitudinal	Lateral <sup>4</sup>	Longitudinal		Lateral	Longitudinal	Longitudinal	
	Straight	Curve <sup>5</sup>				Regular nose (semi-circular or bullet nose)	Tapered nose (shelter lane)				
≤ 50	0.6m		0.6m	10m from the tangent point	0.6m (median width of 1.2m + tree diameter)	10m from the edge of nose	Greater of 10m from edge of nose OR total length of tapered section	0.6m	10m from the hinge point	3.0m from tangent point	2.5m
60	0.6m	Gentle 0.8m Sharp 1.1m	0.6m	10m from the tangent point	0.6m for straight roads and curves >500m radius (median width of 1.2m + tree diameter) 1.5m for curves ≤500m radius (median width of 3.0m + tree diameter)	10m from the edge of nose	Greater of 10m from edge of nose OR total length of tapered section	0.8m	10m from the hinge point	5.0m from tangent point	2.5m
≥ 70	Refer Austroads Guide to Road Design - Part 6: Roadside Design, Safety and Barriers										

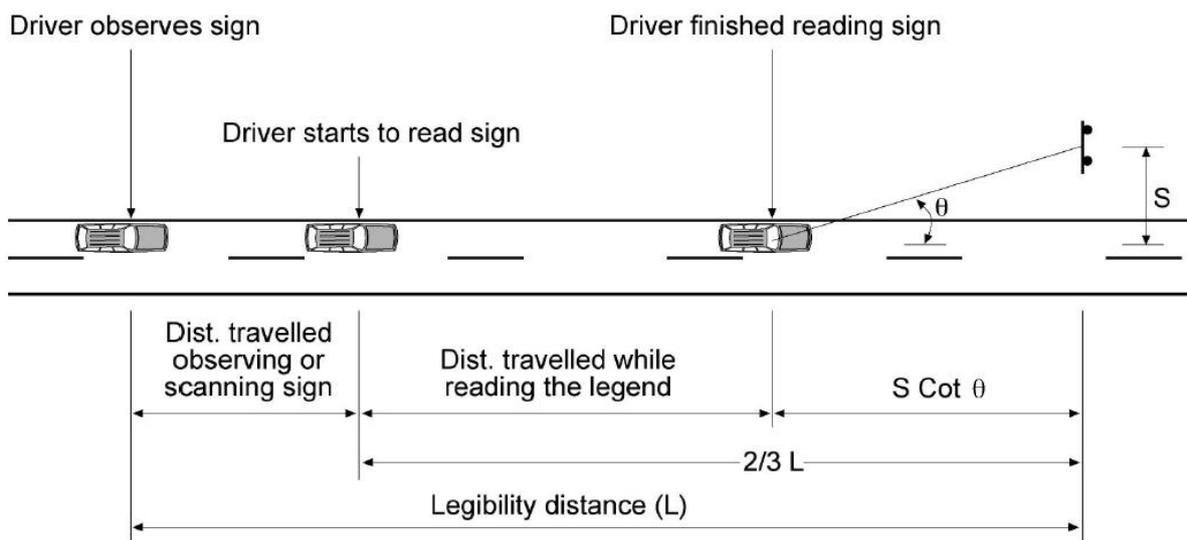
1. Refer to Section 11 for figures indicating these setbacks.
2. Setbacks relate to distance to anticipated face of tree trunk at maturity.
3. If required sight distance envelope requires greater setbacks than listed, sight distance overrides the listed setback distances.
4. Staggered planting (i.e. varying setbacks) along the median is not permitted
5. Gentle curve ≥ 300m radius and sharp curve < 300m radius
6. Where there is a permanent kerbside parking lane, minimum longitudinal setbacks do not apply
7. At constrained sites designers may request the adoption of extended design domain parameters at driveways. Justification must be provided for reduced longitudinal setbacks

## 4. Sight distance to traffic control devices and signs

In order to be effective, traffic control devices need to be prominently displayed and clearly visible to approaching drivers. The following documents provide guidance on determining the distance at which a driver needs to be able to observe, read, and react (if necessary) to a sign. Vegetation shall not obstruct the visibility of signs for approaching drivers from the distance determined in accordance with the following:

- Austroads *Guide to Traffic Management Part 10* Section 6.3.7 – “Letter Size and Legibility” provides a formula to determine the distance from a sign that a driver needs in order to be able to observe a sign, start reading the sign and finish reading the sign on approach, based on the number of words on the sign, the approach speed, and the lateral offset of the sign.

Figure 6.3: Sign legibility distance



$\theta$  = Limit of comfortable field of vision  
 = 10° horizontally for side mounted signs  
 = 5° vertically for signs mounted overhead

$S$  = Lateral offset to centre of sign.  
 Use height above driver eye for overhead signs

Extract from *AGTM Part 10 (2020)*

For side mounted signs, legibility distance (the distance at which a driver needs to be able to observe and read the sign) is determined using the following formula:

$$L = 0.105NV + 8.55S$$

where:

$L$  = legibility distance (metres)

$N$  = number of words on the sign (in this case, 4)

$V$  = travel speed of vehicles approaching the sign (km/h)

S = lateral displacement of the centre of the sign from the centre of the traffic lane (metres)

This formula does not include a reaction component, so the legibility distance in accordance with this would be the minimum distance applicable to signs which don't require action from the driver (e.g. information sign, reassurance sign). It is particularly applicable to signs with multiple words, or signs located at a greater lateral distance from the traffic lane.

- Austroads *Guide to Traffic Management Part 10* Section 6.5.2 “Longitudinal placement” and AS 1742.2 Appendix D “Installation and location of signs” provide guidance on visibility of signs and on locating signs in advance of a hazard. Warning signs are located in advance of a hazard depending on the action required by the driver. As a minimum, the legibility distance (L) in Austroads *Guide to Traffic Management Part 10* Section 6.3.7 should be provided to warning signs.
- Where a sign is located at the control point (e.g. a Stop (R1-1) sign, Give Way (R1-2) sign, Roundabout (R1-3) sign), Stopping Sight Distance (in accordance with Section 5.3 of Austroads *Guide to Road Design Part 3*) to the sign should be provided (this requirement is consistent with AS 1742.2 Clause 2.10, which advises that where stopping sight distance to the traffic control device cannot be achieved, advance warning signs providing advance warning sign of the control ahead be considered). Where advance warning signs of a control point (e.g. Stop Sign Ahead (W3-1) sign, Give Way Ahead (W3-2) sign, Roundabout Ahead (W2-7) sign) are provided, legibility distance in accordance with Austroads *Guide to Traffic Management Part 10* Section 6.3.7 should be provided to these warning signs.
- For signs which are not traffic control devices, (e.g. Gateway signs), adequate visibility of the sign for the purpose of vegetation trimming should be based on the main text of the sign (e.g. the words in the largest font) and based on  $2/3L$  (where L is legibility distance in accordance with Austroads *Guide to Traffic Management Part 10*). Figure 6.3 of Austroads *Guide to Traffic Management Part 10* (extracted above) indicates that  $2/3L$  is the distance required for a driver to start and finish reading the sign.

See Appendix A for the diagram showing the clearances which achieve optimal line of sight to traffic signal lanterns. When assessing potential tree locations to confirm warning distance visibility of signals can be achieved the tree canopy at all stages of tree maturity must be considered

## 5. Location of street trees relative to footpath

In areas of high pedestrian activity, it is desirable for street trees to be located between the kerb and footpath to provide pedestrians with some protection from vehicle traffic (refer to Figure 11.5).

Areas with high pedestrian activity include shopping precincts, outdoor dining spaces and areas supporting active transportation modes such as walking and cycling where pedestrian safety is paramount. Refer *A Functional Hierarchy for South Australia's Land Transport Network* (<http://www.sa.gov.au/?a=10609>) for locations of pedestrian precincts.

## 6. Requirements to minimise impacts to pavement and other infrastructure

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Under Chapter 11 Part 2 of the *Local Government Act*, when planting vegetation in a road corridor, Councils are required to 'give consideration to whether the vegetation is appropriate to the proposed site, taking into account the potential for interference with the construction of the road or with structures in the road)'.

The same applies to the department when the Commissioner, via section 26 of the *Highways Act*, has temporarily or permanently assumed the care, control and management of a road (e.g. for the purpose of carrying out road work).

In order to minimise potential damage to road pavements and other infrastructure, the department requires the following measures be taken:

- Tree species selection must be appropriate for the space provided, to minimise damage to pavements and other infrastructure. A non-exhaustive [list of species](#) suitable for Adelaide streetscapes can be found on the Department's *Standards and Guidelines* webpage (<https://www.dit.sa.gov.au/standards/standards-guidelines>).
- Root barriers must be installed to a minimum depth of 600 mm where it is proposed to plant trees closer than 1 m from the vertical face of the kerb.
- The use of root barrier at each tree planting location should be carefully assessed by the designer and reviewed by an arborist to ensure tree roots will have sufficient soil volume to develop properly.
- The location, height, depth, and extent of underground and above ground services, as well as the potential for tree canopies to interfere with street lighting should be considered when determining the location and selection of tree species.

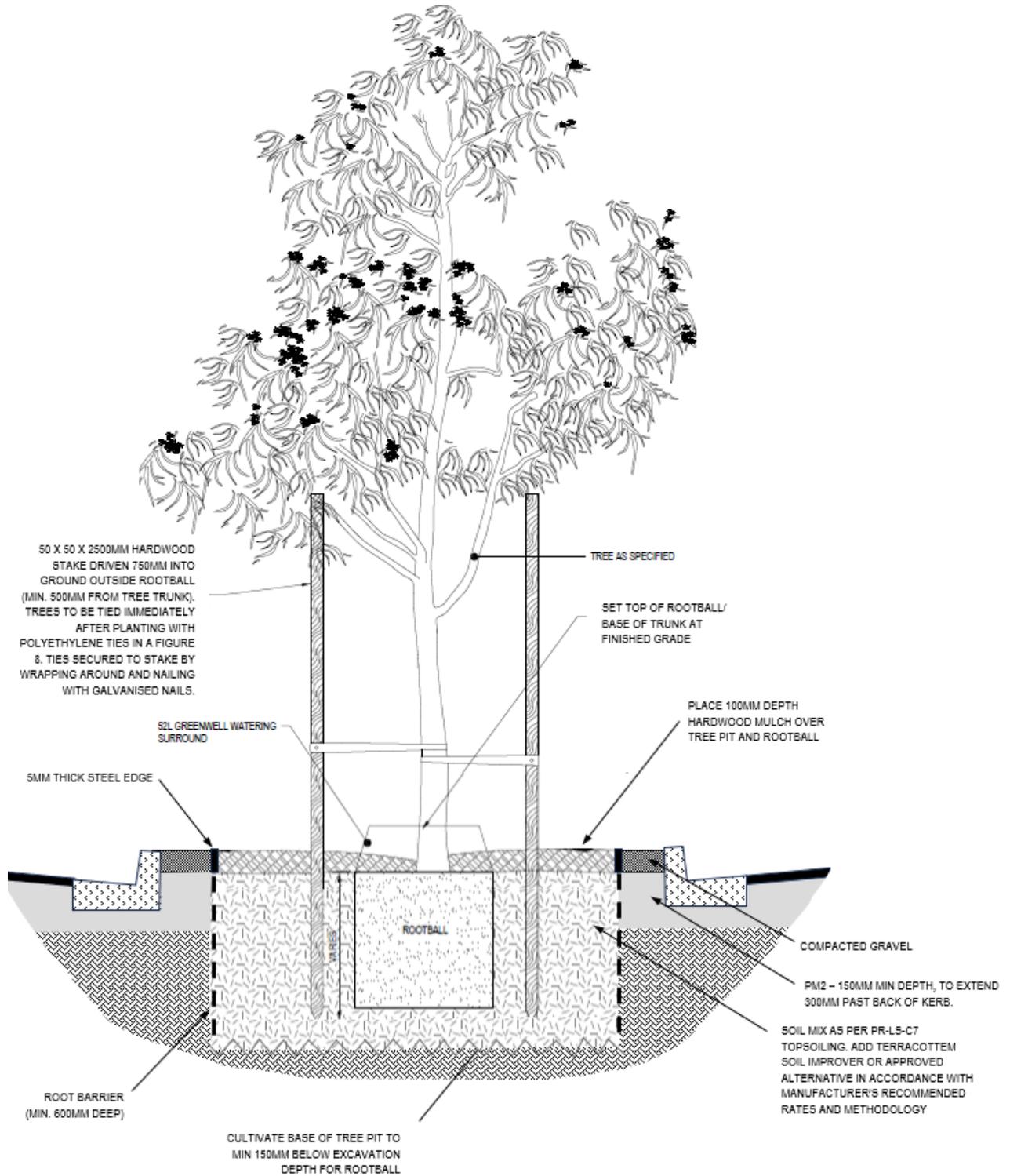


Figure 6.1: Example median tree planting detail showing root barriers

## 7. Maintenance of vegetation

Operational Instruction 20.1 Care, Control and Maintenance of Roads by the Commissioner of Highways (<http://www.dit.sa.gov.au/?a=71793>) sets out the responsibilities of Councils and the Department in relation to roadside vegetation.

## OFFICIAL

The Department shall not bear any costs associated with the maintenance of any vegetation proposed and installed by Council or a third party within the medians of roads under the care and control of the Commissioner of Highways. Council to resolve any sight line issues to traffic control devices or obscuring road lighting affecting the luminaires and maintaining the clearance envelope within the road corridor to meet the Department's requirements as specified in 2 (a) & (b) below. Refer to *Operational Instruction 20.1 – Section 9 “Vegetation Control”* for the maintenance responsibilities of trees in road reserves. See Section 4 of this document for guidance on sight distance to traffic control devices and signs.

If Council do not maintain the clearance envelope to the Department's standard or wish to vary and restrain the trimming to council's standard for aesthetic value, Council may do so and accept any liability.

Prior to approval of the project, Council is to acknowledge and accept taking the agreed ongoing maintenance of the vegetation, via the form attached in Appendix B, that includes the following requirements:

1. Council must undertake General Maintenance of the landscaping to the Department's standard. The scope of work on the median and/or verge includes general maintenance such as:
  - a. maintaining the general health of the vegetation including any re-planting, if required,
  - b. edging, mowing, litter collection, tree pruning, weed control and removal of all debris,
  - c. Watering/irrigation system (if any),
  - d. Pavers, mulch, sculptures (if any).
2. The Council must undertake vegetation trimming/removal in accordance with this document and *Operational Instruction 20.1*, to:
  - a. resolve any sight line issues to traffic control devices or obscuring road lighting affecting the luminance,
  - b. meet the Department's clearance envelope requirements.
3. The Council may vary clearance envelope vegetation to suit their own aesthetic standards without compromising road safety. As the road authority undertaking maintenance, the Council will be liable for any third-party actions, claims or other enquiries arising from the maintenance of (including any associated variations) to the clearance envelope.
4. The Commissioner will continue its due diligence to undertake its periodic inspections and report any vegetation issues to the council for further action. If Councils fail to undertake any action, the Commissioner may, for the purposes of road safety, remove or cut back any tree or other vegetation on or overhanging a road vested in or under the care, control and management of the Commissioner, or adjoining portion of the road, to the Department's standards.
5. Any additional maintenance effort that Council wish to conduct to maintain a higher service level will be at council's cost.

Council also agree to enter into a S211 Agreement with the Department for the above conditions. The agreement will be attached to the Section 26 notice.

## 8. Other considerations

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The initiator shall assess any other traffic impacts of the proposal, not limited to but including:

- property access,
- traffic control changes,
- pedestrian access,
- traffic redistribution, and
- impacts on street lighting.

Over-dimensional vehicle routes may require wider setbacks and greater clearance.

Where formal crossings or pedestrian facilities are not provided on or near known pedestrian desire lines, agencies should take care when choosing the material to be placed in the median to ensure that the material does not create a hazard for pedestrians.

### 8.1. Traffic management

Delivery of landscaping work on arterial roads is likely to require workzone traffic management, and may be subject to time restrictions, depending on traffic volumes and the nature of the work. This can impact costs. Councils are encouraged to work with contractors and have visibility of roadworks permit applications to ensure they are not unnecessarily limiting work windows (see example below).

**EXAMPLE:** Traffic Management Company A is managing the roadworks permit on behalf of Council. They submit a single application which incorporates 6 separate planting locations. One of the locations is highly constrained due to traffic volumes. This results in time restrictions being applied to all 6 locations, increasing the cost to Council for delivering the landscaping work at night.

In this case it would be preferable to submit a separate application for the location with higher traffic volumes. That way only a portion of the work would need to be done at night, and planting at the other 5 locations could be done during the day, reducing overall costs.

Further information on workzone traffic management and approval process can be found on the Department's website: <https://www.dit.sa.gov.au/traffic-control-monitoring/workzone-traffic-management>.

## 9. Alternative vegetation options

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In situations where tree planting cannot be achieved in the verge or median, the following landscape options may be considered to improve streetscape amenity:

- frangible small trees or large shrub species with a mature trunk diameter of less than 100 mm;
- low ground covers and frangible shrubs with a mature height of 0.5 m where sight lines are to be preserved;
- turf grass (e.g. kikuyu); or

- other low maintenance hard surface treatments.

A minimum width of 0.6 m is required between vegetation and the kerb to enable a pedestrian or small child to observe the traffic from the refuge of the verge or median and so that the pedestrian can also be seen by other road users. Pedestrians will also require unobstructed head room around and near any verge or median vegetation for both visibility and injury prevention. The volume of pedestrian activity should be taken into consideration when selecting plant species for verges or medians.

## 10. Approvals

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In accordance with *Operational Instruction 20.1* local Councils are required to seek approval from the Department prior to planting trees along and within the Department's road corridors. This applies to both new planting and replacement planting. All proposals must be accompanied by a completed *Requirements for Approval of Tree Planting/Landscaping* checklist (see Appendix B), signed by Council's Traffic Engineer or Manager, Infrastructure (or equivalent). In addition to the checklist, the Department may request Council provide copies of the sight distance checks undertaken in accordance with the requirements of this document.

If all relevant information is provided, the review process should be completed within 10 working days. Approval is generally only withheld on the basis of road safety, or if major works are proposed in the foreseeable future.

Council's delegate must sign the S211 Agreement prior to commencement of the Project.

Councils may contact the Department's Network Management Services on 08 7133 3300 for further information in relation to approval of tree planting in the Department's road corridors.

The above information can be emailed to [DIT.NMSReviews@sa.gov.au](mailto:DIT.NMSReviews@sa.gov.au).

Upon completion of the work, Council to notify the Department ([DIT.MetroRoadMtce@sa.gov.au](mailto:DIT.MetroRoadMtce@sa.gov.au)) to arrange a site walkthrough with the Department to inspect the site. Notification must attach drawing plans and written confirmation from Council that landscaping has been installed in accordance with the approved plans.

## 11. Tree placement and setback diagrams

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Figures 11.5 to 11.10 should be read in conjunction with setbacks (lateral and longitudinal) described in Table 3.1.

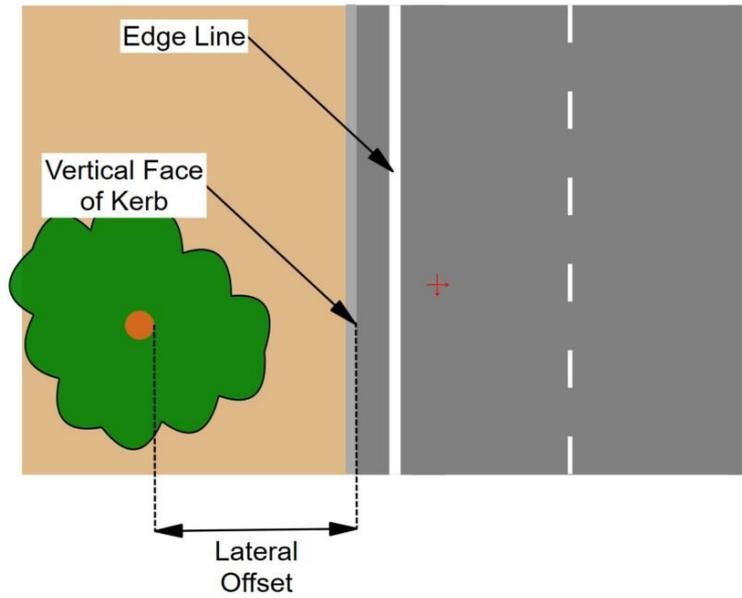


Figure 11.1 - Lateral setback with kerb and edge line

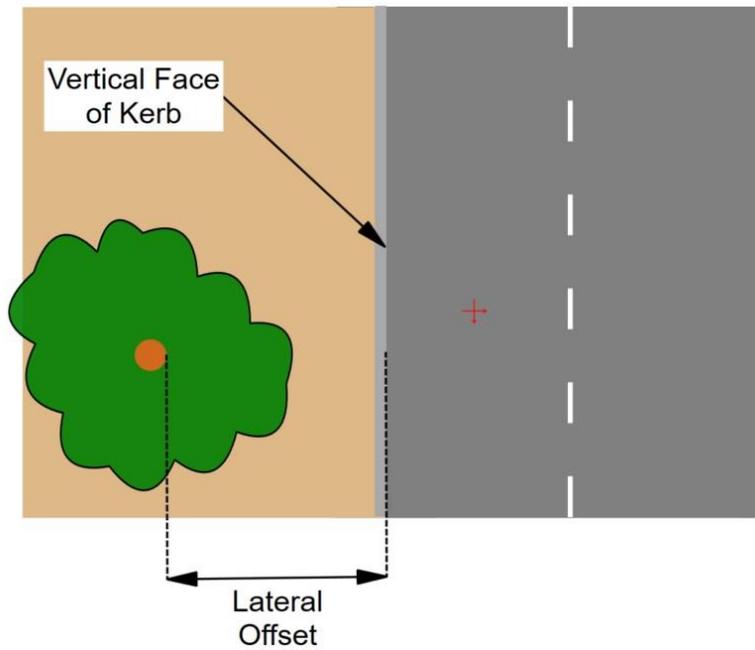


Figure 11.2 - Lateral setback with kerb and no edge line

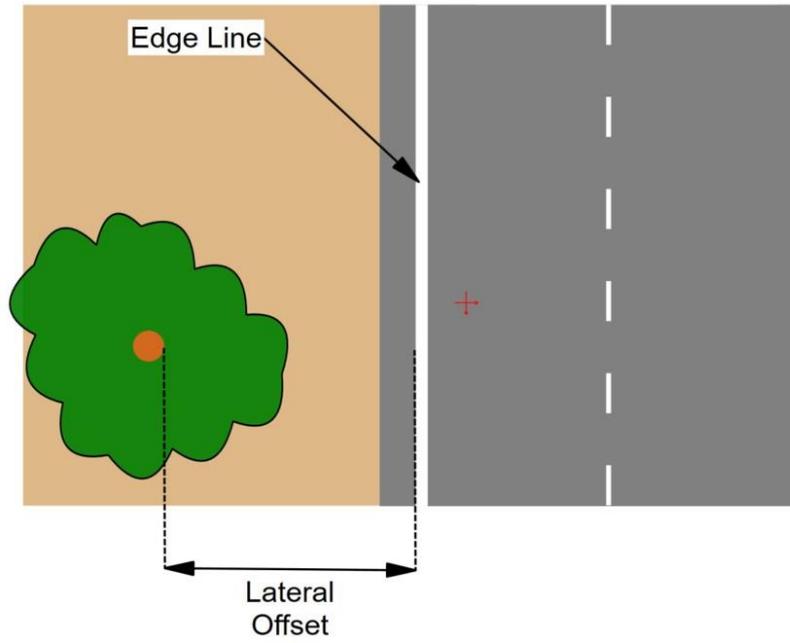


Figure 11.3 - Lateral setback with no kerb and edge line

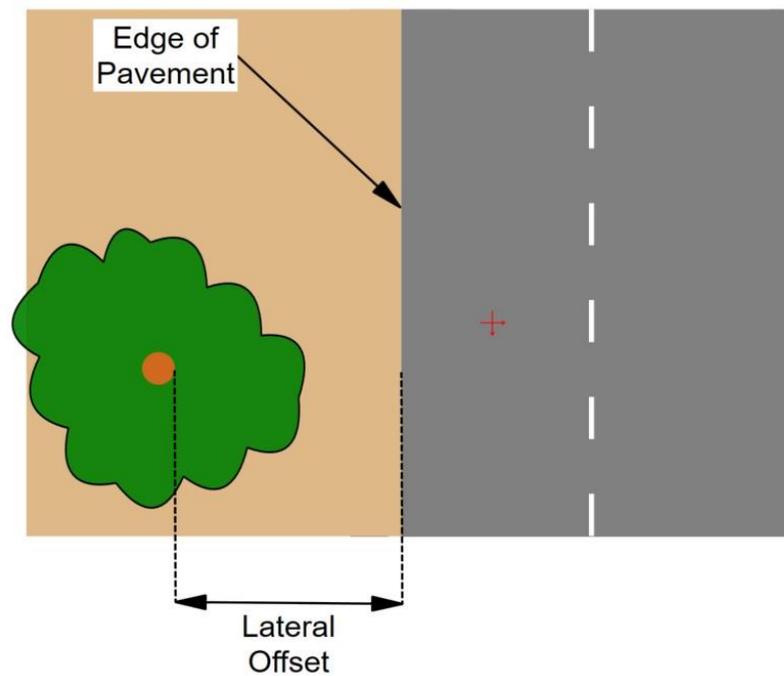


Figure 11.4 - Lateral setback with no kerb and no edge line

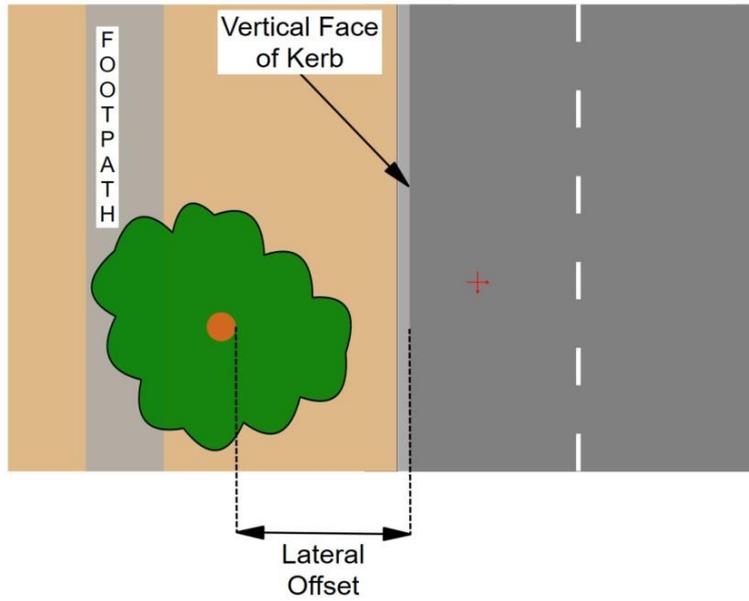


Figure 11.5 - Minimum lateral setback on roads with a speed limit  $\leq 60$  km/h and desirable tree placement in areas of high pedestrian activity

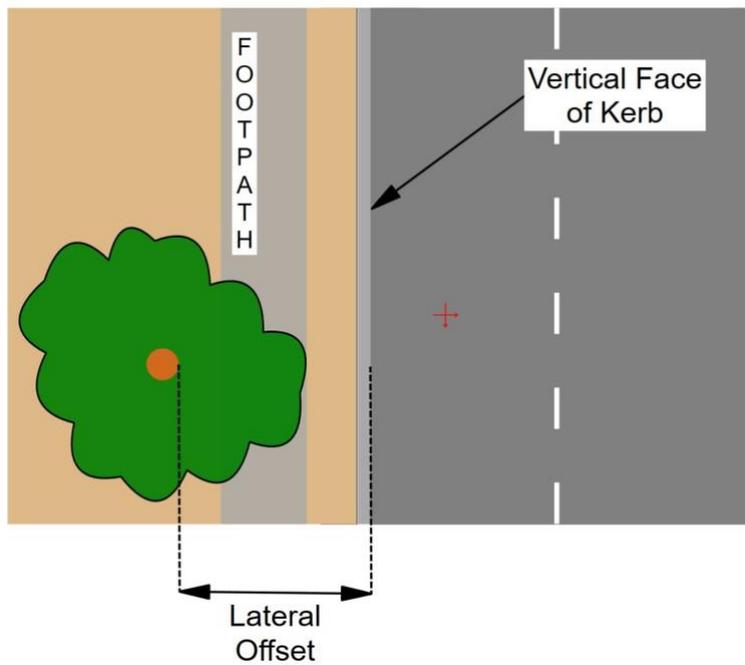


Figure 11.6 - Desirable tree placement on roads with a speed limit  $\leq 60$ km/h and minimal pedestrian activity

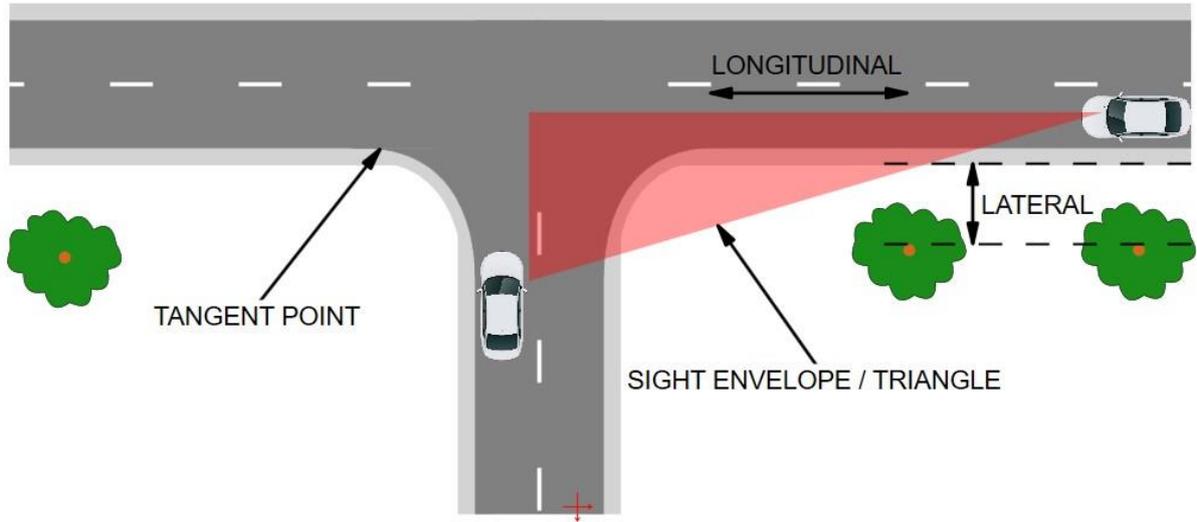


Figure 11.7 - Minimum setbacks (lateral and longitudinal) at an intersection without slip lane

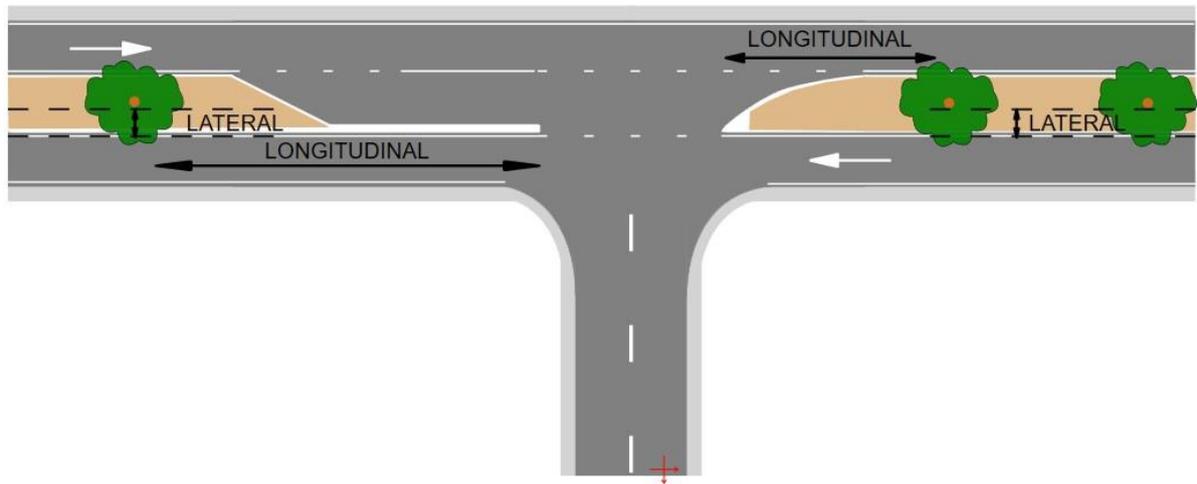


Figure 11.8 - Minimum setbacks (lateral and longitudinal) in medians with median opening

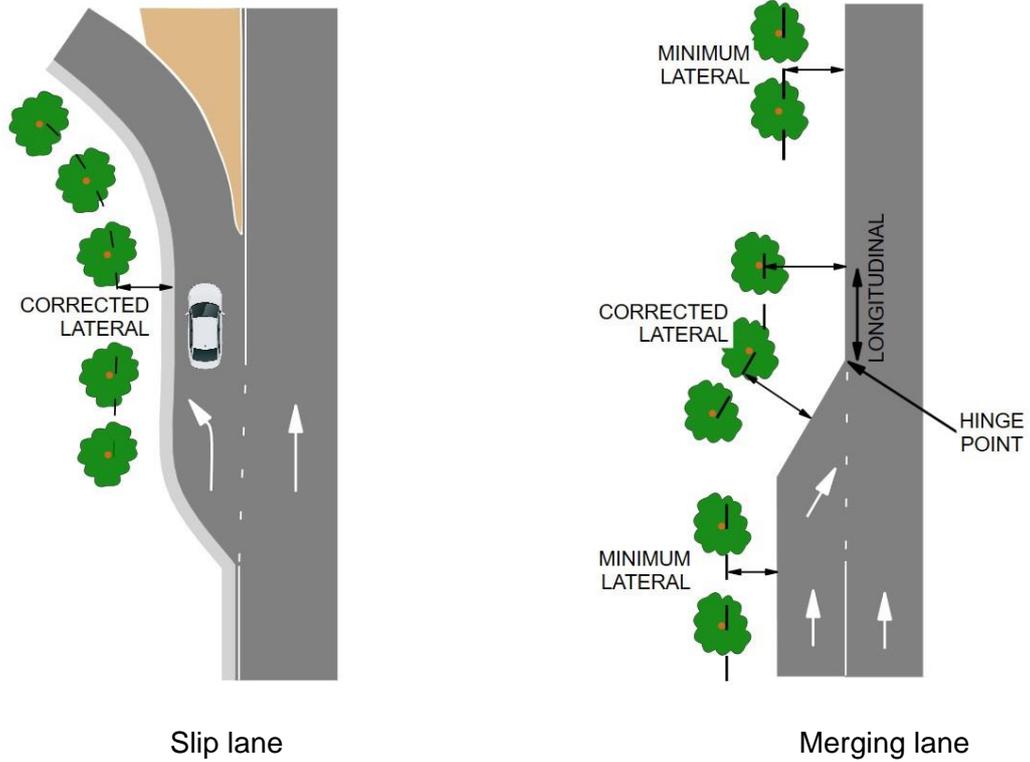


Figure 11.9 - Minimum lateral setbacks at slip lane and merging lane

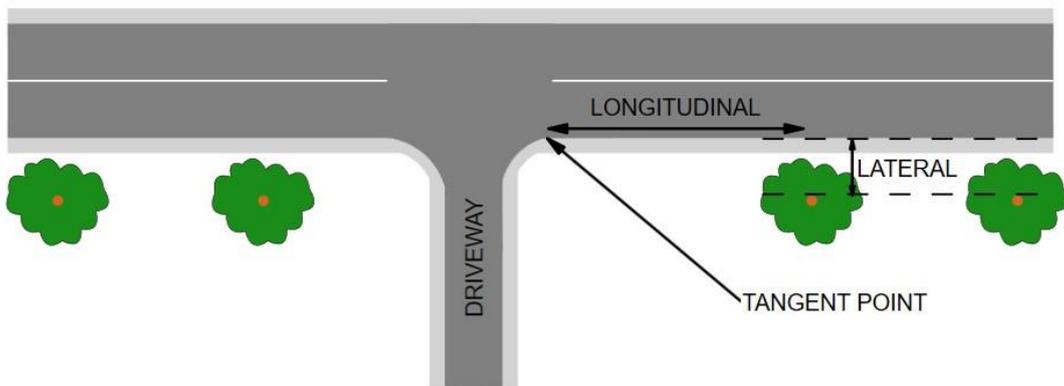


Figure 11.10 - Minimum setbacks (lateral and longitudinal) at driveway

## 12. References

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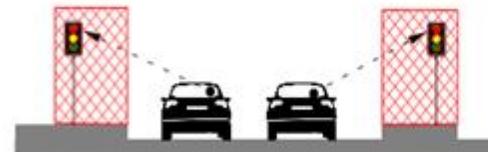
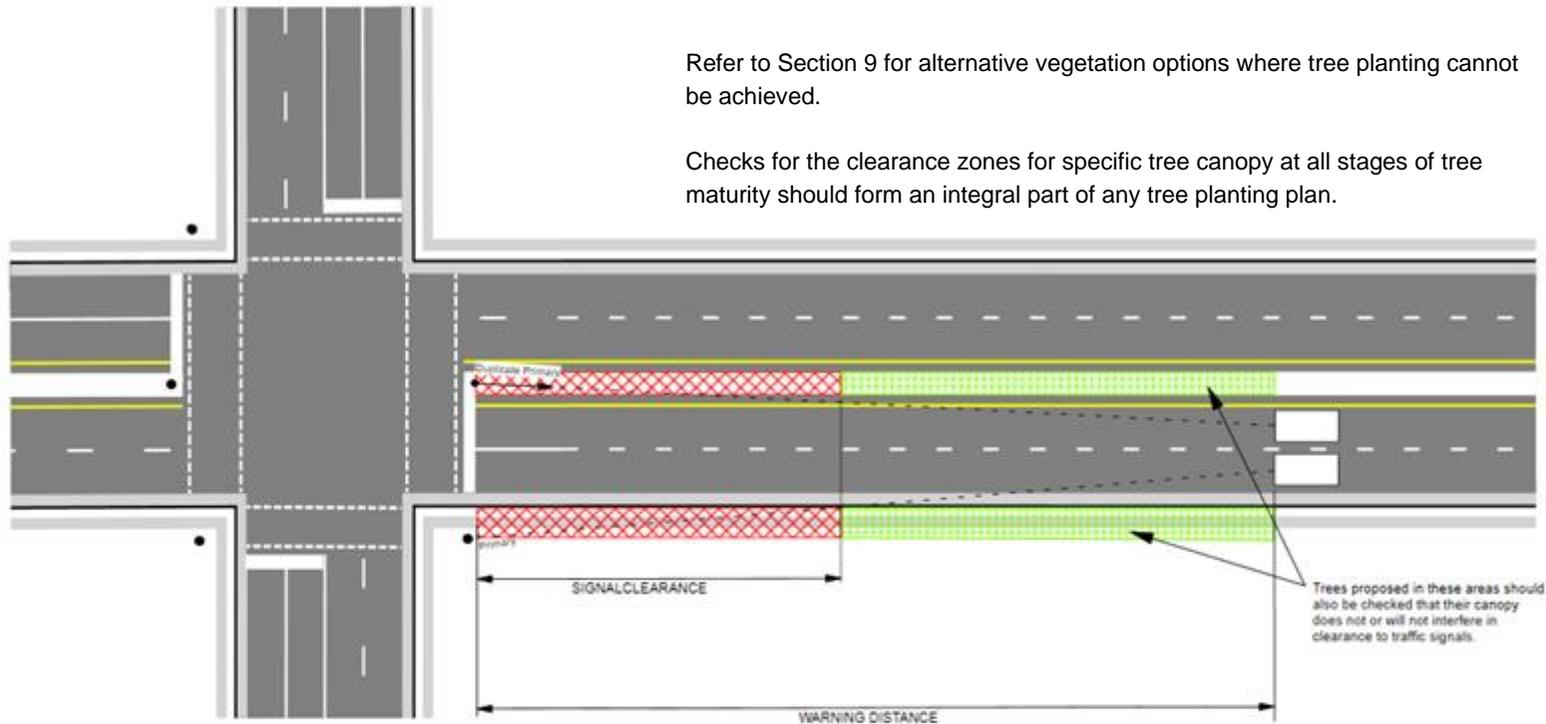
## Appendix A - Clearance Zones for optimal line of sight to traffic signal lanterns

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OFFICIAL

Refer to Section 9 for alternative vegetation options where tree planting cannot be achieved.

Checks for the clearance zones for specific tree canopy at all stages of tree maturity should form an integral part of any tree planting plan.



LEGEND	
	Traffic Signal Lanterns and poles
	Clearance zone
	Canopy Clearance zone
	Line of sight

Speed	Warning Distance* (from Dwg S-4538)	Signal Clearance*
(km/h)	(m)	(m)
50 (or less)	100	40
60	130	55

\* - distances are measured from the stop line

NOT TO SCALE

# Appendix B - Requirements for Approval of Tree Planting Checklist

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## REQUIREMENTS FOR APPROVAL OF TREE PLANTING / LANDSCAPING

The following checklist is provided to ensure the tree planting/ landscaping proposal complies with the Department's requirements for pedestrian and vehicle traffic engineering and maintenance. Proponents are to submit this completed form, signed by Council's Traffic Engineer or Manager, Infrastructure (or equivalent) along with drawings/plans, to DIT.NMSReviews@sa.gov.au

### SIGHT DISTANCE AND VISIBILITY REQUIREMENTS

- All safe sight distances are achieved
- Good visibility is provided to all Traffic Control Devices, particularly in the vicinity of high risk locations such as the roundabout, road curves and property driveways.
- Sight distances to Traffic Signals are provided as required in *Operational Instruction 19.8*.
- Clear sight lines are provided along walking and cycling routes

### TREE SETBACKS

- YES  
 NO
- Tree locations comply with DIT's minimum tree setbacks (both lateral and longitudinal).
- If NO - A risk assessment has been undertaken that takes into consideration:
  - road users' exposure,
  - crash likelihood,
  - severity outcomes in the event of crash, and
  - risk of pedestrian against vehicle occupant safety.
- Lateral setbacks are measured as described in Section 10 of *Operational Instruction 19.8*.
- Tree setbacks minimise the risk of tree roots damaging road infrastructure.

### TREE ROOT CONTROL

- Measures to minimise the risk of tree roots damaging road infrastructure have been implemented, including provision of HDPE root barriers where required..
- Root barriers have been designed in accordance with Sections 2.5 and 5 of *Operational Instruction 19.8*.

### MAINTENANCE OPERATIONS

- Access is accommodated for maintenance of existing services and infrastructure
- Council agree to enter into S211 Agreement with DIT which include the following conditions:
  - Council must undertake General Maintenance of the landscaping to DIT's standard. The scope of work on the median and/or verge includes general maintenance such as:
    - maintaining the general health of the vegetation including any re-planting, if required,
    - edging, mowing, litter collection, tree pruning, weed control and removal of all debris,
    - Watering/irrigation system (if any),
    - Pavers, mulch, sculptures (if any).
  - The Council must undertake vegetation trimming/removal in accordance with this document and Operational Instruction 20.1, to:
    - a) resolve any sight line issues to traffic control devices or obscuring road lighting affecting the luminance,
    - b) meet DIT's clearance envelope requirements.
  - The Council may vary clearance envelope vegetation to suit their own aesthetic standards without compromising road safety. As the road authority undertaking maintenance, the Council will be liable for any third-party actions, claims or other enquiries arising from the maintenance of (including any associated variations) to the clearance envelope.
  - 
  - The Commissioner will continue its due diligence to undertake its periodic inspections and report any vegetation issues to the council for further action. If Councils fail to undertake any action, the Commissioner may, for the purposes of road safety, remove or cut back any tree or other vegetation on or overhanging a road vested in or under the care, control and management of the Commissioner, or adjoining portion of the road, to DIT's standards.
  - Any additional maintenance effort that Council wish to conduct to maintain a higher service level will be at council's cost.
- Maintenance will include formative tree pruning and weed control in the immediate vicinity of the new trees, as well as maintenance of associated tree planting components such as edging, mulch, tree stakes, ties, watering wells and irrigation.
- Upon completion of the work, Council to notify DIT (DIT.MetroRoadMtce@sa.gov.au) to arrange a site walkthrough with DIT to inspect the site. Notification must attach drawing plans and written confirmation from Council that landscaping has been installed in accordance with the approved plans.

I confirm that the proposal complies with all the requirements of Operational Instruction 19.8 and the design addresses the above requirements. I understand that by ticking all boxes under 'Maintenance Operations' that I accept, and provide assurance to undertake, these conditions on behalf of Council.

Name:

Position:

Signed:

Date: