


**SECTION 3**  
**TRAIN OPERATIONS**

WITHDRAWN

REFER ARTC ROUTE ACCESS STANDARD (RAS )  
GENERAL INFORMATION

** Amalgamation of trains**

Two trains may be amalgamated to form one longer train for operational reasons.

If two trains are amalgamated with all the locomotives marshalled at the front of the train, this is considered to be a normal train and no special conditions shall apply. All standard marshalling conditions and train path conditions however, will apply.

If the trains are amalgamated with the locomotives on the second train coupled to the rear vehicle of the leading train, the following conditions shall apply:

- The train driver of the leading train must have full control of the automatic air brake throughout the both trains including the locomotive(s) on the second train and shall direct the driver of the second train when to apply and reduce power.
- All vehicles published in **Section 10 Locomotive and Rolling Stock Data Pages** may be included in an amalgamated train with the exception of 4 wheel vehicles and vehicles with non-automatic couplers.
- Communication between the crew on each train must comply with current Safeworking requirements.
- The brake pipe and main reservoir pipe (where applicable) must be connected throughout the train.
- There must be no marker lights exhibited on the locomotive(s) marshalled on the second train.

Refer to **Distributed Power - Section 2 Locomotive Operations** for conditions of operation.

** Operation of trains on steep descending grades**

Specific braking requirements apply to freight trains descending nominated grades of 1 in 40 or grades of 1 in 33 or steeper. These braking requirements are specified in the relevant Track Sections Pages of the Train Operating Conditions Manual

**Freight trains descending grades of 1 in 33 or steeper**

Freight trains descending such grades must be fitted with operable grade control valves or fixed exhaust chokes to at least 80% of the train mass (excluding locomotives) and the grade control valves (if fitted) must be placed in the 'IP' position.

Where there is less than 80% of the train mass (excluding locomotives) fitted with fixed exhaust chokes the train must have a HP grade inspection prior to descending the grade.

Dynamic or regenerative brake must be used when available.

The maximum speed when descending a 1 in 33 grade is 50 km/h, and 30 km/h when descending a 1 in 30 grade.

**Light locomotives descending grades of 1 in 33 or steeper**

This applies to light locomotive(s) and locomotive hauled trains where the total hauled mass is less than the mass of the locomotives(s) hauling them.

Dynamic or regenerative brake must be fitted and operational, on single locomotives. In the case of multiple unit locomotives, dynamic or regenerative brake must be fitted and operational on the lead locomotive and operational and able to be controlled from the lead locomotive on at least half of any additional locomotives on the train.

The handbrake on the light locomotive(s) must be operational.

The speed of light locomotive(s) when descending a 1 in 33 grade is 40 km/h, and 30 km/h when descending a 1 in 30 grade.

**Descending nominated grades of 1 in 40**

Freight trains descending such grades must be fitted with operable grade control valves or fixed exhaust chokes to at least 50% of the train mass (excluding locomotives) and the grade control valves (if fitted) must be placed in the 'IP' position.

Vehicles without load compensation are to operate in the 'EX' position unless the mass of the vehicle is 20 tonne or more in which case the grade control valve is to be placed in the 'IP' position.

** Holding a train stationary on a grade**

The automatic air brake must not be relied upon to hold a train stationary on a grade for periods exceeding ten (10) minutes unless the lead locomotive is fitted with a pressure maintaining brake valve.

If the handbrakes are required to hold a freight train with locomotive(s) attached on a grade or freight vehicles with locomotive(s) detached, the minimum number of handbrakes to be applied is as follows:

Majority of the train on a gradient of	Minimum number of handbrakes
Level to 1 in 100	3 in 10 (30%)
1 in 99 to 1 in 50	5 in 10 (50%)
1 in 49 to 1 in 33	8 in 10 (80%)
1 in 32 to 1 in 25	All (100%)

When the train is on an **ascending** grade, the handbrakes must always be applied to the vehicles on the **rear** portion of the train. When the train is on a **descending** grade, the handbrakes must always be applied to the vehicles at the **front** of the train.

On locomotive hauled passenger trains, the handbrakes must be applied on **all vehicles** before the locomotives are detached.

** Train speed**

The speed of any train must not exceed the maximum allowable speed for the slowest rated locomotive or vehicle in the train consist as specified in the **Section 10 Locomotives And Rolling Stock Data** pages and the **MAXIMUM SPEED OF LOCOMOTIVES AND ROLLING STOCK** table in the appropriate **Section pages**, together with any permanent or temporary speed boards displayed for the section of track.

** Operation of freight trains in Sydney metropolitan area**

Due to signal braking distance requirements the maximum speed for **all freight trains** operating within the Metropolitan area bounded by Ourimbah, Westmead, Glenfield and Dombarton, including Coniston to Inner Harbour and Coniston to Port Kembla North, is 80 km/h.

Freight train "begin" and "end" speed signs are located at the following locations:

**North**

Begin 80 speed limit                      Up Main at approximately 88 km between Ourimbah and Gosford  
 End 80 speed limit                         Down Main at approximately 88 km between Gosford and Ourimbah

**West**

Begin 80 speed limit                         Up Main at approximately 25.5 km at the western end of Westmead station  
 End 80 speed limit                         Down Main at approximately 25 km between Parramatta and Westmead

**South**

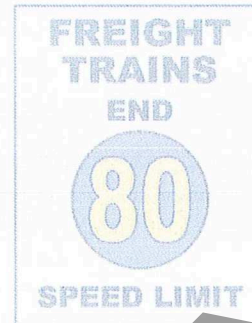
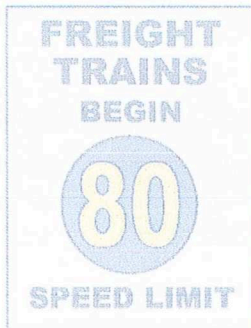
Begin 80 speed limit                         Up Main and Up Relief at 42.4 km at Glenfield  
 End 80 speed limit                         Down Main and Up Relief (facing Down trains) at 42.4 km at Glenfield

**Illawarra**

Begin 80 speed limit                         Up Main at approximately 87.5km (north of Unanderra)  
 End 80 speed limit                         Down Main at approximately 87.5km (north of Unanderra)

The boards shown on page 3 have yellow reflective numerals on a reflective blue background.

**Operation of freight trains in Sydney metropolitan area (continued)**



Speed signs for freight trains operating within the Sydney metropolitan area.

**Advisory speed signs**

**FREIGHT & PASSENGER SERVICES**  
(Excepting XPT/ XPLOER/ ENDEAVOUR))

Yellow reflective material  
Red lettering.

**XPT/ XPLOER/ ENDEAVOUR SERVICES**

Silver reflective material  
Red lettering.

**LONG FREIGHT TRAINS**

Exceeding 1150 metres in length  
Blue reflective material  
Yellow lettering.



At particular signals there may be insufficient sighting distance for trains travelling at track speed to stop within the signalling distance. In these cases advisory speed signs have been positioned approaching these signals. The location of advisory speed signs is listed in the Section Pages.

Drivers of XPT, Xplorer and Endeavour trains, passenger and express freight trains are required to regulate the speed of their train at these locations to ensure that before sighting the signal indication, the speed is not in excess of that figure shown on the advisory speed sign applicable to their train. If at any point approaching the signal it is seen to be exhibiting a full clear indication, normal track speed for the train concerned may be resumed.

On some track sections, advisory speed signs have been placed specifically for freight trains *exceeding 1150 metres in length*.

The lines where advisory speed signs apply are track sections:

- Main South (between Albury and Sydney)
- Main North (between Wyong and Maitland)
- North Coast (between Maitland and Casino).

When approaching the advisory speed sign, the driver is to regulate the speed of the train so that when the applicable signal is sighted the train is not travelling in excess of the maximum speed. The locations of these advisory speed signs are listed in the appropriate section pages.

**Track speed signs**

A single yellow background speed sign applies to all rail traffic.

A white background speed sign by itself or under a yellow background speed sign, applies only to XPT, Xplorer, Endeavour and Millennium trains.

A white background speed sign with the letters "MU" alongside the numerals, by itself or under a yellow background speed sign, applies only to XPT, Xplorer, Endeavour trains or Multiple Unit trains (NSG 604)

**Turnout speed signs**

The letter 'X' before the numbers on a permanent speed sign shows the maximum speed for the turnout.

If there is no speed sign at a turnout, rail traffic must not travel faster than 25km/h through the turnout.

**WOLO speed restrictions**

To be read in conjunction with Rail Infrastructure Corporation Network Rules NGE 210.

During extreme hot weather conditions, there is a risk of track misalignment due to track buckle. In order to reduce the risks involved, the speed of trains for all lines within the affected area must be reduced when high temperatures are indicated for that area. This is accomplished by introducing **WOLO** conditions.

When **WOLO** conditions are in force the speed of any train must not exceed the appropriate **WOLO** speed specified below:

<b>Train Type</b>	<b>Ruling Train Speed*</b>	<b>WOLO Speed</b>
Passenger trains (all types) and light locomotives	100 km/h or more 95 km/h 90 km/h 85 km/h 80 km/h 75 km/h 70 km/h or less	90 km/h 85 km/h 80 km/h 75 km/h 70 km/h 65 km/h Allowable track speed but not exceeding 60 km/h
Freight trains containing <i>all loaded vehicles</i>  <b>OR</b> Freight trains containing <i>one or more empty vehicles</i> , all of which must have an allowable, empty vehicle speed exceeding 80 km/h.	90 km/h or more 85 km/h 80 km/h 75 km/h 70 km/h or less	80 km/h 75 km/h 70 km/h 65 km/h Allowable track speed but not exceeding 60 km/h
NOTE: For the purpose of this rule, a loaded vehicle is one with a gross mass of 30 tonnes or more.		
Freight trains containing <i>one or more empty vehicles</i> , which are restricted to an allowable, empty vehicle speed of 80 km/h or lower.	80 km/h or less.	Allowable track speed but not exceeding 50 km/h.
NOTE: For the purpose of this rule, a loaded vehicle is one with a gross mass of 30 tonnes or more.		

\*The ruling train speed shall be the allowable track speed or the allowable vehicle speed, as specified in the **SECTION PAGES**, whichever is the lesser.


**WOLO speed restrictions (continued)**

**WOLO Warning Sign Areas**

When WOLO conditions are in force, WOLO warning signs are displayed in the following areas:

Down Direction Movements	
Location	Lines
Sydney Terminal Departure Road	All Down Tracks
Central Electric Platforms 16, 17, 18, 19, 22, 23 & 25	All Down Tracks
Sutherland Scarborough Wollongong Dapto	Down Main and Branch Down Main Down Main Main
Lidcombe Glenfield	All Down Tracks Down Main
Blacktown Mt Victoria	Down Main, Down Suburban and Branch Down Main
Hornsby Gosford Wyong	Down Main Down Main Down Main
Enfield North: Flemington side of North Fork Sefton Park Junction side of West Fork	Down Main Down Goods

Up Direction Movements	
Location	Lines
Nowra Dapto Wollongong Waterfall Cronulla Hurstville	Main Main Up Main Up Main Main All Up Tracks
Campbelltown East Hills Liverpool Lidcombe	Up Main Up Main Up Main All Up Tracks
Lithgow Richmond Blacktown	Up Main Main All Up Tracks
Newcastle Broadmeadow Wyong Hornsby	Up Main Up Main Up Main All Up Tracks
Maintenance Centre departure Roads at Hornsby, Mortdale and Flemington	All Up Tracks
Enfield South – Up Direction at southern end of yard	Up Goods

** *Stabling a train on a running line or in a shunting neck when authorised***

Trains or vehicles must not be stabled on any running line or in a shunting neck unless authority is given by the Track Access Provider or, in the case of an emergency, by the train controller for the area concerned.

Authorised locations for stabling of trains are listed in the appropriate section pages.

** *Emergency equipment***

Locomotives must carry the following emergency equipment:

- detonators (minimum of 24)
- a sealed first aid box
- two red flags and one green flag
- a two-way radio
- a towing chain
- a continuity tester
- a white disc
- a spare EOTM
- a spare 25 mm and 32 mm train air brake coupling hoses
- a 1/2" x 5/8" and 3/4" x 7/8" open ended spanner
- a monkey wrench
- a hammer, chisel and pin punch
- chocks (minimum of 4)
- Three approved track circuit shorting clips
- fire extinguisher

Multiple unit trains must carry the following emergency equipment:

- Detonator box containing:
  - 1 canister of detonators
  - Three approved track circuit shorting clips
  - two red flags and one green flag
- a two-way radio
- rope for tying down pantographs
- a spare 25 mm and 32 mm train air brake coupling hoses (where required)
- a spare trip hose (where required)
- a 1/2" x 5/8" and 3/4" x 7/8" open ended spanner
- fire extinguisher

** *Driver safety systems***

All locomotives, multiple unit trains and nominated track maintenance vehicles must be fitted with driver safety systems as detailed in the **RIC Minimum Operating Standards for Rolling Stock**.

** *On train communications***

A CountryNet compatible train radio is required for train movements on some line sections and in accordance with Network Rule NGE230.

A train is required to be fitted with a CountryNet compatible radio between the "Begin Train Order Working" board and "End Train Order Working" board for the following line sections:

- Orange to Dubbo
- Orange East Fork to Parkes
- Goobang Junction to Broken Hill and Tottenham

A CountryNet compatible train radio is not required for shunting where an appropriately qualified terminal representative takes possession of the shunt order.

WITHDRAWN