Practice Note 07
Vehicle Crossings Design Standards

Supplement of Engineering Design Code – Urban and Rural Roadway Design and AT Vehicle crossing application Design Standards

Edition 1, July 2025

Contents

1 Purpose and Scope

1.1 Purpose

The purpose of this practice note is to clarify the underlying processes behind forming a vehicular access that serves one or more units from a public road managed by Auckland Transport. Technical advice is provided on various matters and to be taken into account, prior to application. The advice is general and both site and traffic conditions may vary depending on individual circumstances.

This PN is to ensure that there is a consistent approach across the Auckland region for vehicle crossing approvals that involve both Auckland Council (AC) and Auckland Transport (AT) approvals. Unlike previous approvals, the reader is to note that now:

- Any vehicle crossing that is a permitted activity under the Auckland Unitary Plan (AUP) and serving 10 or less units and complying with the AUP rules will still need to be forwarded to AT for Engineering Approval (EA) to ensure that the vehicle crossing portion of the driveway complies with AT's Transport Design Manual (TDM).
- There is a hold point in the Vehicle Crossing Assessment application process to ensure that other approval processes have been followed and relevant approval and permits have been obtained, prior to any assessment of the vehicle crossing application.
- A preferred sequence of lodging applications is advised. Refer to Section 1.5 for further detail and Attachment A.
- Advice on matters to be addressed prior to lodging an application is provided. Refer to Section 2.2 for further detail.
- Implementation of this PN and any subsequent revisions takes effect immediately on the signed date shown at the end of this PN.

This technical advice does not apply to encroachment driveways on paper roads, which require a mix of vehicle crossing, driveway and road requirements.

Please note that different legislation and processes are required for access from a State Highway managed by NZTA.

While this document may help customers to appreciate the issues involved in access approvals, the Practice Note specifically targets experienced/qualified people involved in access approvals. It caters for more complex accesses. Applicants are advised to get experienced/qualified advice, particularly for more complex accesses.

1.2 Definitions

Bylaw means the Auckland Transport Activities in the Road Corridor Bylaw 2022.

Driveway has a definition within the Auckland Unitary Plan (AUP) and the Bylaw. Driveway means a vehicle access lane located on private property.

Heavy vehicle means a vehicle with a maximum gross vehicle mass (GVM), usually specified by the manufacturer, over 3500 kilograms (kg).

Private way means an accessway serving multiple owners, dwellings or lots and where access is shared and maintained by property owners. This can be applied in various ways, e.g. right of way (ROW) easement as servient/ dominant tenements, commonly or jointly owned access lots (COAL or JOAL). The private way is to provide unimpeded access.

Roadway means that portion of the road used or reasonably usable for the time being for vehicular traffic in general. As per Bylaw.

Vehicle Crossing has a definition within the AUP and the Bylaw. Vehicle crossing is the area of driveway between a roadway and the private property boundary.

Qualified person has the same meaning as in the AUP. The vehicle crossing portion of the works is to be designed by a suitably qualified person.

1.3 Relevant Standards

The reader should note, that in conjunction with this Practice Note:

i) For all documents mentioned the relevant document will be the current version at the time of lodging for RC. If no RC is required, the relevant document will be at the time of lodging for an encroachment licence or vehicle crossing approval.

ii) AC's **Auckland Unitary Plan – Practice and Guidance Note – Vehicle Access Standards RC 3.2.29 (v.1)** provides non-statuary guidance on interpretation of the AUP. This Practice Note takes account of that guidance.

iii) **AC's Private Way Guidance Document GD12** provides advice on driveways and has been prepared with input from AT.

iv) **AT's TDM** applies to the vehicle crossing portion of any vehicle access for works within public roads. **AC's Code of Practice for Land Development and Subdivision (CPLDS) Chapter 3: Transport** applies for works in roads to be vested as public.

v) Refer to **Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections (AGRD-4A)** for visibility requirements at vehicle cossings

vi) Refer to the **TDM Vehicle Crossing Standard Engineering Drawings** to determine the situation that best matches the Applicant's site conditions. **Heavy Vehicle Crossings** are to be used for any crossing serving > 10 lots, dwellings or parking spaces and any access to be used by heavy vehicles. If the vehicle crossing shape needs to differ from the standard dimensions, a specific design should be produced, derived from the standard drawings. Refer to Transport Design Manual (at.govt.nz) VX0000 Series Vehicle Infrastructure for construction details.

vii) Refer to the **TDM Standard Engineering Drawings Vehicle Tracking Envelope series VT0000** for vehicle crossing geometric design.

viii) For the vehicle crossing portion, in addition to the TDM standard engineering drawings for vehicle crossings, the applicant is to consider the following **Auckland Unitary Plan Rules**, as shown below. While some rules apply to inside the property, they can influence driver behaviour and road safety on the vehicle crossing area. The mainland Auckland and Hauraki Gulf Islands sets of rules are different in places. The mainland Auckland requirements are shown below.

- Rule E27.6.3.4 (b) Reverse manoeuvring if 4 or more spaces or >30 m distance parking space to road boundary
- Rule E27.6.3.7 Lighting for 10 or more parking spaces
- Rule E27.6.3.8 (4) Formation and gradient
- Rule E27.6.4.3 Width of vehicle access and queuing
- Rule E27.6.4.3.1 Passing bay sizes and intervals
- Rule E27.6.4.3.2 Table E27.6.4.3.2 Access widths

- Rule E27.6.4.4.1 Table E27.6.4.4.1 Gradient.
  - Note 1 Measured on inside radius.
  - Note 2 Figure E27.6.4.4.3 Net change in gradient for crest and sag vertical curves.
  - Note 3 E27.6.4.4.4 waiting platform.

ix) Requirements specific to Hauraki Gulf Islands are shown in coloured text.

1.4 Legislative Requirements

Attachment A outlines the various legislation that supports the driveway and vehicle crossing approval processes and their approving body:

i) Resource Consent (RC) approval process under the Resource Management Act (RMA),

ii) Engineering Approval (EA) approval process for the vehicle crossing portion under the RMA, assessed by AT and approved by AC,

iii) AT Encroachment approval process under the Bylaw, for any structure or parking area within the road reserve.

iv) If required, Building Consent (BC) approval process under the Building Act,

v) Vehicle Crossing Permit process under the Bylaw,

vi) If required, Temporary Traffic Management Plan (TTMP) to be provided to AT for review under LGA, and

vii) Corridor Access Request (CAR) process under the Bylaw.

viii) While not shown on Attachment A, if the vehicle crossing or part of the crossing impacts another property's frontage rights, the Applicant is to provide written consent from the affected property owner as part of the RC and Encroachment approval application.

ix) While not shown on Attachment A, under the Health and Safety at Work Act (HSW), the Applicant's designers are to inform any activities, that follow on after the design process, of risks associated with the works and to have taken into account the whole of life cycle of the vehicle crossing when designing the works.

x) Also not shown on Attachment A, while AT may provide input into the planning, design and construction phase of a structure/works, the responsibility for those phases lies with the Applicant and their planners, designers and construction supervisors. AT is not responsible for the operational and maintenance phases of any structures that it has approved.

1.5 Outline of Approval Processes

i) Refer to Attachment A Outline of Driveway and Vehicle Crossing Approval Processes.

ii) The processes can be divided into three distinct groups with a hold point at the Vehicle Crossing Permit Application stage. The first group shown by the dashed lines involves Resource Consent (RC) and Engineering Approval (EA) applications. The second group relates to Encroachment Licences and the Building Act. The third group involves Temporary Traffic Management Plans (TTMPs) and Corridor Access Request (CAR) processes.

iii) While not mandatory, the outline shows the preferred order of lodging applications that AT wish the Applicant to follow. This preferred order is suggested to help avoid any possible

rework of the design and relodging of applications, which may happen if the preferred sequence is not followed.

iv) If additional licences or permits are required, they are to be obtained and then provided with any subsequent downstream application.

v) If a Shared vehicle crossing is to be created or altered, written approval is required from each landowner of portions of the crossing to be shared as vehicles turn to and from each property.

vi) If an EA is required as a condition of the RC process, the Applicant is to obtain an approved EA to validate the RC.

vii) If a Kerb Discharge (KD) is required, it is to be applied for as part of the EA process. AT will consider and if appropriate approve KD but subject to a satisfactory approval of the EA. Proof of an approved EA by AC is to be provided to AT to validate the KD. However. AT does not generally prefer KDs and other options are to be been rigorously investigated and other options are not available.

viii) If a Departure from Standard (DfS) is required, it should be applied for as part of the EA process and provided on the DfS form. AT will consider for approval the DfS application. However, AT does not generally prefer the DfS approach and other options are to have been rigorously investigated and are determined not to be available. When considering both KD and DfS applications, safety of road users is not to be compromised.

ix) If an encroachment licence is required, it can be applied for at the same time as any BC application, if any required. AT will approve the encroachment subject to satisfactory approval of BC. Proof of a BC is to be provided to AT to validate the encroachment approval.

x) The TTMP, if required, will be lodged for review at the same time as the CAR. The CAR would be approved and issued, if the TTMP is acceptable.

xi) The reader is also requested to familiarise themselves with each step and to ensure that all design aspects and the level of information required has been addressed, prior to lodging any applications for a Vehicle Crossing.

2 General requirements

2.1 Types of Vehicle Crossing

There are different requirements for different types of crossing. These types are matched to the Rules in the AUP. The correct type for each use must be selected and the approval and design process for each must be followed.

i) **Residential** Single-vehicle width for a single dwelling. May be widened for access to two vehicle parking spaces only by Resource Consent. May be used for up to 9 parking spaces. For 10 or more spaces, a Commercial crossing is required

Figure 1 Residential driveway

ii) **Shared** Provides access to driveways on separate titles but shares all or part of the vehicle crossing to access each driveway.

Figure 2 Shared driveway

iii) **Private way** Provides access to a private way. It may be one-way or two-way and may also be a **Heavy Vehicle** crossing.

Figure 3 Private way

iv) **Commercial Vehicle** Provides access to a Commercial land use or a residential access to 10 or more parking spaces.

Figure 4 Commercial vehicle driveway

v) **Rural** Provides access to driveways from roads outside urban development areas. These may be either **Residential** or **Commercial Vehicle** crossings. Two types are specified, depending on speed zone of the road.

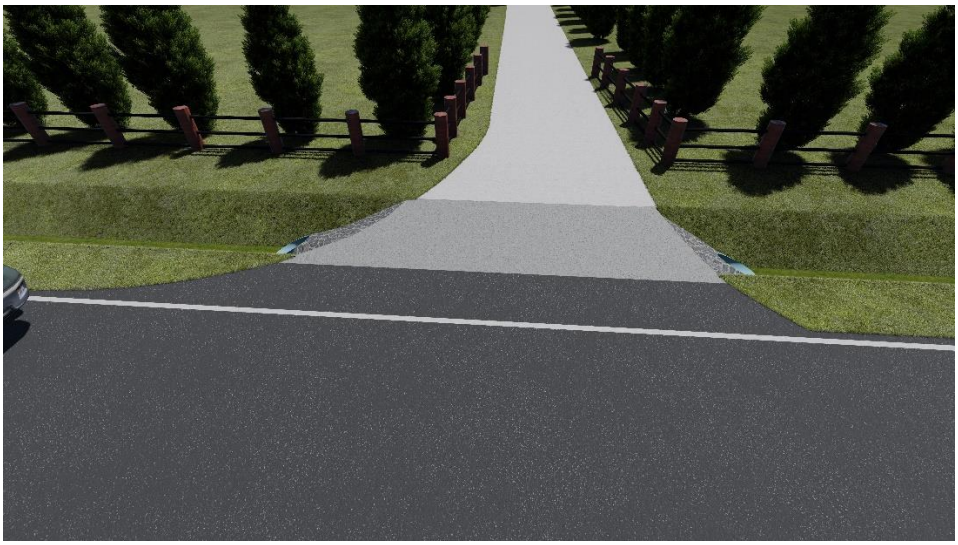

Figure 5 High-speed rural road driveway

2.2 Matters to be Addressed prior to Application

The list below covers the majority of matters but is not a complete or exclusive list. Individual circumstances might require other matters to also be considered prior to application.

2.2.1 Site Survey

i) Different complexities of design may require different extents of survey. Where the Conditions for a Standard Crossing are met (see Section 8.2), a simple sketch including measured dimensions and gradients may be sufficient to show all necessary gradients and dimensions to enable approval and construction.

ii) Where a detailed drawing has been produced for Resource Consent or Engineering Approval, that should be used.

iii) Where a few additional features need to be shown on drawings, such as a gradient that is not standard or existing infrastructure that is close to the crossing, these items must be accurately surveyed to add to the drawings.

iv) Where a more detailed survey is required to enable a non-standard crossing to be designed digitally in three dimensions, a point cloud survey using LIDAR photography will often be most useful.

2.2.2 Drawings

i) Refer to Attachment B for Example Drawings for Vehicle Crossing Applications.

ii) Provide a site layout plan of the vehicle crossing with finished levels, ground levels and identified contours lines. Show relevant dimensions for all key points of the horizontal and

vertical alignments. Show any structures relating to the vehicle crossing and driveway and any other nearby structures.

iii) Provide vehicle tracking plans to show that all necessary turns for all design vehicles can be made, except for Standard Crossings meeting all conditions in Section 8.2. VT0000 Series Vehicle Tracking Envelopes may be used. For vehicle tracking paths not following any of these envelopes, specialist tracking software must be used.

iv) Provide longitudinal sections from the centre of carriageway to the end of any parking space. If the gradients are steeper than 1 in 6 for Hauraki Gulf Islands applications and steeper than 1 in 5 on mainland Auckland applications, including on the inside edge of any curves, provide a longitudinal section for both edge lines.

v) As part of the longitudinal sections, show complying vertical transitions at all crest and sag changes. Also, show the gradients for each vertical section and their associated horizontal alignments including horizontal curve radii.

vi) Provide typical cross sections for the vehicle crossing and to include 5 m either side of the vehicle crossing and edges.

vii) Provide typical cross section of any walls and include 5 m either side to pick up any soil surcharging above the wall or slope drop-off below the wall. Show wall subsoil drainage and linkage to private drainage, backfill material and its quality, handrail/vehicle restraint plus their fixing to the wall.

viii) Show on the layout plan how stormwater run-off from the vehicle crossing and driveway will be managed for 10% and 1%AEP design storms. Also indicate how any natural drainage patterns within the road reserve flow, as well as SW run-off under/over the vehicle crossing and along the edge of seal.

ix) Show road assets, especially any within 1 m of a proposed crossing. These assets are to include signs and markings, parking bays, footpaths and cycle paths, safety barriers and fences, street lights, signal poles, drainage assets, bus stop assets, cabinets, street trees (including root zone), landscaped gardens, structures, plinths and sub-surface chambers.

x) Show utilities within the road reserve on the layout plan. Identify any utilities that might be impacted by the proposed vehicle crossing and might need to be relocated, including power poles that are within 1 m of the driveway as well as any power pillars, access chambers, etc.

2.2.3 Supporting Information

To assist with the EA and Encroachment applications and for records purposes, AT require:

i) Design reports and drawings that have been prepared by a suitably qualified person.

ii) Except for **Standard crossings – Residential** and **Standard Crossings – Low Traffic Local Streets**, the application must state the Design Vehicles that are intended to use the crossing. These may be defined in Resource Consent for the site or based on Permitted Activity class for the Land Use Zone.

iii) For steep or unstable slopes, provide geotechnical reports covering the relevant vehicle crossing area with its conclusions and recommendations. Site investigations, to be included within the report/sections, are to have been undertaken on the general vehicle crossing area rather than inferred from site investigations within the private property.

iv) If there is a build-up of fill for retaining walls or embankments on slopes, geotechnical analysis is required to confirm that the slope stability is acceptable. AT's preference is not to have cut and fill batters within its road reserve and for these sections to be walled.

v) Engineering calculations for all disciplines to be provided that have been prepared by a suitably qualified person.

vi) Copies of approvals from upstream application processes. Refer to Attachment A for processes.

vii) Any other relevant supporting information.

3 Design – Standard cases

3.1 Road elements

AT published information on existing, proposed and planned road networks and AC records of Consents and Engineering Approvals should be used to determine whether any of the following elements are or will later be present at or adjacent to the vehicle crossing. Vehicle crossings must be designed to allow for the construction of planned elements in the future and to accommodate existing elements.

i) Berm

ii) Footpath

iii) Cycleway

iv) On-street parking

v) Street furniture including signs, poles and utility infrastructure

vi) Bus stop and shelter

vii) Traffic calming or traffic islands

viii) Road drainage infrastructure

3.2 Standard Crossings – Residential (up to 9 parking spaces)

AT published Standard Engineering Drawings may be used where the following conditions are met. Where these conditions are not all met, a custom design must be prepared that meets the requirements for the remainder of Section 3 and Section 4: Special Cases.

Issue	Standard	See also
AUP Rules	Driveway complies with AUP Permitted Activity Rules	1.5
Berm Width	Distance from kerbline to road boundary is 2.8 – 5.0 m	4.1, 4.2
Crossfall	Road crossfall for 2 m from kerbline is between ±3% towards the lip of channel	4.6
Berm gradient	Gradient of the crossing between boundary and the back edge of any existing or possible future path is between ±5%	4.4, 4.5
Freeboard	Level at road boundary or at back of path is more than 200 mm above the road channel invert	4.7
Angle of driveway	Centreline of the driveway is straight and between 80° and 100° relative to the kerbline	4.3
Road infrastructure	No infrastructure (including an adjacent vehicle crossing) is within 1.0 m of the proposed crossing	5.1
Design Standards	The standards for Geometrics, Gradients and Visibility are met	3.5, 3.6, 3.8

3.3 Standard Crossings – Low Traffic Local Streets

Turning in and out of vehicle crossings on streets that are low speed and low traffic may use all the width of the roadway. The width at kerbline on Standard Engineering Drawings is set at rear width + 1400 mm to be satisfactory for all normal street conditions. This may be reduced to rear width +400 mm and side splays reduced from 900 mm to 600 mm if all the following conditions are met:

i) The crossing is intended for 85%ile cars only

ii) The street is expected to carry no more than 300 v/hr

iii) The street is a local street with design speed of 30 km/h

iv) Width of street is not less than 6.0 m kerb to kerb

v) No kerbside parking is permitted opposite the crossing for at least 10 m either side of the centreline of the crossing

vi) The crossing is at least 10 m from an intersection

vii) No other Special Case issues conflict with this reduction in width

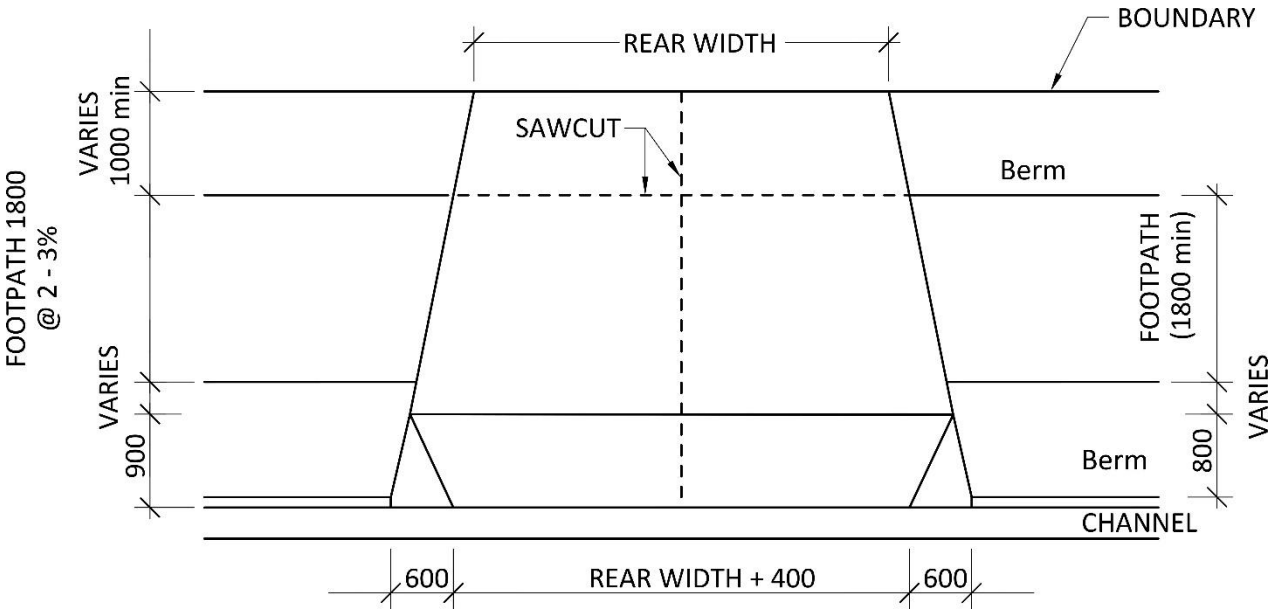

Figure 6 Low traffic local street vehicle crossing

3.4 Shared Vehicle Crossings

If adjacent driveways are less than 4.2 m apart at the property boundary, the vehicle crossings will not be able to be separated by a vertical kerb at the kerbline. Adjoining crossings must be designed as Shared Crossings, to provide access to and from each driveway served.

i) Footpath must be 1.8 m wide through Shared Crossings. No width reduction is permitted.

ii) The length of dropped crossing kerb at the kerbline must not exceed 15 m for any one shared crossing unless in an industrial area.

iii) Dimensions of front ramp, footpath and back berm should be such that vehicles cannot readily park across the footpath. A landscaped back berm between driveways sharing the crossing may help to do this.

Figure 7 Shared vehicle crossing

3.5 Geometrics

i) For **residential** crossings to narrow roadways less than 3.0 m wide free from parking, **rural** vehicle crossings and **commercial vehicle** crossings, entry and exit tapers will vary depending on the Design Vehicles. Refer to AT's TDM vehicle tracking library or VT0000 Vehicle Tracking Envelopes for a suitable Design Vehicle to help determine shape and dimensions.

ii) AT require a 2.25 m off-set from the edge of seal or top of channel lip to back of any possible future footpath for both edges of the vehicle crossing. A 155 mm height difference is to be provided on both vehicle crossing edges with the back of possible future footpath falling back towards the carriageway.

iii) For the Hauraki Gulf Islands, a 1.9 m off-set is required from the edge of seal or top of channel lip with a 155 mm height difference.

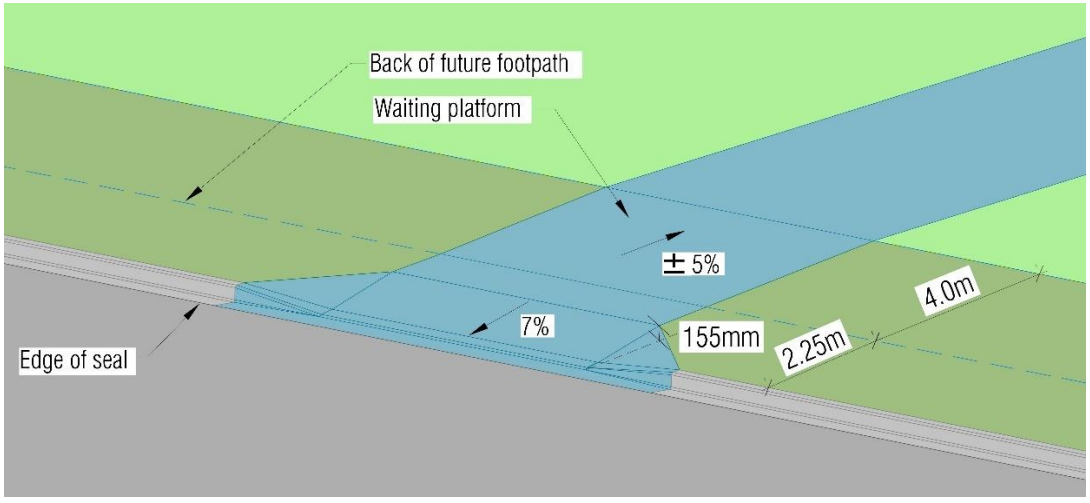

Figure 8 Vehicle crossing allowing for future footpath

iv) Under the Auckland Unitary Plan, a 4 m long waiting platform is to be provided for **residential** use and a 6 m long platform for all other uses. It to be provided at the road boundary but located within private property.

v) However, if the waiting platform is not provided within the driveway at the road boundary, AT require a waiting platform at the back of any existing path or possible future path. A waiting platform is not required for Waiheke Island or other Hauraki Gulf Island applications but should be provided if it is practicable.

3.6 Gradients on Vehicle Crossings

i) Gradients between the roadway and the road boundary are to comply with those shown in the Standard Engineering Drawings listed in Section 3(iii) where practicable.

ii) Gradients are also to comply with AUP permitted activity requirements within road reserve:

Access type	**Maximum gradient**
Vehicle access serving one residential rear site	1 in 4 (25 %)
Vehicle access serving any other residential activities (including rear sites)	1 in 5 (20 %)
Vehicle access used by heavy vehicles	1 in 8 (12.5 %)
Vehicle access serving all other activities	1 in 6 (16.7 %)
AUP Hauraki Gulf Islands residential (except access to a parking platform)	1 in 6 (16.7 %)

iii) Gradients are to be measured along the steepest edge of the vehicle crossing.

iv) Existing or future path crossfall should be 1-2% where possible, or within ± 3% where constrained.

v) The levels and width of the pedestrian through route should not be altered, except that the width may be reduced to not less than 0.9 m where necessary to provide the vehicle ramp down to the channel line. Refer to AT Infrastructure Design Guide Urban and Rural Section 9 Vehicle Crossing Figure 3 for more clarification of the situation.

vi) A waiting platform must be provided clear of the footpath, usually within the property boundary, with a gradient of not more than 5%, length 4m for **residential** access and 6 m for **all other** accesses.

vii) For **residential** access, to avoid the underside of the vehicle striking the ground a change in gradient exceeding 1 in 8 (greater than 12.5% change) at the summit or a 1 in 6.7 (15% change) at a sag must include transition sections to achieve adequate ground clearance, refer to Figure E27.6.4.4.3. Typically, a transition section requires a minimum length of 2m.

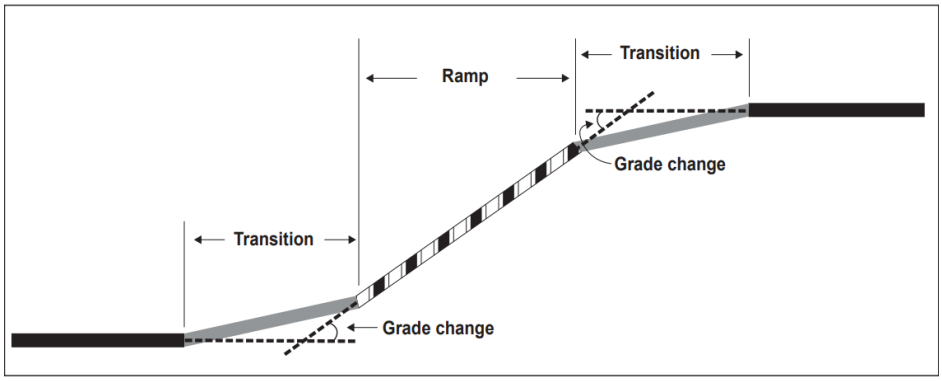

Figure 9 Gradient transitions

viii) Where an oblique change of grade occurs that differs between the left and right wheel tracks of the Design Vehicle, any wheel of the vehicle must be not more than 120 mm above or below a plane defined by the surface level at the locations of the other three wheels. The crossfall, at right angles to the path of a vehicle, must not change by more than 7% over a distance of 3 m. For example, if a footpath has a gradient of 12%, then a parking platform with 5% crossfall must be at least 3 m from the back of the footpath and a level garage threshold must be at least 5 m from the back of the footpath.

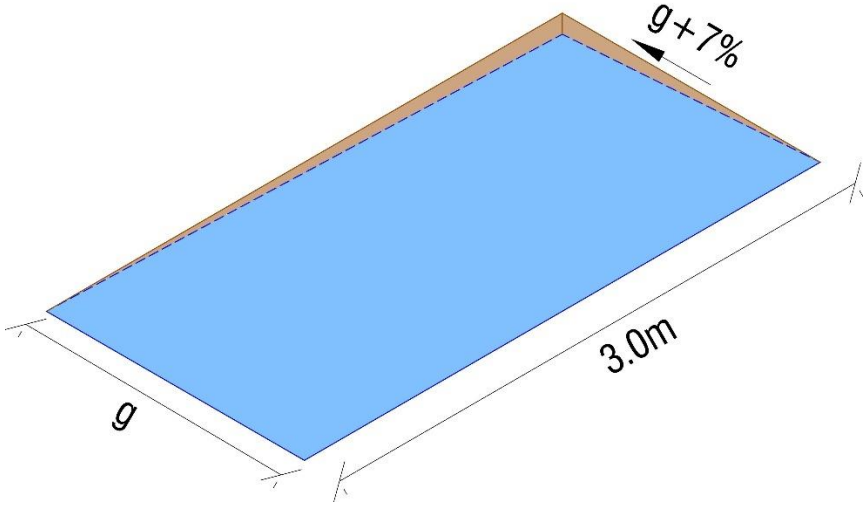

Figure 10 Change of crossfall

ix) For **commercial vehicle** access, to provide ground clearance and to avoid exceeding fifth-wheel hitch capability for semi-trailers a change in gradient exceeding 1 in 20 (3.5%) for crest change or 1 in 17 (6%) for sag change must include a transition. Transition may be either a vertical curve or a series of 2m long flat transition panels. The total length of the transition is derived from the K value (length in metres for each 1% change in grade). Footpath and waiting platforms may help to form these transitions.

Largest Vehicle	Crest K value	Sag K value
8.3 m truck	0.8	0.8
17.4 m semi-trailer	1.0	1.33
HPMV semi-trailer, fuel tanker, car transporter or Over -dimension trailer	2.1	1.33

3.7 Entry and Exit Visibility

i) Drivers must be able to stop and see a clear opportunity to go before crossing a path or entering a traffic lane. Other road users must be able to see an emerging vehicle and stop safely if the vehicle fails to give way to them.

ii) Visibility envelopes are to be provided in accord with this Table. They are not to be obstructed by fixed or moveable street furniture larger than 200 mm width

Driveway type	Through route	Path user speed (km/h)	X (m)	Y (m)
Residential single dwelling with driveway <7 m	Footpath (secondary)	5	3 From edge of footpath	5
	Footpath (primary) and near schools, shops and other high-use activities	10	3 From edge of footpath	7
	Shared path	15	3 From edge of path	10
	Cycleway	25	3 From edge of cycleway	24
	Traffic lane	V	3 From kerbline	SSD
All other accesses	Footpath (secondary)	5	10 From edge of footpath	5
	Footpath (primary) and near schools, shops and other high-use activities	10	10 From edge of footpath	7
	Shared path	15	10 From edge of path	10
	Cycleway	25	10 From edge of cycleway	24
	Traffic lane	V	10 From kerbline	SSD

Note 1: X determined by driver position when stopped or SSD for other cases.
Note 2: Y determined by SSD for path users
Note 3: V is Design speed for the road
Note 4: For SSD refer to Austroads AGRD-4A Section 3.4 and Appendix A.3.

iii) If the vehicle crossing crosses a cycle path or shared path, ensure provision for cyclist visibility splays. Refer to AT's TDM for calculations of cyclist stopping distance. Any reduction in cyclist stopping distance will be at AT's discretion. A speed management ramp or speed hump may be required to guide drivers to stop where they may observe path users before driving across a cycle path or shared path.

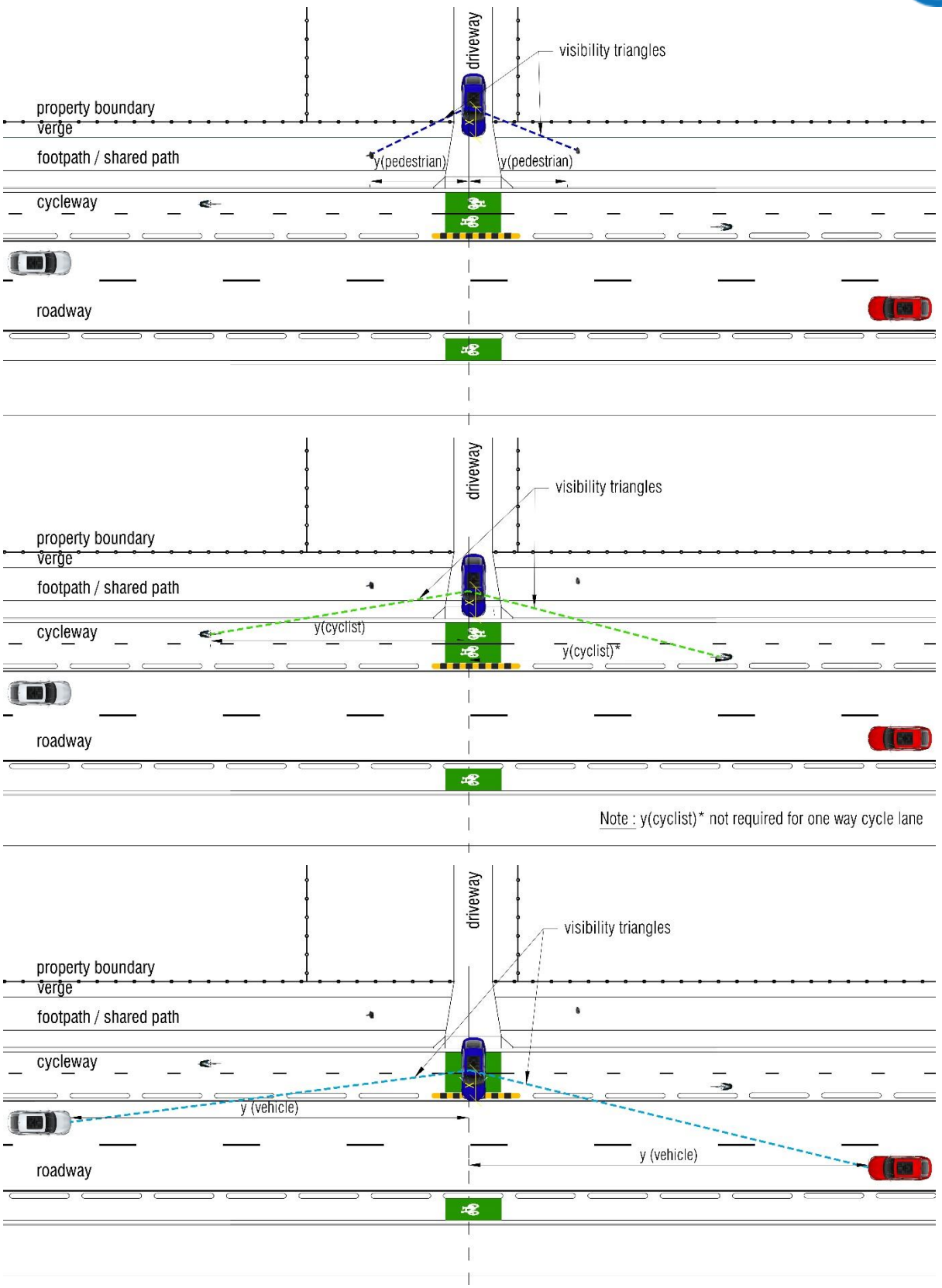

Figure 11 Visibility envelopes

3.8 Fences and Gates

i) Fences on either side of a vehicle crossing must not obstruct the visibility envelope. Party fences between properties adjacent to driveways should, where agreement can be obtained, be set back from the visibility splay, or made 80% visually permeable, or be not more than 600 mm high within the visibility splay.

ii) For a vehicle crossing on an **arterial or collector** road, unless kerbside parking is permitted close to the vehicle crossing, any gate must be set back by the length of the Design Vehicle; except that a commercial business use that has published business hours may have a security gate for use only out of business hours.

iii) For **rural and commercial** vehicle crossings in speed zones of greater than 50 km/hr, a gate might sometimes be closed. The Applicant is to ensure that any gate is offset sufficient distance back from the edge of carriageway seal to allow the Design Vehicle to stop and stand clear of the trafficked carriageway. At times that might require the gate to be offset and located back within private property.

iv) An exit-only one-way vehicle crossing may have a gate closer to the road boundary, provided it neither opens into a path or roadway nor obstructs the visibility envelope.

Figure 12 Gate position

4 Special Cases

Where the conditions for Standard Crossings are not met, AT published Standard Engineering Drawings may be varied as specified in this section. Where more than one Special Case is present, the interaction between them must be considered in the design. Note that a Resource Consent must be obtained if the Permitted Activity Rules of the AUP are not met, unless an existing driveway is to be used unchanged. AT may require amendments to the design submitted before issuing approval.

4.1 Wide Berm

i) Width of vehicle crossing may taper to the same width as the driveway at a distance of 5 m measured from the kerbline then continue to the road boundary at that width.

ii) If a passing bay is required at the start of a private way, it may be formed partly or wholly within the road reserve if necessary, measured from the rear edge of any existing or possible future path.

iii) Exceptionally, where a complying driveway cannot be formed to provide vehicle access to a property then a parking bay or structure may be licensed as an encroachment wholly or partly within the road reserve. A vehicle crossing to the feature must be designed based on vehicle tracking but complying with all other vehicle crossing Standard or Special Case requirements.

4.2 Narrow Berm

i) Where the distance from the kerbline to the road boundary is less than 2.8 m, the Design Vehicle may not be able to turn within the maximum Permitted width of driveway at the road boundary. This includes turning into half the width of a two-way vehicle crossing. The width of the vehicle crossing at the kerb edge may be increased to fit the vehicle tracking envelope for the Design Vehicle turning from a safe position on the roadway. The width of the driveway at the road boundary may also be increased to fit the turning envelope, subject to any necessary Resource Consent Condition.

Figure 13 Vehicle crossing in narrow berm

4.3 Curved or angled driveway

i) 90° access is preferred. Vehicle tracking entering and exiting the driveway from and to a safe position on the roadway must be provided to determine a suitable layout for the vehicle crossing. This may be wider than the standard crossing. Visibility checks should be carried out with regard to the angle of observation as described in Austroads to determine the extent of clear visibility envelope.

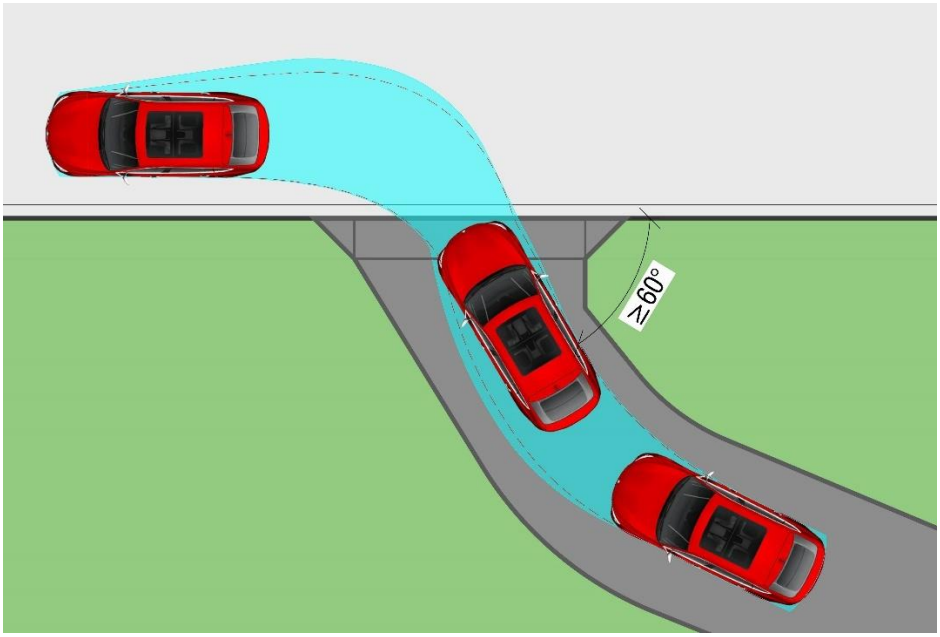

Figure 14 Angled driveway example

ii) If the vehicle crossing is located within a slope, a 2-3% vehicle crossing crossfall is to fall back towards any inner kerb and channel or dish channel rather than towards the vehicle crossing's outer edge. Alternatively, provide a kerb and channel on the outside edge if the fall is to the outer edge. This requirement is to ensure that the downhill supporting slope is not saturated and weakened during high rainfall events.

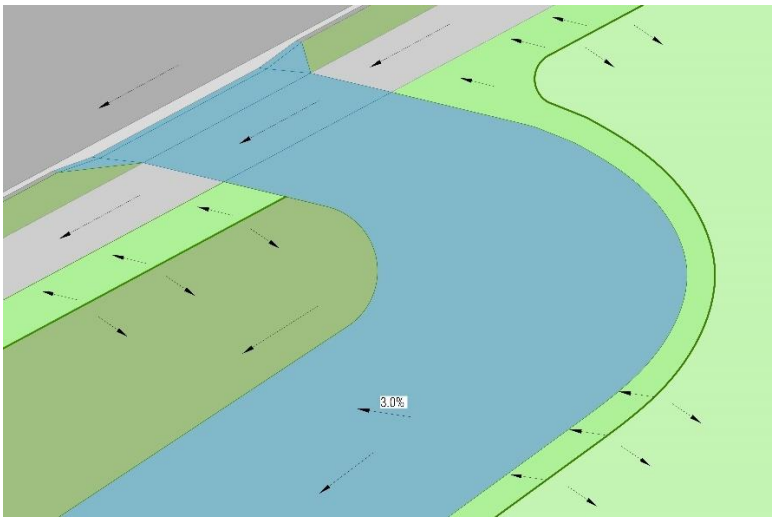

Figure 15 Surface water control in sloping berm

4.4 Steep Driveway

xi) Steep gradients with tight horizontal curves are not acceptable where there will be loss of wheel traction. In the case of vehicle crossings above the carriageway, in addition to the vehicle crossing driver, there can be an additional risk of injury to both pedestrians on footpaths and drivers of vehicles on the road carriageway.

xii) Where a waiting platform cannot be provided within the private driveway, all or part of the length of the platform may be provided in the berm part of the crossing, measured from the rear edge of any existing or possible future path.

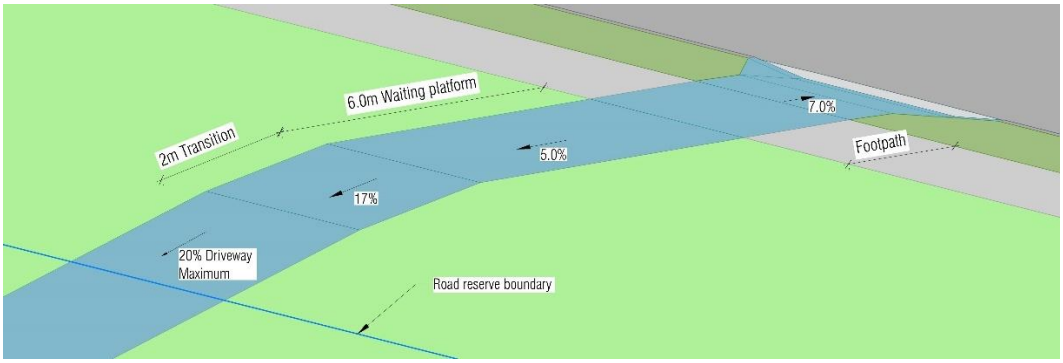

Figure 16 Waiting platform in road reserve

4.5 Steep Berm

i) Where a berm has a gradient >±5% from the road edge or from the edge of any path, transition requirements above must be provided, together with oblique change of grade standard. Maximum gradient must not exceed those in Section 6.2. If a waiting platform cannot be formed, then for a driveway rising towards a path or a road, visibility standards for pedestrians and for vehicles must be met.

ii) Effects on road drainage must be considered and provided for.

iii) For steep crossings requiring a change in the level of the footpath through the crossing, footpath ramps either side of the crossing should not exceed a grade of 8%. If this is not possible, the grade should not exceed 12% and the level difference at this grade should not exceed 75 mm. Check surface water flow depth to avoid flood nuisance.

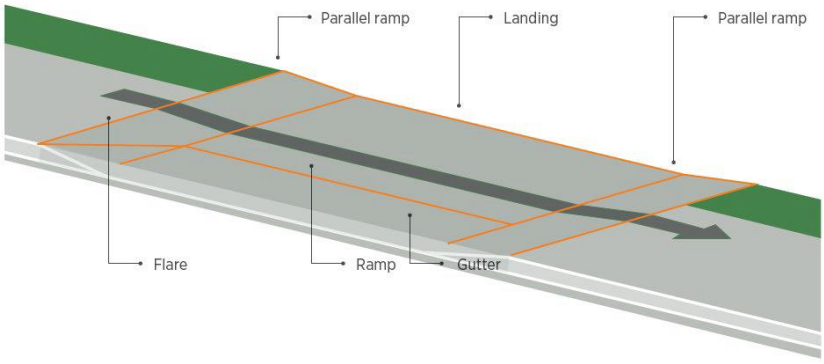

Figure 17: Dropped footpath for steep berm

iv) The horizontal alignment of a path may be changed if this is necessary for transition gradients to be achieved, while maintaining any minimum clearance required from traffic lanes.

4.6 Steep crossfall

If the road falls towards the lip of channel at more than 3% crossfall gradient, then the vehicle crossing ramp and levels must be varied to meet transition design standards to avoid vehicle grounding. This may affect the level and gradient of the path and berm parts of the crossing, which must comply with Steep Berm standards.

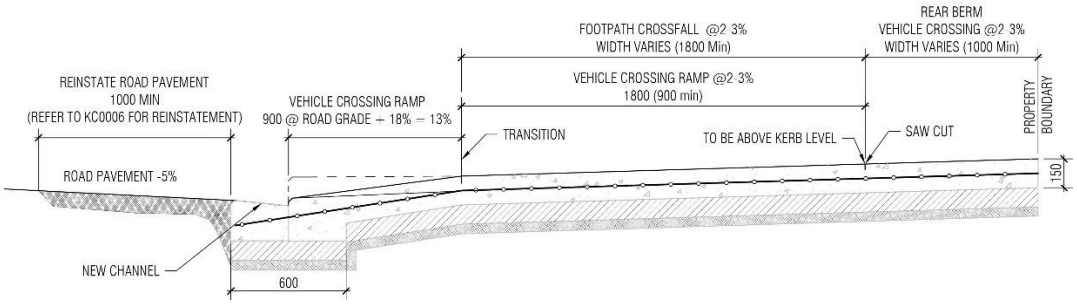

Figure 18 Effect of steep crossfall

4.7 Low freeboard

i) Road drainage design must be investigated for surface water management in accord with AT's TDM or AC's CPLDS and the vehicle crossing must be designed to avoid adverse effects on paths or discharge onto private land if either of these conditions apply:

   a. if the front edge of any path is less than 150 mm above the invert of the road channel

   b. if the back edge of any path or the level of the crossing at the road boundary is less than 200 mm above the invert of the road channel

ii) A vehicle crossing may be located where an existing or designed overland flow path discharges from the road reserve. If this is intended, then:

   a. the driveway must be designed to convey the overland flow path clear of any habitable floors or other building floors as required by the Building Code and AUP

   b. a specific spillway design must be developed in conjunction with vehicle crossing design standards.

iii) A vehicle crossing close to where an existing or designed overland flow path discharges from the road reserve must be designed to avoid unintended diversion of flood flow.

iv) A grated channel drain or other inlet in front of the kerbline may intercept some channel flow with discharge to a nearby catchpit or manhole.

5 Further design issues

5.1 If infrastructure in road reserve is affected

i) Any infrastructure or utilities above or below ground that are affected by the proposed crossing must be removed, relocated or replaced at the applicant's expense. The design of the crossing may be altered to avoid affecting infrastructure, subject to meeting Special Case standards.

ii) Any stormwater management device including catchpits, raingardens, grated channels or combined kerb and drains must be avoided or relocated clear of the crossing.

iii) Any feature within the roadway close to the crossing including streetlights, bus stops, parking bays, traffic islands, pedestrian crossings or traffic calming devices that may affect or be affected by the path of vehicles using the vehicle crossing must be investigated. Relocating or changing road infrastructure should be avoided where practicable. Relocation or removal of features may be considered but will require review and approval by AT.

iv) See Section 5.8 for utilities infrastructure.

v) See Section 5.9 for vegetation.

5.2 Turning Provision

i) Refer to AUP Rule E27.6.3.4 for Reverse Manoeuvring. Sufficient space must be provided on site, so that vehicles do not need to reverse off the site or onto or off the road from any site where any of the following apply:

(a) four or more parking spaces are served by a single access;

(b) there is more than 30m between the parking space and the road boundary of the site; or

(c) access would be from an arterial road or otherwise within a Vehicle Access Restriction covered in AUP Standard E27.6.4.1

ii) While clause i) above is an AUP requirement within the private property, the same requirement will apply if turning provision is to be provided within the road reserve.

5.3 Passing Bays

i) AUP requirements for passing bays are to apply. Sometimes a passing bay layout is provided starting just off the back of the footpath, which allow two vehicles to pass and to not obstruct vehicles if leaving/turning off the carriageway, especially if the vehicle crossing's approach to the carriageway has limited visibility.

5.4 Pedestrian Access

i) A driveway may have separated pedestrian access up to the road boundary. The pedestrian access must be continued with a walkway to connect to the footpath.

ii) The walkway shall be the same width as the driveway access path and shall be constructed to AT walkway design standards matching texture, type, colour and material of the footpath.

iii) If the walkway is raised above the driveway, then the kerbing shall transition to the same level as the footpath at the crossing edge over not more than 1.0 m length.

iv) If the walkway is separated from the edge of the driveway, the same horizontal separation or at least 1.0m shall be kept from the edge of the vehicle crossing.

5.5 Retaining walls

i) If a wall is required to support a vehicle crossing below the carriageway, the wall design is to consider 10 kPa footpath surcharge loading due to maintenance vehicles within the existing or possible future footpath. It should also allow for slope surcharge to help determine the equivalent wall height. A Building Consent is required if the wall has an equivalent height of 1.5 m or more. Typically, if any structures are 200 mm or more high, an encroachment licence is required.

ii) The Applicant is to provide a typical cross section of the wall including wall sizings/ dimensions, footings, sub-soil drainage and handrails. The application will also show how the sub-soil drainage links back into the private property drainage.

iii) Within the typical wall section, show how any stormwater run-off will be managed e.g. kerb and channel. Vehicle crossing crossfall is to fall towards the inner edge rather than towards the outer edge.

iv) During the Building Consent process, for vertical drops of 1m or more, details are to be provided to AC of a compliant handrail and if required also vehicle restraint, such as kerb and channel, vehicle stop or side barrier. A sight rail and side restraint may be required on lesser vertical drops at AT's discretion. AT may require further vehicle restraint where the wall is high and is located close to the back of existing or possible future footpath. The fencing, handrail or vehicle restraint requirements for a wall requiring BC are to be determined by AC in conjunction with AT advice.

v) Visibility splays are to be provided for vehicle crossings with high cut banks or walls.

vi) The ends of the walls are to stop at 100 mm clear of the back of any possible future footpath. This requirement is to ensure that any possible future possible footpath development is not disrupted by the end of wall.

vii) Where walls for vehicle crossings below the carriageway are to be located close to the line of any possible future back of footpath, provision is to be made for any additional loadings associated with the footpath. If the wall is sloping downwards and following the vehicle crossing gradient, both loading and location provisions would also need to be made for any possible addition wall on top of the vehicle crossing wall to bring levels up to the back of footpath level.

viii) Where walls for vehicle crossings above the carriageway are to be located close to the back of current or possible future footpath, the vehicle crossing wall is to make provision so that utilities and associated trenching can be located within 400 mm of the wall foundations.

ix) Private walls are not to encroach onto the road reserve and includes the footings, concrete embedment, the sub-soil drainage or any combination of them. Similarly, no part of the encroachment wall is to be located within the setback distance, including any wall footing, foundations and sub-soil drainage for walls.

5.6 Stormwater

i) Stormwater (SW) run-off from the driveway is to be linked into either the property's own stormwater system or into a public mains system or natural watercourse. If the SW run-off is to be discharged onto road carriageway, it would require a kerb discharge approval, which would be approved at the discretion of AT.

ii) AT does not favour the Kerb Discharge approach and the applicant will need to demonstrate that other options were not available. In some situations, a kerb discharge will not be possible as the roads SW drainage system is designed to only cope with its own SW run-off.

iii) The Applicant is advised to check that the vehicle crossing will not adversely impact on the natural ground contours or obstruct drainage of the road reserve or carriageway. The vehicle crossing should not cause SW run-off from either the road reserve or the vehicle crossing to be diverted into adjacent properties.

iv) For vehicle crossings below the carriageway level, the Applicant is to indemnify AT against any liability relating to SW run-off from the vehicle crossing onto their own property.

v) If the vehicle crossing obstructs SW flow across the site frontage, a minimum 300 diameter culvert under the driveway must be provided if the swale drain is deep. Calculations of the SW run-off from the catchment area will be required to ensure that the culvert is not under-capacity. Alternatively, a dip in the vehicle crossing could be provided for AT to consider, if the swale drainage is shallow.

5.7 Surfacing/Sealing

i) All vehicle crossings to be surfaced or sealed between the kerb and the private boundary, where the road carriageway is already sealed.

ii) If there is a further risk of aggregate migrating onto the carriageway from the above driveway portion, AT will request further surfacing or sealing to be provided or alternative mitigation to be provided. For vehicle crossings off unsealed roads, AT will consider surfacing or sealing on a case-by-case basis.

5.8 Utilities

i) As previously mentioned under Drawings, the Applicant is to investigate and mark any utilities on the application drawings.

ii) Evidence that the Applicant has consulted with relevant Utility organisations is to be provided with the Application.

iii) For any relocated power poles or streetlights, the geotechnical report or report's geotechnical section is to have investigated this matter and confirmed the suitability of the new pole location.

iv) For parking areas with more than 10 spaces, lighting is to be provided. While this lighting applies to the parking area, approaches on road reserve to the parking area may also require lighting for consistency of the route.

5.9 Vegetation

i) Any trees that are to either remain or be removed within the vehicle crossing area are to be clearly marked on the layout plan. Ensure that the drip line of any tree that is to remain is marked to ensure that it will be located clear of the vehicle crossing works.

ii) If vegetation needs to be cut to obtain an adequate sight distance, it is the Applicant's responsibility to maintain/cut that vegetation to provide sight distance. If the vegetation to be maintained/cut lies on another property frontage, permission from the affected property owner is required. Refer to Schedule 1 Trees and Vegetation Responsibilities Item 8 for private property owner's responsibilities for trees and vegetation causing obstruction (Attachment C).

iii) Works within the dripline of street trees, including trimming or removal, requires Landowner Consent from AC.

iv) For existing or proposed large vegetation with roots, ensure that a suitable root restraint material is provided to mitigate any adverse impact on walls and other structures.

v) Allow 1 m clearance between the outer edge of the vehicle crossing to the nearest edge of the tree. Any proposed vehicle crossing that is within the root zone of a tree on road reserve that is to remain must take into account any conditions set by AC.

6 Documentation, Certifications and Approvals

i) The Applicant is to provide a copy of the signed PS1 designer form when submitting their application for the Engineering Approval, encroachment approval and Vehicle Crossing Approval. This form will be reviewed by AT. Requirement for PS1 may be waived for simple crossing at discretion of Road Corridor Inspection Team.

ii) If the design involves geotechnical, structural and civil engineering, any combination of those disciplines or other design disciplines, separate PS1 forms are to be provided by all parties for their part of the design.

iii) Depending on the nature of the project AT may require further signed PS form certification to be provided. AT will inform the Applicant if further signed PS forms are required, as part of reviewing the application.

iv) Copies of upstream approvals including conditional approvals to be provided at the time of lodging an application, particularly for the Vehicle Crossing Permit application.

v) Where requested by AT, copies of all relevant design reports, geotechnical reports, engineering calculations and supporting drawings are to be provided to AT for records purposes.

vi) AT will require a Code Compliance Certificate (CCC) to be provided on completion of the works and to be provided to AT for records purposes. AT will also require copies of the as-built plans for any encroachment works.

7 Practice Note Approval

		Signature	Date
Practice Note Contact	Andy Irwin Principal Specialist – Transport Design	DocuSigned by: E0C59C1A0AD541D...	22 July 2025
Reviewed by:	Manoharan Subramaniam Road Corridor Inspection Manager	Signed by: 8A3AC6A1820842B...	22 July 2025
Endorsed by:	Laurence Jones Road Corridor Requests Manager	Signed by: 03DB60CFABED476...	23 July 2025
Authorised by	Chris Beasley Transport Design and Standards Manager	DocuSigned by: 646D1613508748A...	04 August 2025
Effective date	04 August 2025		

AT reserves the right to review, amend or add to this Practice Note at any time upon reasonable notice to users of the Transport Design Manual and related documents.