Appendix 4

Vegetation Setbacks and Clearances

June 2013

Feedback: Please send your feedback regarding this document to: mr.techdocs@tmr.qld.gov.au

Appendix 4 Amendments – June 2013
Revision Register

Issue / Revision No	Reference Section	Description of Revision	Authorised by	Date
1	-	Initial Release of 2nd Edition of Manual	Steering Committee	Jun 2013

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Vegetation Setback and Clearances

4.1 Minimum Vegetation Setbacks and Clearances Schedule

The purpose of this schedule is to provide the required vegetation setbacks and clearances for planting designs. The schedule should be used by designers at the preliminary and detailed design stage of the design process. All setbacks and clearances are based on the Department's and Public Utility Provider (PUP) minimum requirements at the time of publishing. This schedule should be used in conjunction with sight distance and clear zone requirements associated with design speeds; as per the Departments *Road Planning and Design Manual* (RPDM). These safety requirements take precedence and will override all setbacks and clearances where conflicts occur.

Refer to **APX4-*Table 1: Minimum Vegetation Setbacks and Clearances Schedule***

Note:

- *For all projects being documented for construction, at detailed design stage, setbacks and clearances must be included by the designer on the Notes and Legend Sheet within the construction drawings package. This ensures all setbacks and clearances are clearly communicated to the Contractor, and where onsite conditions vary the design, these can be adjusted according to these minimum requirements;*
- *The designer must confirm with all relevant service providers their required clearances and setbacks for each design project, and provide written confirmation to the project manager;*
- *Some PUP setbacks and clearance parameters will be project specific and subject to a case by case project decision; and*
- *Where applicable Local Government Authority (LGA) setbacks and clearances may apply, and are to be provided in writing to the project manager.*

This table should be read in conjunction with the following supporting information:

4.1.1 Design Exceptions

Where designers propose deviation from the Department's minimum safety clear zone requirements and those included in this schedule, and non-compliance would result, a design exception must be sought. It should be noted that safety is the priority of the Department, and a design exception will not be granted if it directly opposes safety requirements and increase safety risks within the state controlled road corridor. The Department will not accept liability for variances from the TMR's accepted safety design standards. Any variances to Departmental safety standards will be subject to assessment on a case by case basis relative to the particular situation by the Regional or District Director, who will either grant approval or reject. Detailed design drawings must document and note any design exception. These plans require the signature of a professional registered engineer (that is; with RPEQ status) as registered under the Board of Professional Engineers of Queensland.

Where design exceptions are granted from a PUP (only relevant to the utilities they own), the design exception and any conditions are to be provided to the project manager in writing, and documented by the designer in the Notes and Legend Sheet within the construction drawings package. Design exceptions from a PUP cannot over ride any TMR safety requirements (clear zone and sight visibility) and where conflict exists, safety requirements take precedence.

4.1.2 Terms

For the purposes of this manual, the definitions for the following terms are:

'Frangible' vegetation **-** plants with stems equal to or less than 70-100mm when measured from 300mm above the finished ground level. Groundcovers and shrubs are all generally frangible except for large shrub species exceeding 3.5m in mature height. Trees are not considered frangible.

'Non-Frangible' vegetation - plants with stems larger than 70-100mm when measured from 300mm above the finished ground level. Shrubs species exceeding 3.5m in mature height and trees are considered non-frangible.

'Clear zone' - the area that commences at the edge of the trafficable lane and is available for emergency use by errant vehicles; the distance that the clear zone extends from the carriageway edge is dependant on the traffic volume, road geometry and design speed of the road. This area may consist of a shoulder, parking bays, a recoverable slope and a clear run-out area.

'Setback' – the horizontal distance measured from the '***outer most edge'*** *(refer to definition of term)* of a design component or road element concerned, to the centre of a plant (for example; trunk of tree). Refer to Figure APP2-A for graphic illustration of this term.

Note that this definition does not apply to setbacks relative to Public Utilities.

'Clearance' – the horizontal distance measured from the ***'outer most edge'*** *(refer to definition of term)* of a design component or road element concerned, to the circumference of the expected mature width or diameter of vegetation at maturity (for example; tree canopy).

'Outer most edge' **–** the edges of design components or road elements from which required vegetation setbacks and clearances are measured from. Outer most edges can include, but are not limited too, the:

- Outer edge line marking of the trafficable lane or carriageway (travelled way);
- Outer face of design components (for example; retaining walls and noise barriers);
- Outer edge of other hardscape elements, for example;
- pathways relative to pedestrian/ cyclist facilities;
- maintenance paths/ tracks;

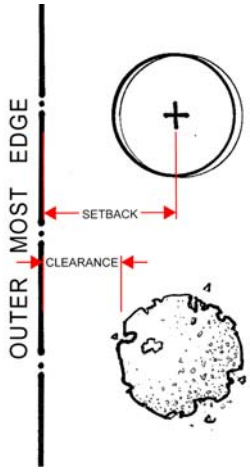

Table APX4-1: Setbacks and Clearances

'Canopy Clearance Height' – Vertical distances measured between the finished ground surface and the underside of a tree canopy (that is; lowest bottom branches). Trees often need to be initially planted with a ***'clear trunk'*** *(refer to definition of term)* to achieve a clear canopy height or promote growth in a particular way. This can be undertaken either at the supplying nursery, during establishment and monitoring periods or as the tree develops. Trees may also require ***'crown lifting'*** *(refer to definition of term)* to attain a required canopy clearance height.

Refer to Figures APP4-2 to APP4-4 for graphic illustration of this term and application in various roadside situations.

'Clear trunk' – Applies to the height above the ground level in which trees have their lower branches removed through appropriate formative pruning methods, to achieve a desired canopy clearance. This process can be undertaken at nurseries prior to trees being supplied or during establishment and monitoring periods.

'Crown lifting' – A formative pruning technique involving the removal of the lower branches (whole or part of) of a tree to a desired height. This process is normally conducted once trees are established or are at maturity to form a clear trunk and retain required canopy clearance heights for safety purposes. Often the required clearances are not attained initially, however are still undertaken so that the tree develops in a desired shape to facilitate clearances in the future. Crown lifting should be carried out using formative pruning techniques as per Australian Standard AS4373 – 2007; *Pruning of amenity trees*. Consideration should also be given when selecting tree species, as to their suitability for formative pruning.

Generally, minimum canopy clearance heights within specific road situations are:

- 2.4m in pedestrian facility environments, for example; footpaths and walkways (Refer to Figure APP4-2);
- 2.7m in cyclist facility environments, for example; cycle paths, cycleways, veloways and shared access paths (Refer to Figure APP4-3); and
- 6.0m where trucks and buses frequently use routes and in designated high and very high clearance routes (Refer to Figure APP4-4).

Note – graphical diagrams shown in Figures APP4-2 to APP4-4 depict anticipated plant growth and shape of trees attained over time (at a minimum of approximately 5 years after planting).

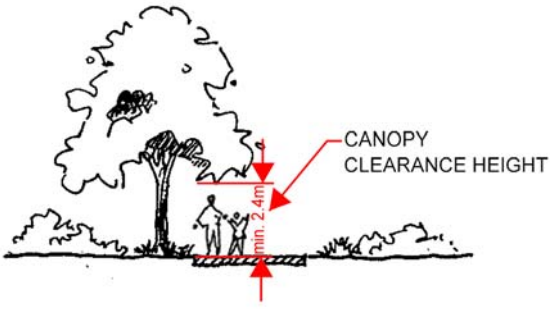

Table APX4-2: Canopy Clearance Height – in standard pedestrian and car park environments

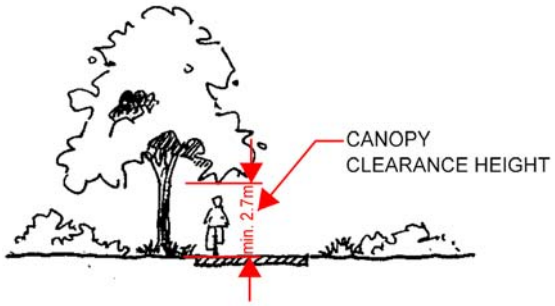

Table APX4-3: Canopy Clearance Height – in standard cyclist/shared access environments

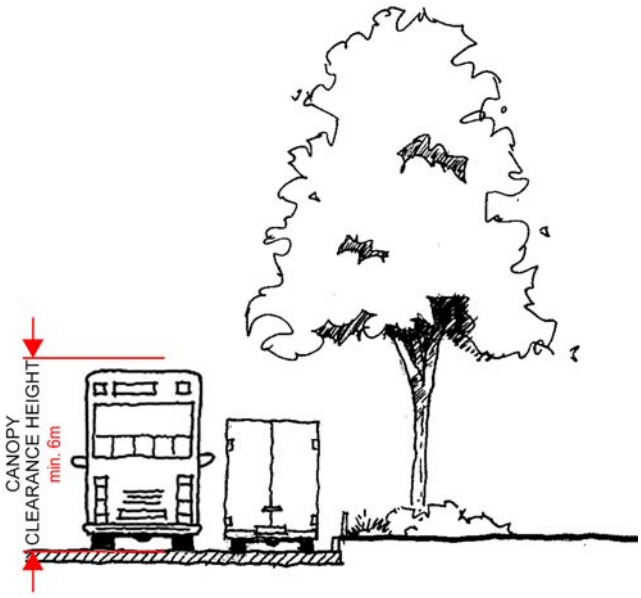

Table APX4-4: Canopy Clearance Height – where trucks and buses frequently use routes and in designated high and very high clearance routes

'Vegetation Height' – Maximum (or minimum) height of vegetation at maturity as measured from finished ground surface.

'Vegetation Width' – Maximum (or minimum) width or diameter of vegetation at maturity as measured from ***'outer most edge'*** *(refer to definition of term).*

4.1.3 Local Government Authorities

Parameters within this Manual are applicable to state owned and operated road corridors only. Where a road/street within a project is not state controlled and owned and is a Local Road, setbacks and clearances should be in accordance with the relevant local government authority requirements, and acknowledge relevant local area plans, unless determined otherwise within the project contract. It must be clearly communicated within documentation where the extents of the state owned and operated road corridors and local government area requirements are.

4.1.4 Public Utilities

The parameters provided within the Schedule relative to Public Utilities, are broad general requirements only, and current at the time of publishing. All setback and clearances must be checked against the concerned Public Utility Provider's (PUPs) guidelines and standards. A Dial Before you Dig (DBYD) must also be undertaken prior to commencing design work to ascertain location and details of

above ground and underground pipes and cables.

PUP requirements over-ride both TMR and local government authorities minimum setback and clearance requirements. The list of public utilities and associated setbacks and clearances (where included) provided in the Schedule serve as a prompt for designers to further investigate and consult with relevant PUPs.

Generally the order of priority for determining setbacks and clearances from services is:

1) PUP;

2) TMR; and

3) LGA.

However, design exceptions from a PUP cannot over ride any TMR safety requirements (clear zone and sight visibility) and where conflict exists, safety requirements must take precedence.

Often setbacks and clearances are subject to assessment by the individual local PUP on a case by case basis, and require negotiation by the Designer with the PUP, particularly where public utility relocations are proposed. Where design exceptions are granted from a PUP (only relevant to the utilities they own), the design exception and any conditions are to be provided to the project manager, and documented by the designer in the Notes and Legend Sheet within the construction drawings package.

It should be noted that minor versus major utilities, or setbacks and clearances relative to specific pipe and cable sizes or diameters, have not been included in the Schedule. These require consideration and investigation when consulting with local PUP's. Minor and major utilities need to be differentiated in design documentation so appropriate setbacks and clearances are documented.

4.1.5 Minimum general requirements to be applied

The following should be considered when applying the vegetation setbacks and clearances within **APX4-*Table 1: Minimum Vegetation Setbacks and Clearances Schedule***

Parameters are applicable to all speed zones;

- Frangible vegetation only is permitted within clear zones;
- Non-frangible vegetation is only possible in separated roadway situations where it is of sufficient width to meet clear zone setback requirements for non-frangible vegetation, or where barriers are provided. If not, a design exception is required;
- Non-frangible vegetation is permitted beyond the clear zone in accordance with specific parameter requirements noted. An exception to this is if non-frangible vegetation is protected by safety barriers. If located behind a barrier, the barrier reduces the clear zone requirements. Certain additional setbacks to those in the table may still be required depending on the project specific situation;
- Plantings in sight distance affected areas should provide a clear visibility above the finished level of the road surface, and account for vertical curvature of the road alignment; such as on crests. Considering this, vertical clearances need to take into consideration landform, in addition to anticipated mature plant heights. These two heights combined need to achieve and maintain the required sight visibility in planting areas;
- In general, a minimum 5m clearance (unless noted otherwise) is required from the outer edge line marking of the carriageway for deciduous trees or other tree species that bear large fruit, cones, seed pods or large quantities of flowers. This clearance reduces the chance of vegetation shedding onto traffic lanes and into pedestrian environments, causing potential surface hazards.

4.1.6 Management of vegetation setbacks and clearances

In order for safety to be maintained within the road landscape, vegetation setbacks and clearances need to be maintained throughout the life of the road corridor. Methods to be applied ensuring safety hazards are reduced include:

- Maintaining vegetation in sight visibility affected areas to maximum permissible heights above the finished ground surface level of the adjacent road surface;
- Ensuring trees have clear trunks (to minimum specified canopy clearance height) so that overhanging branches do not impede on pedestrian and cyclist safety;
- Maintaining vegetation within areas of pathways, bikeways, and carparks so it does not encroach on accessibility, circulation and sightlines;
- Ensuring tree branches and canopies less than the minimum required clearance height of 6.0m above road level (in high and very high clearance routes), do not extend into the trafficable lane, both during establishment and at maturity.
- Crown lifting branches through formative pruning techniques (if tree species suitable and able to tolerate process) to a minimum of a 6.0m clearance height above road level to prevent conflict with large vehicles (in high and very high clearance routes); and
- Maintaining vegetation appropriately to ensure public utilities and associated inspection pits are accessible by maintenance personnel.

MINIMUM VEGETATION SETBACK AND CLEARANCES SCHEDULE

Setbacks and clearances relate to horizontal distances only. Where related to vertical distances, these are noted otherwise.

Parameter	**Description:** *Non-frangible* versus *frangible* vegetation	Setback	Clearance	Value	Rationale
Roadside areas without barriers	All *non-frangible* vegetation; measured from carriageway edge line to clear zone	✓		As per RPDM	RPDM (in conjunction with Austroads) is a higher order document.
Roadside areas with barriers	*Non-frangible* vegetation; Concrete barriers	✓		1.5m	Provides maintenance free treatment to rear of barrier.
	Frangible vegetation; Concrete barriers	✓		0.5m or ½ Dia*	
	Non-frangible vegetation; Wire rope barriers	✓		2.0m	Allows for deflection/movement of the barrier when impacted.
	Frangible vegetation; Wire rope barriers	✓		0.5m or ½ Dia*	
	Non-frangible vegetation; W-beam & TRS Beam barriers (also includes a 'hazard free zone', which typically extends 6m behind the back of the guardrail and for 22.5m from each end)	✓		1.0m	
	Frangible vegetation; Steel barriers (also includes a 'hazard free zone', which typically extends 6m behind the back of the guardrail and for 22.5m from each end)	✓		1.0m	
Roadside general	*Non-frangible* vegetation (general); from road pavement edge	✓		2.5m **A	Setback required mitigating potential tree root damage and resulting reduction of life to road pavement. Greater offsets are required for species with known invasive root systems (eg., Ficus and Melaleuca species).
	Non-frangible vegetation (general); from road pavement edge		✓	7.0m	The projected/anticipated canopy line of trees should not encroach beyond the outer carriageway line or be capable of providing a canopy within the minimum 7m clearance adjacent to trafficked lanes in the future.
	Non-frangible vegetation (>15m in mature height known to have a reputation of limb drop and/or large seed drop during high wind/storm events); from road pavement edge	✓		10.0m	To mitigate the risk of trees, limbs, branches and large seeds falling and impacting the roadway (eg. Eucalyptus species).
	Frangible vegetation		✓	0.5m or ½ Dia*	To prevent planting overhanging roadway; reducing potential for safety obstructions and increased maintenance requirements.

Parameter	Description: *Non-frangible* versus *frangible* vegetation	Setback	Clearance	Value	Rationale
Roadside structures and furniture	*Non-frangible* vegetation; tree canopy from fauna fence (relative to rear/ fauna side of fence)		✓ - species dependent (Refer further to FSRD)	3.0m **B	Eliminates the risk of fauna (koalas in particular) dropping into the fenced road corridor which may be difficult/ impossible for the fauna to escape.
	Non-frangible vegetation; from outer parapet/ rails and piers of bridges	✓		5.0m	Minimises the likelihood of the bridge being impacted by trees; both structurally and from a maintenance perspective (protects from strike). Also reduces likelihood of vegetation encroaching sightlines. NOTE – greater setbacks may be required in those parts of Queensland where intense storms/ cyclones are a regular occurrence.
	Non-frangible vegetation; either side of retaining structures as per RPEQ's determination		✓	As per RPEQ	Requirements of walls vary depending on type and site conditions. RPEQ to ensure trees do not compromise walls integrity, over its required design life.
	Frangible vegetation (general); includes but not limited to fencing, retaining walls, kerbs, garden edging, drainage channels**C		✓	0.5m or ½ Dia*	Maintenance minimisation; retains structure/ furniture function and reduces the likelihood of conflict between the vegetation and adjoining structure or edge.
	Frangible vegetation; from fauna fence (relative to rear/ fauna side of fence)	✓		1.0m (ground covers) and 1.5m (shrubs)	Applies to *wide* corridors only; that is, where space permits for maintenance access. *Narrow* corridors which lack of space behind fauna fence do not apply as an additional setback will further reduce vegetation coverage, compromising corridor effectiveness and habitat connectivity. Similarly, corridors where there is a *guard rail absent* do not apply as have sufficient space available to front/ road side of fence for maintenance access through clear zone and setback requirements and results in no further need for maintenance access on other rear/ fauna side of fence.
Maintenance access paths/ tracks	*Non-frangible* vegetation	✓		1.0m	Allows for maintenance track to remain operational. NOTE - crown lifting may be required to facilitate.

Parameter	**Description:** *Non-frangible* versus *frangible* vegetation	Setback	Clearance	Value	Rationale
	Frangible vegetation		✓	0.5m or ½ Dia*	Maintenance minimisation and reduces conflicts with safety hazards for operational staff.
Noise barriers (where maintenance access is required)	*Non-frangible* vegetation		✓	1.5m	Also allows for maintenance access. Clearance eliminates conflict between tree and wall and beyond.
	Frangible vegetation		✓	1.0m	Allows for maintenance access.
Road Signage	Approach side *1. Vegetation within sightline triangle – clearance as indicated* *2. Vegetation within sightline triangle having maximum mature height of 500mm below bottom edge of sign – No requirements necessary.* *3. In addition to notes 1 & 2 all vegetation to comply with RP & D manual and/or clear zone and sight visibility requirements where present..*	✓		• Ensure sight distance triangles across road landscapes (with horizontal curvature) are achieved so that the driver has time to recognise and react to the sign. • Vegetation that will block sightline, longitudinal sight distance triangle start point to be minimum of 1.4V m in advance of the sign (where V is the 85th percentile speed) and sighted to far outside edge of sign. Eye measurement to be taken to centre of traffic lane. • For sight-distance calculations refer to RP & D manual • For sign location/placement refer to MUTCD	Ensures sign is not obstructed by any vegetation enabling drivers to have sufficient time to observe, read, and react accordingly also minimising maintenance and ensuring sightlines are retained**D
	Departure side 1. Single-sided signs with frangible vegetation – maintenance area requirements apply as indicated. 2. Double-sided signs need to comply with notes 1 & 2 for approach situations. 3. *In addition to notes 1 & 2 all vegetation to comply with RP & D manual and/or clear zone and sight visibility requirements where present.*	✓		Single-sided signs:- 10.0m (Min) • Double-sided signs • As per approach side above	Ensures sign is not obstructed by any vegetation and assists with maintenance operations. Sightlines are retained **D

Parameter	**Description:** *Non-frangible* versus *frangible* vegetation	Setback	Clearance	Value	Rationale
Sight Distance	Vegetation sight distance triangle; Plantings in these zones should provide a clear visibility both horizontally and vertically when the eye height and the target height are considered.		✓	• Sight distance as per RPDM • Proposed mature plantings and landform combination heights should be at least 100mm outside the vertical limits of the sight triangle	RPDM (in conjunction with Austroads) is a higher order document. Ensures sight distance is not obstructed by vegetation enabling drivers to have sufficient time to observe and react accordingly, also minimising maintenance and ensuring sightlines are retained
Pedestrian and Cyclist Environments	*Non-frangible* vegetation (general); from pavement edge – pathway, cycleway or other	✓		1.0m	Setback ensures trees still provide shade to pedestrian/ cyclist areas and nodes**E
	Non-frangible vegetation (>15m in mature height known to fall or have a reputation of limb drop and/or large seed drop during high wind/storm events; or plants with aggressive/ spreading root system); from pavement edge – pathway, cycleway or other	✓		10.0m	To mitigate the risk of trees, limbs, branches and large seeds falling and impacting on pedestrian/ cyclist areas and nodes (eg. Eucalyptus species). To mitigate potential tree root damage and resulting reduction of life to pavement surface, for species with known invasive root systems (eg., Ficus and Melaleuca species).
	Frangible vegetation		✓	0.5m or ½ Dia*	To prevent planting overhanging pathways, cycleways or other; reducing potential for safety obstructions and increased maintenance requirements.
Lighting (Roadway Lighting only) – For Street Lighting/ Public Lighting; refer directly to Local Authority requirements	*Non-frangible* vegetation and *Frangible* vegetation (greater than 4m in height)	✓		10.0m	Indicative only**F
	Frangible vegetation (all other)	✓		1.0m	To retain a clear surround for maintenance access.
CCTV view-shed	Vegetation below view-shed		✓	Maximum mature height of 1.0m below bottom edge of view-shed	To prevent planting encroaching view-shed; reducing potential for obstructions and maintenance requirements
	Vegetation beside view-shed	✓		½ mature diameter	

Parameter	**Description:** *Non-frangible* versus *frangible* vegetation	Setback	Clearance	Value	Rationale
Above ground Electrical Services (relative to Energex, Ergon Energy and Energy Australia requirements ONLY) - For Powerlink (High Voltage Transmission Lines) setbacks and clearances; refer directly to Powerlink requirements	≤ 33kV (low voltage line) – Below powerlines: *Frangible* vegetation or 'Energex's Safe Tree plants' (3.5m maximum mature height for min. 7.0m either side of alignment – Refer further to below requirement)	n/a –mature height will be below actual line	n/a –mature height will be below actual line	n/a –mature height will be below actual line	To ensure conflict does not occur between vegetation and power infrastructure (lines, conductors, poles and so on) and minimise potential ongoing maintenance required to retain clearances as per PUP owners' requirements.
	≤ 33kV (low voltage line) – Near powerlines, including poles: *Non-frangible* vegetation (45º rule; as per 'Energex's Safe Tree Program').		✓	To equal at least mature height, or min. 7.0m (that which is greater)	
	≤ 33kV (low voltage line) – Around poles: *Frangible* vegetation		✓	4.0m	
	> 33kV (high voltage line) – Below powerlines: *Frangible* vegetation or 'Energex's Safe Tree plants' (3.5m maximum mature height for min. 10.0m either side of alignment – Refer further to below requirement)	n/a –mature height will be below actual line	n/a –mature height will be below actual line	n/a –mature height will be below actual line	
	> 33kV (high voltage line) – Near powerlines, including poles: *Non-frangible* vegetation (45º rule; as per 'Energex's Vegetation Management Standard').		✓	To equal at least mature height, or min. 10.0m (that which is greater)	
	> 33kV (high voltage line) – Around poles: *Frangible* vegetation		✓	6.0m	
	Substations, tower structures and any other facilities (generally 2.0m standard however often by negotiation with owner): *Frangible*		✓	Min. 1.0m or diameter as required by owner (that which is greater)	
Underground water (including drainage and sewerage), electrical or any other underground services; telecommunications and fibre optics**G	All vegetation with a mature height ≤ 3.5m	✓		2.0m	To allow future access and minimise impacts to underground services from root systems.
	All vegetation with a mature height > 3.5m (general underground services and piping)	✓		As per arborist advice or min. 4.0m (that which is greater)	To ensure tree roots do not impact on underground infrastructure – setback will vary with species characteristics; that is, greater setbacks required for species with vigorous or known to be invasive root systems.
	All vegetation with a mature height > 3.5m (drainage sump)	✓		As per arborist advice or min. 6.0m (that which is greater)	
Gas Services	All vegetation with a mature height ≤ 3.5m	✓		2.0m	To allow future access and minimise impacts from root systems.

Parameter	**Description:** *Non-frangible* versus *frangible* vegetation	Setback	Clearance	Value	Rationale
	All vegetation with a mature height > 3.5m	✓		As per arborist advice or min. 3.5m (that which is greater)	To ensure tree roots do not impact on underground infrastructure – setback will vary with species characteristics; that is, greater setbacks required for species with vigorous or known to be invasive root systems.
Service pits and inspection points**G	All vegetation with a mature height ≤ 3.5m	✓		1.0m	To ensure maintenance access to pits and inspection points.

NOTE:
*A **setback** is measured from the outer edge of a design component, road element, object or carriageway line to the centre of the vegetation's (tree, shrub or groundcover) trunk.*

*A **clearance** is measured from the outer edge of a design component, road element, object or carriageway line to the perimeter of the vegetation's (tree, shrub or groundcover) mature canopy.*

*Setbacks and Clearances from **PUPs** are measured form the outer most point of object, line or pipe.*

***'Non-Frangible'** vegetation - plants with stems larger than 100mm when measured from 300mm above the finished ground level. Shrubs species exceeding 3.5m in mature height and trees are considered non-frangible.*

***'Frangible'** vegetation - plants with stems equal to or less than 100mm when measured from 300mm above the finished ground level. Groundcovers and shrubs are all generally frangible except for large shrub species exceeding 3.5m in mature height. Trees are not considered frangible.*

**0.5m or ½ mature Diameter – whichever is greatest.*

REFERENCES:
**A = Where it is proposed that tree species be used within 2.5m of the road pavement edge (appropriate crash barrier system required), mitigation measures (that is, root barrier system) must be implemented that guarantee pavement life and that services will not be impacted in the future.

**B = Birds such as cassowaries will not cross fence through tree canopies into roadway. However, koalas may drop out of tree canopies over a fence. In these cases, 3.0m applies (guide only – Refer further to FSRD).

**C = Requires coordination with Civil, Structural and/or Drainage Engineer requirements.

**D = Horizontal setback - triangle measured from a single point on carriageway line, perpendicular to sign, to the value on the relevant side, to the outermost point of sign. Vertical clearance - where low planting is proposed to approach (front) side of sign, mature height needs to be less than the height of the base of the sign (that is, where meets sign post - if applicable) to ensure signage is not obscured by vegetation, maintaining sight visibility and safety.

**E = Tree species selection is to be of a type that accommodates a minimum 2.4m vertical clearance at maturity over the full pathway width (2.7m where cyclists also use facility) and does not have large seeds, fruit, blooms or excessive foliage fall that may impact on pathway/ cycleway user safety or become a slip/ trip hazard (particularly in wet weather). Non-frangible trees known to exhibit invasive root system should not be planted this close to pathways/ cycleways; greater setbacks are required.

**F = Requires coordination with Lighting/ Electrical Engineer requirements. Illumination zone will be the determinant for the setback requirements since will vary depending on light post dimensions. Final setbacks need to ensure that trees do not interfere with the lighting illumination requirements.

**G = Grass, tufting grasses or low groundcovers/ spreading shrubs with shallow root systems only are to be utilised over underground service corridors.

Table APX4-1: Minimum vegegetion setback and clearances schedule