

Heavy Vehicle Network Access Considerations

RDN 04-01
July 2019

1. Purpose

These guidelines must be considered on all new road and road upgrade projects during the design phase along corridors utilised by heavy vehicles.

These guidelines outline the minimum requirements which should be adopted to ensure the current and future performance of the network for large and heavy vehicles.

2. Considerations

2.1. Primary Considerations

The [heavy vehicle maps](#) listed below will help determine whether your nominated route will impact a road or area utilised by heavy vehicles, and are available on the VicRoads website.

- B-Double
- Oversize & Overmass (OSOM)
- Oversize & Overmass Agricultural Vehicles
- Emergency & Emergency Preparedness maps
- HPFV B-Double – Quad-Tri and Quad-Quad
- HPFV A-Doubles (all maps)

2.2. Other Considerations

- [Movement and Place classifications](#) (VicRoads staff)
- If the subject or surrounding corridors are impacted by a gazetted network mentioned above
- Areas of significant industrial activity
- Heavy vehicle traffic volumes (AADT)
- Victorian road rules to ensure infrastructure changes do not force illegal movements.

3. Performance Based Standards

The Performance Bases Standards (PBS) Scheme allows complying vehicles to operate as productively, safely and sustainably as possible on networks that are designed for their level of performance.¹

3.1. PBS Vehicles and Austroads Vehicles

The PBS Scheme covers a range of large and heavy vehicles² and not just the vehicles that are prescribed in the Austroads Guide to Road Design and Austroads design vehicles³.

Table 1 identifies the equivalent Austroads vehicle for the various PBS levels.

PBS Road Class	Austroads Vehicle
PBS Level 1	19m prime mover and semitrailer
PBS Level 2	26m B-double
PBS Level 3	35.4m B-Triple
PBS Level 4	53.5m Type 2 road train

Table 1: PBS Level and Austroads Design Vehicles⁴

Where the PBS level is specified in this note, the equivalent Austroads vehicle in Table 1 should be used for design and checking purposes.

3.2. PBS Class 'A' and Class 'B' Vehicles

The PBS Scheme outlines two classes of vehicles based on the length of the vehicle, the trailer combination and the

¹ www.nhvr.gov.au/road-access/performance-based-standards

² Refer to "PBS Vehicle Configurations" for vehicle combinations - <https://www.nhvr.gov.au/files/201810-0923-pbs-vehicle-configurations.pdf>

³ Refer to AP-G34-13 Austroads Design Vehicles and Turning Path Templates Guide

⁴ Adapted from Table 1 from NHVR "Performance Based Standards – An introduction for road managers"

resulting geometric turning performance of the vehicle. The standard vehicle lengths are referred to as Class 'A'.

The length of Class 'A' and Class 'B' vehicles are noted in Table 2. Class 'B' vehicles within the same PBS level are longer than Class 'A'. Although Class 'B' vehicles are longer than Class 'A' vehicles, due to the configuration of trailers, the on-road performance (such as low speed swept path turns) of a Class 'B' vehicle is no worse than a Class 'A' vehicle of the same PBS level.

PBS Road Class	Overall vehicle length (m)	
	Class 'A'	Class 'B'
PBS Level 1	$L \leq 20.0$	$L \leq 20.0$
PBS Level 2	$L \leq 26.0$	$26.0 < L \leq 30.0$
PBS Level 3	$L \leq 36.5$	$36.5 < L \leq 42.0$
PBS Level 4	$L \leq 53.5$	$53.5 < L \leq 60.0$

Table 2: PBS network access by vehicle length ⁵

For this note, the PBS level requirements refer to Class 'A' lengths identified in Table 1. Designers should use the vehicles in Table 1 to design and check access requirements.

3.3. Low Speed Swept Path Widths

Table 3 outlines maximum width of low speed swept paths for vehicles complying to each PBS level. This information can be used primarily to check compliance of existing infrastructure.

B-doubles operate on over 90% of the arterial network. Consequently, all arterial roads should be designed to provide for PBS level 2 access at a minimum.

PBS Road Class	Performance Level Required ⁶	Austrroads Vehicles	Movement & Place ⁷
Level 1	7.4m max	19m Semi-Trailer	N/A
Level 2	8.7m max	26m B-Double	F3
Level 3	10.6m max	35.4m B-Triple	F1 or F2

Table 3⁸: Maximum width of low speed (5km/h) swept path performance levels and Austrroads reference vehicles

Proposed designs that will impact access on B-double gazetted routes must be sent to the Heavy Vehicle business area at hv.design@roads.vic.gov.au for review before changes can be adopted.

⁵ Adapted from Table 3. PBS network access by vehicle length from NHVR "Performance Based Standards – An introduction for road managers" – May 2019

⁶ The performance level requirements for PBS road classes refer to a low speed swept path width with a 12.5m turning radius

⁷ External documentation is forthcoming.

4. Movement and Place Framework Limitations

The Movement and Place Framework is primarily focused on statutory (general access) vehicles as well as [Class 2 Freight Carrying Vehicles](#) as defined by the National Heavy Vehicle Regulator (NHVR). The classifications do not consider Class 1 vehicles and are also not responsive to last mile freight access. Therefore, the Movement and Place classifications must not be the only reference material used when assessing the impact of corridor works on heavy vehicle movements.

5. Intersection Design and Check Vehicles with Turning Radii

Table 4 applies to the design of all new and upgraded intersections, including roundabouts, and to be used in place of Austrroads Guide to Road Design Part 4: Intersections and Crossings - General, Table 5.1.

Intersecting road types ⁹	Design Vehicle & Turn Radius	Check Vehicle & Turn Radius
Arterial to Arterial (Includes Freeways & interchanges)	PBS level 2 Radius 15m	PBS level 3 Radius 12.5m
Arterial to Collector (industrial)	PBS level 2 Radius 12.5m	PBS level 3 Radius 12.5m
Arterial to Collector (residential)	PBS level 1 Radius 12.5m	PBS level 2 Radius 12.5m
Collector to Collector (residential)	Single unit truck/bus Radius 12.5m	PBS level 1 Radius 15m
Collector to Collector (industrial)	PBS level 2 Radius 15m	PBS level 3 Radius 12.5m
Arterial/Collector/Local to Local (residential)	Service vehicle (8.8m) Radius 9m	Single unit truck/bus Radius 12.5m
Arterial/Collector/Local to Local (industrial)	PBS level 2 Radius 12.5m	PBS level 3 Radius 12.5m

Table 4: Minimum Intersection Requirements

⁸ Data source: [C7.3 Table 10, Performance Based Standard Scheme the Standards and Vehicle Assessment Rules, 2008](#)

⁹ As defined in Table 4.1 of AP-G34 Austrroads Design vehicles and turning path templates guide. - <https://austrroads.com.au/publications/road-design/ap-g34>

Design and Check vehicle swept path analyses must be submitted with the design packages to validate that vehicle requirements have been adequately addressed.

These guidelines should be considered the minimum requirements for designing intersections. If these cannot be met, exemptions may be sought based on the criteria in Section 5.1.

Where there is specific land-use vehicle access and activity on the project (such as businesses, agricultural properties) that require movements of vehicles larger than specified in Table 4, then the specific project requirements should be the minimum adopted for the intersection swept paths or accesses.

5.1. Exemptions to the minimum requirements

Exemptions may be granted for existing intersections, provided that the **current level of access is maintained**, under the following conditions:

1. The road reserve or existing developments form stringent controls preventing a greater level of access
2. Where meeting the requirements would present a road safety risk (i.e. to pedestrians)
3. Where there are restrictions on the road limiting access to heavy vehicles. (Load limit signs, etc)
4. For non-Arterial to Arterial intersections, where there are pre-existing restrictions (geometry constraints, load limits, etc) immediately downstream of an intersection which would prevent heavy vehicle access.

5.1.1. Required supplementary information when applying for exemptions

If the Design and Check Vehicles with Turning Radii requirements cannot be met, the following must be provided by the project:

- A summary of the existing vehicle access, including a summary of the proposed vehicle access following the works
- Relevant design drawings which clearly indicate how the requirements cannot be met
- Overview of the impact meeting the requirements would impose

Exemptions seeking to provide a reduced level of access will need to be discussed with the affected Local Government Authority, then submitted to the VicRoads Technical Reference Panel (TRP).

6. Lane Widths¹⁰

In general, 3.5m lane widths should be adopted for designated freight routes, particularly for new works.

Lane widening should be provided for curves as required to accommodate the tracking of long vehicles. To determine the required additional width, refer to AGRD Part 3: Geometric Design, Section 7.9.

6.1. Tracking widths of heavy vehicles within a lane

Table 5 specifies maximum straight-line vehicle tracking widths as per the NHVR Performance Based Standards Scheme - The Standards and Vehicle Assessment Rules. These widths are the physical road space the vehicles take up and do not include clearances to lane lines.

PBS Vehicle Class	Widths at 90km/h
Level 1	2.9m
Level 2	3.0m
Level 3	3.1m
Level 4	3.3m

Table 5: High speed vehicle tracking widths

Tracking widths are a result of the trailer/s moving laterally as the vehicle travels at higher speeds along a road. The tracking widths in Table 5 demonstrate the importance of providing 3.5m standard lane widths on freight routes to allow for vehicle tracking with an appropriate factor of safety.

6.2. Exemptions to lane widths

Narrower lanes may be considered where any of the following apply:

- The road reserve or existing development form stringent controls preventing wider lanes
- The road is in a low speed environment
- Truck volumes are relatively low
- The alignment and safety records are satisfactory in the case of modifications to existing arterial roads.

6.2.1. Required supplementary information when applying for exemptions

If lanes narrower than 3.5m are proposed for freight routes, sufficient information regarding context must be provided to inform the decision. For project proposals, this should include:

- Summary of existing lane widths and posted speed limits along the corridor being considered
- Advice on any relevant corridor strategies that propose longer term geometric upgrades; statement summarising any geometric deficiencies inherent in the proposal

¹⁰ See also Austroads Guide to Road Design (AGRD) Part 3, Section 4 and VicRoads Supplement to AGRD Part 3

- Statement of current safety performance along the route being considered
- Statement on corridor road users including projected traffic volumes and freight vehicle numbers.

7. OSOM Vehicles

The NHVR define OSOM vehicles as [Class 1 vehicles](#) that include dozers, cranes, agricultural and emergency vehicles. OSOM vehicles are up to 5 metres wide and Agricultural vehicles can be up to 6.5 metres wide.

OSOM vehicles have a higher risk of rollovers. As such, these risks should be considered, particularly around raised platforms and where intersections are located on steep grades.

Before implementing network/route alterations in rural regions that will impact on road width, it is critical that the [Agricultural OSOM map](#) is consulted to identify the width of the agricultural vehicles permitted to use the route in the subject region. These vehicles are limited to a maximum speed of 50km/h, under the Gazette Notice. However, often travel at much lower speeds and need opportunities to move aside to allow traffic to overtake safely.

Proposals to amend existing roads need to provide cross sections detailing how this requirement will be addressed.

8. Minimum Height Clearance

[High clearance restrictions](#) on arterial roads are mapped and available on VicRoads website.

The height standard for arterial roads is 5.4 metres and 5.9 metres for OSOM routes, unless an exemption is provided.

9. Roundabouts and U-turns in rural areas

When a route is gazetted for heavy vehicle access in a rural area, provision should be provided for the vehicles to turn around, through a U-turn treatment or roundabout/intersection.

It is preferable to accommodate this type of movement at an intersection if there is no other opportunity to make this movement within 1km of the intersection in built up areas.

Contact

For further information please contact:

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Road Design Notes are subject to periodic review and may be superseded.

Road Design Note 04-01 – Revision Summary

Issue	Approved	Date	Amendment
04-01	A/M-SSE	July 2019	Version 2