



*This document aims to provide heavy vehicle drivers with information about safe driving behaviour. The information provided in this publication is not a substitute for knowing the legislation and should not be taken as an accurate or binding interpretation of the law.*

## Heavy Vehicle Driver – Tips & Guide

Issue 1 November 2011

# Negotiating Steep Hills

“Low risk” driving goes hand in hand with a driver’s ability to successfully negotiate a heavy vehicle up or down a hill. As a professional heavy vehicle driver you are responsible for ensuring your vehicle performance on steep hills is adequate to maximise road safety and minimise traffic congestion and disruption.

*As a general guide:*

There are a number of steep gradient roads in Western Australia that require drivers of heavy vehicle to exercise caution.

These include but are not limited to:

- Ravensthorpe Hill (11% gradient) on South Coast Hwy, Shire of Ravensthorpe.
- Marandoo Hill (8% gradient) on Karijini Drive, Shire of Ashburton;
- Greenmount Hill (7% gradient) on Great Eastern Hwy, Shire of Mundaring;
- Coalfields Hwy (7% gradient) in the Shire of Harvey;
- Bedforddale Hill (5.11% gradient) on Albany Hwy, City of Armadale;
- Red Hill (6.8% gradient) Toodyay Road, City of Swan; and
- Toodyay Road (8% gradient) Shire of Toodyay.

## Factors that can influence heavy vehicle hill climbing ability

Every heavy vehicle driver needs to be aware that the following can influence heavy vehicle's ability to climb hills:

- The type of road surface seal (*Example; asphalt or gravel*);
- The length and "gradient" also known as steepness of a hill;
- Climate conditions (*For example, wet, icy or poor visibility*);
- Insufficient load weight on the Axle Drive Group of towing vehicle;
- Vehicle Gross Combination Mass (*In respect to hill climbing ability - GCM generally implies that a properly maintained vehicle combination, should be able to safely climb a maximum grade/slope of 5%*);
- Lack of traction (*Condition of tyres – do not use bald or badly worn tyres*);
- Driving heavy vehicle combinations at the correct approach speed;
- Drivers missing a gear change or selecting the wrong gear;
- The towing vehicles lack of power;
- Roadworthiness of vehicle (*Always conduct daily pre-start vehicle and trailer checks and perform a more thorough weekly vehicle combination maintenance inspection*); and
- Driver inexperience.

## DRIVING UP A STEEP HILL

At the start of a work shift and before driving a heavy vehicle, **ALL drivers should familiarise themselves with the route they intend to travel and be aware of any steep hills along that route.**

- Know your vehicle's towing capabilities;
- Observe and obey all regulatory road warning signage along the road;
- If you need to stop and check your vehicle and load before going up a hill, do so in a safe location;
- If required, commence gear shift change down early, prior to ascending the hill;
- Use the gearbox properly on your truck and know the right gear to engage and exactly when to do it;
- Changing gears and using the correct gear is a fundamental skill every heavy vehicle driver must master and necessary for efficient operation of your vehicle;
- The correct gear is the one that enables the engine to operate at its most efficient speed for the task it is doing;
- Use the engine torque efficiently, and
- Do not change gear while climbing the hill.

## DRIVING DOWN A STEEP HILL

- Make sure your vehicle is in low gear before commencing descent and do not rely on the your service brakes (*the gear required to ascend a hill is usually the same gear required during descend*)
- If you fail to engage the correct gear, then stop the vehicle immediately and make the correct gear change.
- Do not attempt to descend a hill in neutral gear or with the clutch depressed
- Use the auxiliary brakes to help control the vehicle speed
- Only use the service brakes for managing emergencies, traffic conditions and cornering

*It is important to note that brakes may become overheated if you use them constantly downhill to control speed. This can lead to brake burn-out or brake fade causing the brakes to fail.*