



Government of South Australia

Department for Transport,
Energy and Infrastructure

COMMODITY NETWORK ROUTE GUIDELINES

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1. INTRODUCTION

The Department for Transport, Energy and Infrastructure (DTEI) seeks to encourage efficient and safe heavy vehicle operation.

Heavy vehicle transport plays an important role in supporting the State's economy especially for the transport of primary products such as the movement of grain from paddock to silo.

To meet the objective of South Australia's Strategic Plan a Heavy Vehicle Access Framework (HVAF) has been developed to provide the policy and direction to achieve a sustainable, efficient and environmentally friendly road freight transport system. This includes road access to local properties, farms and factories for the movement of all forms of produce and products.

Under careful management roads not principally designed for major heavy vehicle use can be used under certain conditions for the transport of specific freight on a restricted or limited basis without compromising road safety or damaging infrastructure. Under these circumstances, such roads do not need to meet the same road standards required for all year round heavy vehicle operations.

To facilitate this restricted freight transport task a commodity freight route category has been included in the HVAF. This document provides the specifications and assessment standards for routes used for the transport of commodity specific freight and is primarily intended for use by Authorised Assessors, whether in DTEI, Local Government or the private sector, to determine the suitability of routes for the operation of Restricted Access Vehicles (RAVs).

The assessment criteria for commodity networks is based on the national Performance Based Standards (PBS) Road Classification Guidelines with more flexible conditions applying which take into account seasonal or low frequency operation.

The PBS Road Classification Guidelines and Risk Assessment Principles should be used as a reference to support the use of these Guidelines for the assessment of commodity routes.

This document should also be read in conjunction with the Heavy Vehicle Access Framework.

2. COMMODITY FREIGHT

Commodity Freight is defined as a homogeneous bulk freight load (primary products) that is transported on an adhoc or seasonal basis from the place of production to the place of processing.

Bulk Freight approved for transport on the commodity freight network is as follows:

- Bulk Wine & Grapes
- Fertiliser
- Fresh Fruit & Vegetables
- Grain
- Hay & Bulk Stockfeed
- Livestock

- Logged Forest Timber
- Milk
- Wool (Baled)

It should be noted that bulk products are transported in a road vehicle of which a tank forms part or to which a tank is attached.

Dangerous Goods are not included as a Commodity Freight load as routes for dangerous goods need to be assessed in accordance with the Performance Based Standards (PBS) Scheme Network Classification Guidelines – July 2007 and any other regulatory requirements.

3. COMMODITY FREIGHT ROUTE STANDARDS

Commodity Freight Routes are routes that can safely accommodate RAVs on a limited or seasonal basis where traffic volumes are low and in most cases limited to particular users transporting specific commodities (ie the transport of grain from paddock to silo).

In this situation conditions or restrictions suited to local road operation can be applied to manage the safety risk and protect the infrastructure that may not necessarily be suitable for routes used for general freight operation.

Commodity Freight Routes only apply to local rural roads and do not include roads through large town centers.

In the first instance all Commodity Route Networks must be assessed on the basis of being gazetted. Depending on conditions of operation and impact on infrastructure, access may need to be controlled by permit to individual vehicles, but they will only apply in exceptional circumstances.

Due to their varying standards, commodity routes can be subject to greater change than a route approved for general freight (all year round operation). Therefore, the road authority may require Commodity Networks to be reviewed on a more regular or seasonal basis with a greater probability of access being changed or possibly revoked due to safety or infrastructure reasons.

4. CONDITIONS OF OPERATION

Any or all of the following conditions can be applied to routes that are considered appropriate for commodity operations:

- Access is limited to seasonal operation only, eg to align with harvest season
- Access is limited to a particular commodity
- Access is limited to specific times of travel
- Speed limits as low as 50 km/h may be applied to Commodity Routes
- Hauling vehicle to be fitted with yellow revolving flashing lights that can be seen through 360 degrees by oncoming or approaching traffic

- The driver may be required to stop and give way to other road users where they would normally have priority to allow the other vehicle to clear the intersection prior to the Restricted Access Vehicle undertaking a turning manoeuvre
- The vehicle must slow down and pull over to allow other vehicles to pass if overtaking or passing opportunities are limited.

5. PREREQUISITE REQUIREMENTS FOR ACCESS

Prerequisite requirements to approving a Commodity Route may be to:

- Improve gateway or paddock entry or exit points to provide greater turning radii to avoid damage, wheel scrubbing or rutting to the road surface.
- Undertake any minor works such as tree trimming to increase available road width or improve sight distances.

6. ASSESSMENT CRITERIA

6.1. Traffic Volume

Commodity routes should not be considered when current volumes, during the commodity transport period, exceed 1,000 vehicles per day.

In certain circumstances, depending on traffic volumes, a crash history investigation may need to be undertaken and included in the assessment.

6.2. Road Width

Road Width is one of the most important factors in determining the suitability of a road for use by heavy vehicles.

For low trafficked roads (see Table: 1), narrower lane widths can still provide for safe operation as:

- Speed is generally lower; and
- the drivers of both the RAV and opposing-direction vehicles will tend to slow down and move to the left of the road to provide sufficient clearance when passing each other.

Desirable minimum widths for sealed rural roads for B-Double and Double Road Train class vehicles are given in Table: 1 and desirable minimum carriageway widths for unsealed roads are given in Table: 2. These widths pertain to near straight alignments but take into consideration vehicle offtracking.

Table: 1 – Desirable Minimum widths for sealed rural roads.

Road Class	AADT (Vehicles)	Minimum Width (m)	
		Lane ¹	Shoulder ²
B-Double	< 150	3.4 m seal on 7.2 m formation	
	150 – 500	2.8	1.0
	500 – 1,000	3.1	1.2
Double RT	< 150	3.6 m seal on 7.6 m formation	
	150 – 500	2.9	1.2
	500 – 1,000	3.2	1.2

- Notes:
1. Lane width is the trafficable width of a carriageway divided by the number of lanes.
 2. Shoulder width includes both sealed and unsealed portions of the shoulder.

Table: 2 – Desirable Minimum carriageway widths for unsealed roads

Road Class	AADT (Vehicles)	Carriageway (m)
B-Double	<150	6.0
	>150<500	6.5
	>500<1000	7.0
Double RT	<150	7.0
	>150<500	7.5
	>500<1000	8.0

Minor width deficiencies alone should not necessarily preclude a route particularly if the deficiencies only apply to a small proportion of the route length. In this situation a risk assessment must be undertaken to ensure that the minor width deficiency will not create a safety hazard.

To provide network continuity and connectivity, road authorities may decide on a relaxation of carriageway width. In such cases, a risk assessment must be undertaken considering all factors which would contribute to the safe operation of the vehicle and its interaction with other users.

Road authorities may also consider allowing narrower road width requirements where speeds are controlled to 50 km/h or where other users will be familiar with the operation of RAVs (eg, farm access roads)

Road authorities may consider the need to increase the minimum road width requirements for routes or areas where it is expected that a proportion of users will be unfamiliar with the road network or the operation of RAVs (eg, tourist routes), or where shoulder erosion is a particular problem.

6.3. Township Roads

Lane width is an important consideration for vehicles travelling through townships or small community settlements and needs to take into account other road users, particularly parked vehicles and cyclists to ensure unimpeded travel.

Travel in townships or small community settlements should generally be unimpeded by parked vehicles or stationary turning queues so as to minimise the necessity for lane changing manoeuvres. Hence, routes should preferably have at least one continuous through lane available in the direction of travel. Short sections of a single through lane may be permitted.

6.4. Bridge Widths

Bridges are normally the narrowest points on a road and few rural bridges provide the widths given in Tables 1 and 2. Table: 3 provides a general indication of minimum bridge width requirements. An inspection and risk assessment should be undertaken for bridges not providing desirable minimum widths, considering:

- bridge approach sight distance;
- ability of drivers on a bridge approach to see vehicles on the opposing approach; and
- willingness of drivers to adjust angle of entry onto a bridge to accommodate the width needs of large vehicles.

Table: 3 Desirable Minimum Bridge width requirements on rural roads.

Road Class	AADT	Minimum width ¹	Comment
B-Double To Double RT	< 150	4.0 m	Can be a Single-lane bridge
	150 - 500	7.0 m	Two-lane bridges
	500 - 1000	7.4 m	

1. The lesser of between bridge rails or between kerbs.

6.5. Overtaking Provision

The time taken to overtake a long vehicle is of concern for traffic operations on single road-ways, essentially two-lane, rural roads. The manoeuvre commonly requires that the overtaking vehicle uses the opposing traffic lane, and opportunities for this to be undertaken safely are limited by the sight distance profile of the road and the availability of gaps in the opposing traffic. The time required for an overtaking manoeuvre increases with increasing length of the overtaken vehicle. As overtaking time increases, the frequency with which the road and the opposing traffic provide safe overtaking opportunities decreases. Drivers wishing to overtake a RAV will, on average, have to wait longer for a safe opportunity. Queues may form behind long vehicles, and frustration can lead to overtaking being attempted in situations that are less safe than normal.

A road assessed for the specific vehicle configuration should provide sufficient overtaking opportunity in accordance with the following criteria:

6.5.1. Overtaking Sight Distance

The Austroads (2003) guide on Rural Road Design specifies overtaking road design requirements in terms of two sight distances:

- Establishment Sight Distance (ESD): A minimum sight distance that is adequate to encourage a given proportion of drivers to commence an overtaking manoeuvre.
- Continuation Sight Distance (CSD): A critical sight distance, which if maintained for some length of road after the ESD has become available, will enable an overtaking driver to either complete or abandon a manoeuvre already commenced with safety.

A section of road for which the available sight distance exceeds the ESD is a sight distance overtaking opportunity. The length of the opportunity is the length of the section providing ESD plus the length of the following section providing CSD.

Table: 4 gives establishment and continuation sight distances for cars overtaking.

Table: 4 - Sight Distances

Road Class	Establishment Sight Distance (m)	Continuation Sight Distance (m)
	80 km/h	80 km/h
B-Double	750	340
Double RT	840	380

The calculation of design values for ESD and CSD entails a number of assumptions regarding the proportion of drivers who will accept an overtaking opportunity and vehicle speeds. In practice, there is considerable variation in the distances required for overtaking manoeuvres and in driver preparedness to initiate the manoeuvre. Hence, Table: 4 values should be regarded as a general indication only.

6.6. Low Speed Offtracking and Intersection Design

All vehicles using the road network should be able to safely undertake turning manoeuvres and negotiate intersections without damaging other vehicles, buildings, infrastructure and roadside furniture. It is also important that vehicles negotiating intersections do not unduly obstruct traffic.

When a long vehicle makes a low-speed turn at an intersection, the rear of the vehicle may offtrack several metres to the inside of the path of the front of the vehicle. This is known as low-speed offtracking and the swept path is the road area covered by the outermost and innermost points of the vehicle making the low-speed turn.

The use of templates such as those provided by Austroads is the currently accepted method of determining whether large heavy vehicles can negotiate an intersection by plotting the swept paths.

Because of increased size and turning circles, RAV vehicles can adversely impact roadside infrastructure such as drainage pits, kerb and channel, roadside poles, signs, vegetation, footpaths, and pram/bicycle crossings. These facilities need to be checked against the requirements for low speed offtracking to ensure that there is adequate clearance between vehicle and infrastructure.

6.7. Pavements and Road Surfaces

All routes, sealed or unsealed, need to be assessed for suitable use by heavy vehicles. Normal criteria used for the assessment of freight routes should be used as a guide for commodity routes. However, as most commodity routes are likely to be unsealed roads, other factors such as surface roughness, compaction, quality of road base and the degree to which the road is affected by water or rain need to be considered in determining the level of access and the relevant conditions.

6.8. Bridges and Structures

All bridges and structures must be analysed to ensure that they have sufficient strength for the specified combination and axle loads.

6.9. Railway Level Crossings

Sufficient clearance time and distances should be available in the direction of travel relates to the specific vehicle combination.

Assessment of level crossings can be complex and involves the road track owner/user. DTEI has established a group to assess all road crossings in South Australia.

The assessment of rail crossings, on all proposed commodity routes, must be undertaken by DTEI's Level Crossing Unit.

6.10. Height Clearances

Heavy vehicles are particularly vulnerable to striking low overhead obstructions. Adequate overhead clearances should be available along all routes. Overhead clearances should be at least 300 mm above the permitted height of a vehicle.

Where power lines cross the route, the minimum overhead clearance requirements must be checked with the local electricity authority. Similarly, where overhead wiring exists at level crossings, height clearance requirements must be checked with the relevant rail authority.

The nominal prescriptive maximum vehicle height is 4.3 m for all commodities except for livestock which is 4.6 m.

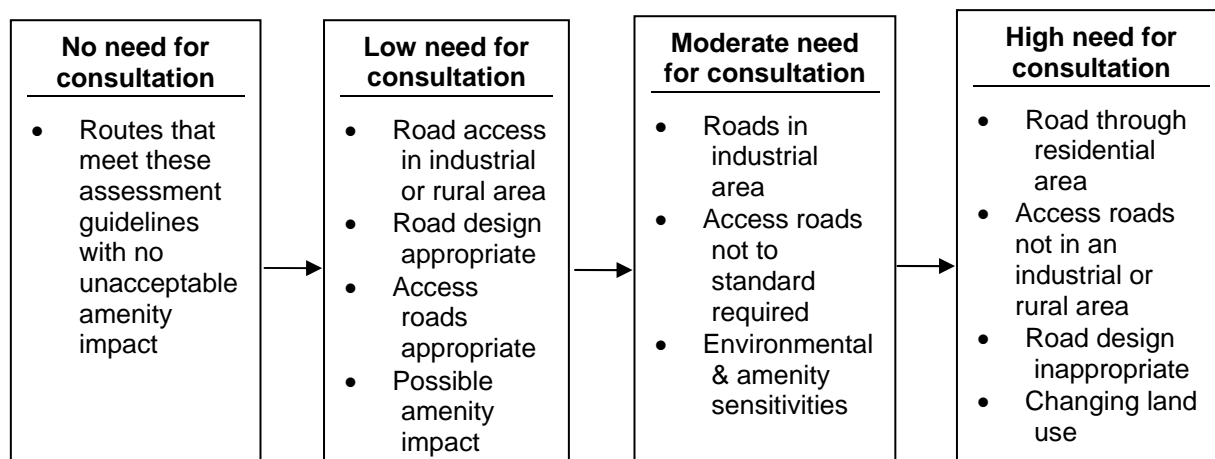
7. CONSULTATION

Consultation should be undertaken in conjunction with the assessment of routes, except in the most straightforward of cases. The nature of the consultation will be determined by the relevant road authority or authorised assessor.

A model for assessing whether consultation is required and what level of consultation should be undertaken is shown in Figure: 1.

Where a road or route is already in use by larger vehicle combinations and there are no unacceptable amenity impacts resulting from the use of the road, then there may not be a need for community consultation.

Figure: 1 – Consultation Model



GLOSSARY OF TERMS

B-DOUBLE	An articulated vehicle hauling two trailers with the rear trailer superimposed onto the front trailer of the articulated vehicle, and connected by the use of a fifth wheel permanently located towards the rear of the front trailer.
ROAD-WAY WIDTH:	The width between the outer shoulder edges or between the kerb faces, of undivided carriageways.
HEAVY VEHICLE:	A vehicle with a gross vehicle mass exceeding 4.5 tonnes.
MCV:	Multi-Combination Vehicle - consisting of all articulated combinations of vehicles exceeding 19 metres in length or 42.5 tonnes gross mass including B-Doubles, road trains and truck-and-trailer combinations.
LOW SPEED OFFTRACKING:	The lateral distance that the last-axle on the rear trailer tracks inside the path of the steer axle in a 90 degree, usually used for low-speed movements (see also swept path).
ROADSIDE INFRASTRUCTURE:	A general term covering all road furniture that includes bridges and culverts, signs, street lights and protective devices for the control, guidance and safety of traffic, and the convenience of road users.
SEAL WIDTH:	Width between edges of sealed surface or between edge lines (where installed on undivided carriageways), whichever is less.
SHOULDER:	The portion of formed carriageway that is adjacent to the traffic lane and flush with the surface of the pavement.
SWEPT PATH:	Swept path is defined as the road area covered by the outermost and innermost points of a vehicle making a low speed turn.
TRACKING ABILITY ON A STRAIGHT PATH:	The amount of variation in the lateral position of the trailing unit (last trailer) measured relative to the path or track followed by the hauling unit (rigid truck or prime mover).

SAMPLE FORM FOR ROAD ASSESSMENT

ROAD SECTION:							
ITEM NUMBER	DESCRIPTION	ROUTE ASSESSMENT ANALYSIS	RISK ASSESSMENT/ COMMENTS	PROPOSED CONDITIONS OF ACCESS	APPROVED CLASSIFICATION B-Double (BD)/ Road Train (RT)	APPROVED/ NOT APPROVED (Recommendation)	DATE OF REVIEW (Recommended)
6.1	Traffic Volume						
6.2	Road Width						
6.3	Township Roads						
6.4	Bridge Widths						
6.5	Overtaking Provision						
6.5.1	Overtaking Sight Distance						
6.6	Low Speed Offtracking & Intersection Design						
6.7	Pavements & Road Surfaces						
6.8	Bridges & Structures						
6.9	Railway Level Crossings						
6.10	Height Clearance						

4	PREREQUISITE REQUIREMENTS FOR ACCESS
	DETAILS:

7	CONSULTATION UNDERTAKEN
	DETAILS:

ASSESSED BY: _____
Authorised Assessor

DATE OF ASSESSMENT: / / 20__