

D52 Moss Vale - Unanderra

RAS DIRN Section Page

Applicability

ARTC Network Wide

SMS

Publication Requirement

Internal / External

Primary Source

Document Status

| Version # | Date Reviewed | Prepared by | Reviewed by | Endorsed | Approved |
|-----------|---------------|---------------------|--------------|--|--|
| 2.4 | 18 Oct 24 | Operations Services | Stakeholders | Principal Rolling Stock Interface Engineer | Manager Engineering Services 22/10/2024 |

Amendment Record

Amendments to the RAS are published at the following link

<https://www.artc.com.au/customers/standards/route/access/>

All changes in this document are highlighted with this colour

Disclaimer

This document has been prepared by ARTC for internal use and may not be relied on by any other party without ARTC's prior written consent. Use of this document shall be subject to the terms of the relevant contract with ARTC.

ARTC and its employees shall have no liability to unauthorised users of the information for any loss, damage, cost or expense incurred or arising by reason of an unauthorised user using or relying upon the information in this document, whether caused by error, negligence, omission or misrepresentation in this document.

This document is uncontrolled when printed.

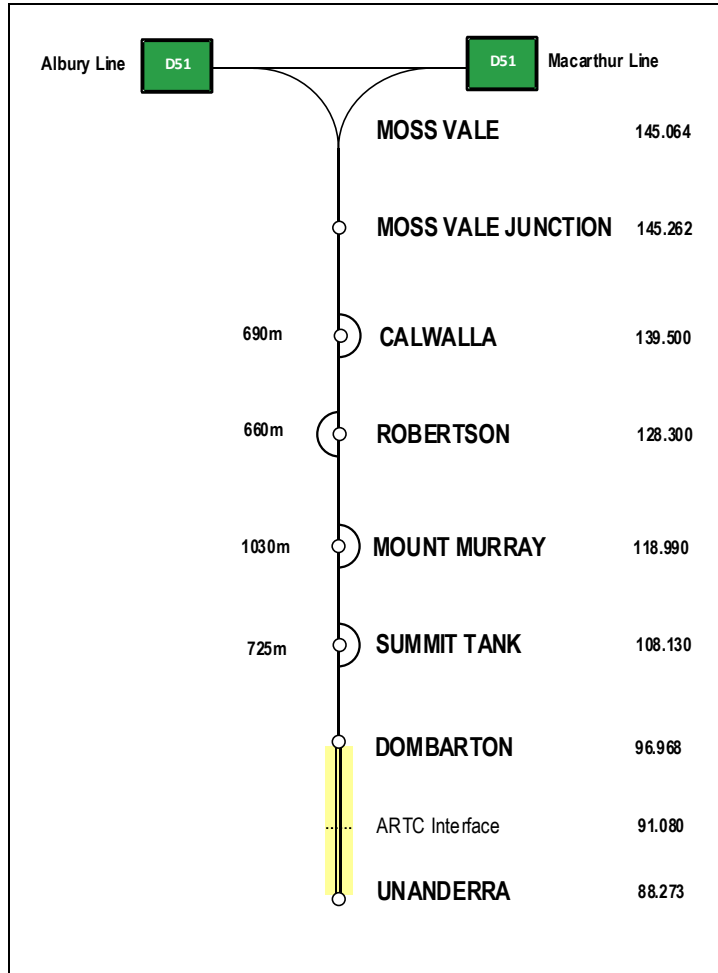
Authorised users of this document should visit ARTC's intranet or extranet (www.artc.com.au) to access the latest version of this document.

Table of Contents

| | |
|---|-----------|
| Table of Contents | 2 |
| 1 Network Diagram | 3 |
| 2 Route Capacity | 4 |
| 3 Maximum Trailing Loads | 5 |
| 3.1 DOWN (uphill) LOADS for GENERAL FREIGHT, GRAIN AND COAL | 5 |
| 3.2 UP (downhill) LOADS for GENERAL FREIGHT, GRAIN AND NON-COAL | 6 |
| 3.3 UP (downhill) LOADS for COAL..... | 7 |
| 3.4 Additional Locomotives on UP Trains (excess to haulage requirements) | 7 |
| 3.5 General Braking requirements – UP direction: | 8 |
| 3.6 Braking requirements – UP direction – 2 Pipe Trains | 8 |
| 3.7 Conditions for Operation of single pipe trains greater than 2400 tonne and up to 4000 tonne and up to 1500 m in length..... | 8 |
| 4 Special Access Conditions | 10 |
| 4.1 Heritage Passenger Trains | 10 |
| 4.2 Light Locomotives & Light Trains | 10 |
| 4.3 Out of Gauge Steel Trains | 10 |
| 4.4 Self-Propelled Diesel Trains..... | 11 |
| 4.5 Intermodal (Container Trains) Summit Tank-ARTC/TfNSW Boundary –Unanderra | 11 |
| 5 Operating outside or beyond the prescribed operating conditions | 13 |
| 6 MOSS VALE – UNANDERRA Overlength Service Request | 15 |
| 6.1 Service Length Guidelines: | 15 |
| 6.2 Overlength Guideline Notes: | 15 |
| 7 Permanent Speed Restrictions | 16 |

1 Network Diagram

Note: These line maps are indicative only. For detailed diagrams, refer to relevant Network Information Book.



2 Route Capacity

NOTES TO BE READ IN CONJUNCTION WITH ALL ROUTE CAPACITY TABLES BELOW

Route capacity applies where vehicle characteristics and conditions permit.

Express speeds are for passenger train types that are approved to run to "Express Speed Boards" by the ARTC Network Rules only (i.e. XPT, Xplorer, etc).

For all other passenger trains:

- a. Freight locomotive speed limits apply for diesel locomotive hauled passenger trains.
- b. Freight wagon speeds apply where freight wagons are marshalled as part of the train.
- c. DMU and rail motors are to adhere to carriage axle loads.

| MOSS VALE – ROBERTSON | | | |
|-----------------------|----------------------|----------------------------|-----------|
| TRAIN TYPE | MAXIMUM SPEED (KM/H) | MAXIMUM AXLE LOAD (TONNES) | |
| FREIGHT | | LOCOS | WAGONS |
| | 115 | 22.8 (up to 134t GVM) | 19 |
| | 100 | 22.8 (up to 134t GVM) | 21 |
| | 80 | 22.8 (up to 134t GVM) | 25 |
| PASSENGER | | LOCOS | CARRIAGES |
| EXPRESS | 115 | N/A | 19 |
| LOCO HAULED | 115 | 22.8 (up to 134t GVM) | 19 |

(Includes non-express DMU and rail motors)

| ROBERTSON – UNANDERRA | | | |
|-----------------------|----------------------|----------------------------|-----------|
| TRAIN TYPE | MAXIMUM SPEED (KM/H) | MAXIMUM AXLE LOAD (TONNES) | |
| FREIGHT | | LOCOS | WAGONS |
| | 65 | 22.8 (up to 134t GVM) | 25 |
| PASSENGER | | LOCOS | CARRIAGES |
| EXPRESS | 65 | N/A | 19 |
| LOCO HAULED | 65 | 22.8 (up to 134t GVM) | 19 |

(Includes non-express DMU and rail motors)

3 Maximum Trailing Loads

The requirements from other ARTC Route Access Standard documents are applicable to this route. Operators are responsible for ensuring all ARTC Route Access Standard requirements are followed.

3.1 DOWN (uphill) LOADS for GENERAL FREIGHT, GRAIN AND COAL

The following table defines the minimum number of locomotive combinations to operate with the maximum trailing load.

| MAXIMUM TRAILING LOAD (TONNES) | | | | | | | |
|--------------------------------|------------------------|--------------|--------|--------|------|-------|------|
| Sections | Locomotive Class | Single | Double | Triple | Quad | Notes | |
| 1 | 91.080 km to Moss Vale | AC6 | 1130 | 2260 | 3390 | -- | |
| 2 | 91.080 km to Moss Vale | AC6 + L2 | -- | 1750 | -- | -- | b |
| 3 | 91.080 km to Moss Vale | AC6 + 2 x L2 | -- | -- | 2529 | -- | b |
| 4 | 91.080 km to Moss Vale | 2 x AC6 + L2 | -- | -- | 2727 | -- | b |
| 5 | 91.080 km to Moss Vale | L3/L4 | 500 | 1000 | 1500 | -- | 1, a |
| 6 | 91.080 km to Moss Vale | L2 | 900 | 1800 | 2700 | 3600 | |
| 7 | 91.080 km to Moss Vale | L3/L4 | 750 | 1500 | 2250 | 3000 | a |
| 8 | 91.080 km to Moss Vale | L5 | 690 | 1380 | 2070 | 2760 | |
| 9 | 91.080 km to Moss Vale | L6 | 551 | 1102 | 1653 | 2204 | |
| 10 | 91.080 km to Moss Vale | L7 | 543 | 1086 | 1629 | 2172 | |
| 11 | 91.080 km to Moss Vale | L8 | 517 | 1034 | 1551 | 2068 | |
| 12 | 91.080 km to Moss Vale | L9 | 485 | 970 | 1455 | 1940 | |
| 13 | 91.080 km to Moss Vale | L10 | 430 | 860 | 1290 | 1720 | |
| 14 | 91.080 km to Moss Vale | L11 | 388 | 776 | 1164 | 1552 | |
| 15 | 91.080 km to Moss Vale | L12 | 362 | 724 | 1086 | 1448 | |

Notes to Table

1. Empty wheat / coal vehicles. ARTC Unanderra to Dombarton running times (19 minutes) to apply.
 - a. Locomotive classes separated by a slash indicates all combinations of those classes are acceptable.
 - b. The AC6 locomotive shall be a C44ACi or GT46C-ACe type AC locomotive and the L2 locomotive can be NR or AN class.

3.2 UP (downhill) LOADS for GENERAL FREIGHT, GRAIN AND NON-COAL

The following table defines the minimum number of locomotive combinations to operate with the maximum trailing load.

| Sections | Locomotive Class | MAXIMUM TRAILING LOAD (TONNES) | | | | Notes |
|---------------------------|---------------------|--------------------------------|--------|--------|------|------------|
| | | Single | Double | Triple | Quad | |
| 1 Moss Vale to 91.080 km | AC6 | 2400 | -- | -- | -- | 1, 3 |
| 2 Moss Vale to 91.080 km | AC6 | -- | 3600 | -- | -- | 2, 3 |
| 3 Moss Vale to 91.080 km | AC6 + L2 | -- | 2400 | -- | -- | 1, 3, b |
| 4 Moss Vale to 91.080 km | AC6 + L2 | -- | 3600 | -- | -- | 2, 3, b |
| 5 Moss Vale to 91.080 km | AC6 + 2 x L2 | -- | -- | 2400 | -- | 1, 3, b |
| 6 Moss Vale to 91.080 km | AC6 + 2 x L2 | -- | -- | 3600 | -- | 2, 3, b |
| 7 Moss Vale to 91.080 km | 2 x AC6 + L2 | -- | -- | 2400 | -- | 1, 3, b |
| 8 Moss Vale to 91.080 km | 2 x AC6 + L2 | -- | -- | 3600 | -- | 2, 3, b |
| 9 Moss Vale to 91.080 km | L2 | -- | 3600 | -- | -- | 2, 3 |
| 10 Moss Vale to 91.080 km | L2 | 2080 | 2400 | -- | -- | 1, 3 |
| 11 Moss Vale to 91.080 km | L2/L3/L4 | -- | 3300 | -- | -- | 2, 3, a |
| 12 Moss Vale to 91.080 km | AC6 +L3/L4 | -- | 3300 | -- | -- | 2, 3, a, b |
| 13 Moss Vale to 91.080 km | L4 + L5/L6/L7/L8/L9 | -- | 3300 | -- | -- | 2, 3, a, c |
| 14 Moss Vale to 91.080 km | L3/L4 | 1840 | 2400 | -- | -- | 1, 3, a |
| 15 Moss Vale to 91.080 km | L5 | 1872 | 2400 | -- | -- | 1, 3 |
| 16 Moss Vale to 91.080 km | L6 | 1651 | 2400 | -- | -- | 1, 3 |
| 17 Moss Vale to 91.080 km | L7 | 1610 | 2400 | -- | -- | 1, 3 |
| 18 Moss Vale to 91.080 km | L8 | 1563 | 2400 | -- | -- | 1, 3 |
| 19 Moss Vale to 91.080 km | L9/L10 | 1200 | 2400 | -- | -- | 1, 3, a |
| 20 Moss Vale to 91.080 km | L11 | 1191 | 2382 | 2400 | -- | 1, 3 |
| 21 Moss Vale to 91.080 km | L12 | 1112 | 2224 | 2400 | -- | 1, 3 |
| 22 Moss Vale to 91.080 km | L13 | 500 | 1000 | 1500 | 2000 | 3 |

Notes to Table

1. Single pipe trains.

For trains over 2400 tonnes or above 1000 metres long, refer to Section 3.7 for special conditions for single pipe trains in excess of 2400 tonnes and up to 1500 metres long.

2. Two pipe trains.

Two pipe vehicles have a main reservoir that recharges the air brake system.

The maximum train length of two pipe vehicles on a train is 46 vehicles. Up to 6 empty or loaded single pipe vehicles may be attached to the REAR of a loaded or empty two pipe train. The two-pipe portion shall not exceed 40 wagons.

3. Lead locomotives must be fitted with a pressure maintaining brake valve (26L equivalent)

a. Locomotive classes separated by a slash indicates all combinations of those classes are acceptable.

- b. The AC6 locomotive shall be a C44ACi or GT46C-ACe type AC locomotive and the L2 locomotive can be NR or AN class.
- c. Not all L5/L6/L7/L8/L9 locomotive types are fitted with extended range dynamic brake that can satisfy the requirements in Section 3.6 and qualify as a 2-pipe train operating in excess of 2400t.

3.3 UP (downhill) LOADS for COAL

The following table defines the minimum number of locomotive combinations to operate with the maximum trailing load.

| Sections | Locomotive Class | MAXIMUM TRAILING LOAD (TONNES) | | | | Notes |
|--------------------------|------------------|--------------------------------|--------|--------|------|---------|
| | | Single | Double | Triple | Quad | |
| 1 Moss Vale to 91.080 km | AC6 | -- | 4500 | -- | -- | 1, 3 |
| 2 Moss Vale to 91.080 km | AC6 | -- | 4600 | -- | -- | 2, 3 |
| 3 Moss Vale to 91.080 km | AC6 | -- | -- | 5000 | -- | 2, 4 |
| 4 Moss Vale to 91.080 km | L4 | -- | 4200 | -- | -- | 1, 3 |
| 5 Moss Vale to 91.080 km | L3 | -- | 4500 | -- | -- | 1, 3, 5 |
| 6 Moss Vale to 91.080 km | AC6 | -- | 4392 | -- | -- | 2, 3, 6 |

Notes to Table

1. Two pipe trains.
2. ECP trains.
3. Tahmoor to Inner harbour route.
4. ECP trains from Western coal fields.
5. To allow some locomotive flexibility in the Tahmoor – Inner Harbour trains a single L3 category locomotive can be substituted by a single L4 category locomotive however in these instances only 42 wagons out of the 45 wagon consist can be loaded.
6. Distributed Power train, refer to operating conditions in RAS General Information Section 7.3.4 as supplemented by any applicable Operational Notice.

3.4 Additional Locomotives on UP Trains (excess to haulage requirements)

1. Additional locomotives can be marshalled headend to those listed in the table, however the maximum power marshalled at the front of the trains shall not exceed:
 - 16,000 HP for DC locomotives
 - 13,500 HP for AC locomotives
2. For combined DC and AC locomotives the lower figure shall apply.
3. Locomotives attached to the train for balancing purposes (i.e. excess to haulage requirements, refer section 3.2 & 3.3) that are dead attached, not fitted with dynamic brake or do not have operating dynamic brake are to be included in the trailing load of the train.

3.5 General Braking requirements – UP direction:

The following requirements are in addition to the requirements for “Operation of Trains on Steep Descending Grades” within the ARTC Route Access Standard – General Information.

4. All wagons (ECP wagons excepted) shall be fitted with fixed exhaust chokes as per AS 7510.2 (Brake Cylinder release time for a Freight Vehicle fitted with a fixed exhaust choke shall be 350 kPa to 70 kPa in 30 to 50 seconds.),
5. Wagons fitted with Grade Control Valves are not permitted on this line,
6. Dynamic brake shall be used if available and operational, Refer to RAS General Information Section 7.4 for addition conditions for application of dynamic braking,
7. The train shall apply dynamic braking of no more than 990 kN in total up to the ARTC/TfNSW boundary near Unanderra (Note that a reduced dynamic brake force applies in TfNSW area),
8. The minimum allowable axle load for vehicles in the front third of a train shall not be less than 10 tonne for dynamic braked trains.

3.6 Braking requirements – UP direction – 2 Pipe Trains

1. Locomotives programmed to work 2-pipe trains in excess of 2400 tonne shall be fitted with extended range dynamic brake,
2. In the event of a dynamic brake failure, there shall be at least 50% of active locomotives in the consist with operable dynamic brake that can be controlled from the lead unit (e.g. a triple locomotive train must have 2 of the 3 locomotives with operable dynamic brake).
 - If the driver has any trouble in adequately recharging the brake pipe as a result of the dynamic brake failure, the train shall be brought to a stand and held with the locomotive independent brake and sufficient handbrake while the brake pipe fully recharges.
 - If the driver again has trouble in adequately recharging the brake pipe later in the journey, the train shall be brought to a stand and secured by handbrakes. The train may be subsequently moved only by dividing the train or attaching additional locomotive/s with operable dynamic brake.

3.7 Conditions for Operation of single pipe trains greater than 2400 tonne and up to 4000 tonne and up to 1500 m in length

These trains must operate under mandatory dynamic brake conditions which means all locomotives must be fitted with operable extended range dynamic brakes.

Other conditions and recommendations for this operation are:

1. The minimum axle load in the front third of the train should not be less than 10 tonnes,
2. It is recommended that no less than one locomotive be provided for each 1000 tonnes or part thereof of train load (e.g. a load of 2800 tonne should have a minimum of 3 locomotives - a load of 3200 tonne should have a minimum of 4 locomotives),
3. Locomotive(s) may be marshalled at the rear of the train from Summit Tank to Unanderra in order to comply with the Horsepower limit at the front of the train,
4. The speed of the train must be controlled by the dynamic brake supplemented by the use of the air brake as required,

5. Crews, where there are locomotive(s) marshalled on the rear of the train, must have a clear understanding of procedures for operating these trains in the event of the loss of radio communication.
6. If the dynamic brake fails on one locomotive only after departing Summit Tank, the train may continue under the control of the remaining dynamic brake and supplemented by the air brake.

If the driver has any trouble adequately recharging the brake pipe, the train must be brought to a stand and held on the locomotive independent brake and sufficient handbrakes and the brake pipe fully recharged,

The train may then continue under the control of the remaining dynamic brake and supplemented by the air brake,

If the driver again has trouble adequately recharging the brake pipe, the train must be brought to a stand and secured by handbrakes,

The train may be subsequently moved only by dividing the train or attaching additional locomotive(s) with operable dynamic brake.

7. If the dynamic brake fails on more than one locomotive after departing Summit Tank, the train must be brought to a stand and secured by handbrakes. The train may be subsequently moved by dividing the train or attaching additional locomotive(s) with operable dynamic brakes.

If the dynamic brake fails on more than one locomotive between Moss Vale and Summit Tank, the train must be divided at the first suitable location.

If the train is required to be divided above, each portion of the train must comply with the Operator's procedure for single pipe train load and length limits.

4 Special Access Conditions

The requirements from other ARTC Route Access Standard documents are applicable to this route. Operators are responsible for ensuring all ARTC Route Access Standard requirements are followed.

4.1 Heritage Passenger Trains

1. Train loads for heritage passenger trains shall not exceed the tested/agreed load for each specific locomotive type.
2. The cutting out of brakes is not permitted.
3. The operator shall have driving procedures that specifically address the braking issues associated with the route (such as speed, heat input to wheels, brake fade, re-charge of brake pipe following brake releases).
4. The operator shall have a procedure in place to manage the train and communicate with network control in the event of a runaway.
5. Drivers shall be trained in those driving and communication procedures.
6. Train guards shall be trained to carry out duties such as securing and protecting the train in the event of a train failure.

4.2 Light Locomotives & Light Trains

Definitions:

- A light locomotive or light locomotives operate without any trailing load.
- A light train is a train where the trailing load is less than the mass of the hauling locomotive(s).

The following conditions apply to light locomotives and light trains operating in the UP direction from Moss Vale to Unanderra:

- Dynamic brake must be fitted and operational on a single locomotive or a light train hauled by a single locomotive,
- Dynamic brake must be fitted and operational at least half the locomotives where there are multiple unit locomotives or a light train hauled by multiple unit locomotives. The lead locomotive must be able to control other dynamic brake locomotives.
- The park-brake on light locomotive(s) must be operational.

4.3 Out of Gauge Steel Trains

The following table lists locations where crossings may be made as authorised.

| LOCATION | CROSSING |
|-----------|----------------------------------|
| MT MURRAY | LOOP LINE |
| ROBERTSON | LOOP LINE |
| CALWALLA | LOOP LINE |
| MOSS VALE | NUMBER ONE BRANCH STORAGE SIDING |

4.4 Self-Propelled Diesel Trains

Conditions for the operation of self-propelled diesel trains are:

| XPT | XPLORER/ ENDEAVOUR | CONDITIONS OF OPERATION |
|---|-----------------------|---|
| DOWN DIRECTION (UNANDERRA – MOSS VALE) | | |
| ✓ | | All power cars operating |
| | ✓ | All engines operating |
| ✓ | | Maximum 7 trailer cars with 2 power cars or 3 trailer cars with 1 power car powering and 1 power car disabled |
| ✓ | ✓ | All compressors operating |
| ✓ | ✓ | Emergency coupler available |
| ✓ | ✓ | No brake cut outs allowed |
| ✓ | ✓ | EP brake, automatic brake, hand and all spring parking brakes fully operational |
| UP DIRECTION (MOSS VALE – UNANDERRA) | | |
| ✓ | | One or two power cars operating |
| ✓ | | Single power car not permitted (train must consist of at least two vehicles (i.e. two power cars or one power car, one trailer) |
| | ✓ | All engines operating |
| | ✓ | At least half traction engines working. Single car not permitted |
| ✓ | | Maximum 7 trailer cars with 2 power cars or 3 trailer cars with 1 power car powering and 1 power car disabled |
| ✓ | ✓ | All compressors operating (compressor on any dead power car to be switched to hotel supply) |
| ✓ | ✓ | Emergency coupler available |
| ✓ | ✓ | No brake cut outs allowed |
| ✓ | ✓ | EP brake, automatic brake and all spring parking brakes fully operational |

4.5 Intermodal (Container Trains) Summit Tank-ARTC/TfNSW Boundary – Unanderra

This requirement applies to all intermodal (container) trains diverted from the Defined Interstate Rail Network via Summit Tank because of the potential for any vehicle in the consist to be loaded to the maximum allowable height above rail of 4050 mm (as published in the Route Access Standard General Information, Chapter 7 – Loading Restrictions).

As the tracks between Moss Vale and Unanderra are only authorised for container traffic operating to a **maximum height of 3916 mm above rail**, all trains conveying container traffic, which have been diverted from the Defined Interstate Rail Network, shall operate as an out of gauge train. This infringement is in height only and does not affect passing traffic.

The following operating conditions shall apply:

- A maximum speed of 15 km/h is imposed through all tunnels between Moss Vale and Unanderra. The speed limit shall apply for the full length of the train.
- The Network Controller shall ensure that all crews are reminded of this requirement prior to the operation.

5 Operating outside or beyond the prescribed operating conditions

The safety implications of not operating to the prescribed requirements and limits between Summit Tank and Unanderra in the UP direction are high. Any proposals by operators to operate outside or beyond the existing operating conditions requires the submission of technical and risk analyses to both ARTC and TfNSW for determination.

Examples of operating outside or beyond the prescribed operating conditions include:

- operating beyond the maximum train load allowed
- operating beyond the train length, maximum number of wagons or both permitted
- operating above the allowable maximum speed that applies to the train
- axle load of vehicles in the front third of a train is lower than permitted
- application of dynamic brake above the specified limit

Under the Rail Safety National Law, it is the obligation of the rolling stock operator (RSO) to undertake change management and safety validation activities when deviating from existing operational parameters.

The operator shall, through documented technical and risk analyses, demonstrate that the proposed train operating outside or beyond the prescribed operating conditions by the RIM is safe in relations to:

- In-train forces: L/V ratio analyses (where applicable) to support all locomotive-wagon and wagon-wagon combinations (at different loading states) in the consist under dynamic or emergency brake application on the tightest curve to ensure it is not encroaching the derailment limit.
- Train braking capacity: a review that train brake characteristics are fit for purpose for all approved operating states and the operator's driving methodology. Where the brake characteristic review identifies new limitations, the driving methodology shall be updated to inform the train crews. The issue/topics covered in the documented analyses shall include but are not limited to:
 - an assessment of the brake reduction required for the driver actions in the driving methodology.
Also refer to advisory note 1
 - an assessment of the speed(s) at which wagon braking power exceeds the thermal limit of the brake blocks.
Also refer to advisory note 2 & 3
 - Brake release parameters for safe serial/cycle braking and/or transitions from balance braking to serial/cycle braking.
Also refer to advisory notes 4, 5 & 6
 - Pneumatic air consumption demand and available locomotive supply.
Also refer to advisory note 7 & 8
- The documented analyses, where appropriate, shall include:
 - Applicable historical or existing operation performance data & comparative analysis to proposed train

Operating outside or beyond the prescribed operating conditions

- Relevant calculations along with defined data, assumptions and formulas required to understand the calculations performed
- Relevant measurements, observations and results from static and dynamic testing
- Summary of recommended changes to associated operating documents (such as the driver methodology) and the revised documents in full.

Where the trains operated in the trial are to be permanently approved and the identified “worse case” used in the documented analyses has not been validated with actual train operating data. ARTC may apply operating conditions for the permanent approval to align with the “worse case” train that has been validated with actual train operating data.

Advisory Notes:

1. *Based on a specific trial train configuration with a certain wagon type and tonne per operative brake, train crews can be informed that a particular brake setting will result in maximum control of the train speed with the available dynamic brakes.*
2. *Scope of review should be directed to inform train crews of what speed any specific brake application may be at risk of exceeding the thermal limits. The specific brake application used should be informed by the driving methodology.*
3. *It has been recommended that when braking power exceeds 35kW per wheel (or 280kW per 4-axle wagon) then the brake may overheat and have reduced performance. Supplier performance data may also provide further clarity on brake block thermal limit*
4. *Assessment of brake release parameters should constitute a validation of the guidance provided, in the train crew instructions, for initiation of brake releases to ensure that the train does not accelerate beyond 30km/h on the 1:30 gradient at any point in the train operation with due consideration of all operating states.*
5. *Static testing results should be used to determine the time it takes for the Auxiliary Reservoir of the last wagon to recharge after a full release from appropriate brake applications.*
6. *So that the train crew may be able to identify if there is a risk that not all of the wagon brakes have recharged, pertinent brake pipe flow measurements/observations from static testing may also be provided through the driving methodology.*
7. *This is anticipated to inform the minimum number of compressors that are required for normal operation. Operating below this number may require additional actions to be taken in the methodology to ensure sufficient stored pneumatic braking energy is retained in the train.*
8. *Many locomotives have mechanically driven compressors that do not output the maximum rated air supply while the locomotive engine is operating at “DB Setup” rpm. Other Locomotives are electronically driven and can output maximum air supply at any engine/dynamic brake rpm settings. Where appropriate, the minimum number of each type of compressor may need to be included in the driver methodology.*

6 MOSS VALE – UNANDERRA Overlength Service Request

Due to capacity constraints on the Moss Vale (exclusive) – Unanderra (exclusive) corridor, the following planning guidelines have been established to ensure that services proposed to operate above 690m are reviewed and operational planning considerations are captured prior to approving the path.

6.1 Service Length Guidelines:

- a. **0m – 690m:** Services can access up to three (3) crossing loops.
 - o No pathing restrictions, follow current process.
- b. **691m – 725m:** Services can access two (2) crossing loops.
 - o Max three (3) approved overlength services are permitted to operate across the corridor at any one time.

ARTC Planners / Programmers will review requests to operate overlength services.
- c. **726m – 1030m:** Services can access one (1) crossing loop.
 - o Max two (2) approved overlength services are permitted to operate across the corridor at any one time.
 - o ARTC Planners / Programmers will review requests to operate overlength services.
- d. **1031m – 1500m:** Services cannot access any crossing loops.
 - o Can operate as a diversion route only or are subject to a capacity review ensuring only one (1) service is permitted to operate across the corridor at any one time.

6.2 Overlength Guideline Notes:

- Overlength is considered a service length above 690m.
- An overlength service request must be in accordance with the Service Length Guidelines described above in section 6.1.
- ARTC Planners / Programmers will review requests to operate services overlength on the MVL – UND corridor.
- Submission of the path request and service length via DTPOS does not guarantee approval to operate.
- Existing mandatory paths are exempt from this process, any new path requests or requested alterations to existing paths are to be treated as new requests and must adhere to this process.
- If an approved overlength service is not operating to the approved path, this will be considered un-healthy, and an alternate live run path may need to be negotiated with the Train Transit Manager, taking into account the above guidelines.

7 Permanent Speed Restrictions

| LOCATION | KILOMETRAGE | DOWN | | UP | |
|--|-------------|--------|-------------------|--------|-------------------|
| | | NORMAL | EXPRESS PASSENGER | NORMAL | EXPRESS PASSENGER |
| UNANDERRA | 88.273 | | | | |
| <u>TfNSW territory</u> (Refer to TfNSW TOC Section Pages for details of speed boards in this area) | | | | | |
| <u>Start ARTC Territory</u> | 91.080 | | | | |
| DOMBARTON | 96.968 | | | | |
| | 107.970 | | | 30 | 40 |
| SUMMIT TANK | 108.272 | | | | |
| | 108.230 | 45 | 45 | | |
| | 116.070 | | | 45 | 45 |
| | 117.200 | | | 65 | 65 |
| MT MURRAY | 118.992 | | | | |
| | 127.240 | 65 | 65 | 40 | 40 |
| ROBERTSON | 128.306 | | | | |
| | 128.970 | 70 | 70 | | |
| | 130.640 | | | 70 | 70 |
| | 130.920 | 80 | 80 | | |
| | 133.480 | | | 80 | 80 |
| | 133.680 | 115 | 115 | | |
| CALWALLA | 139.366 | | | | |
| | 140.150 | 100 | 100 | 115 | 115 |
| | 140.580 | 115 | 115 | 100 | 100 |
| | 149.850 | 50 | 50 | 115 | 115 |
| | 150.330 | | | 50 | 50 |
| MOSS VALE | 150.898 | | | | |