

### Train Operation Parameters

Design Aspect	Design Criteria	Comments
Passing loop requirements	Three passing loops along the corridor, length of loops shall cater for minimum 2,350 metres between clearance points to cater for Goonyella-length trains	Loop locations: Northern Goonyella end – Approximately 220.0km Midway – Approximately 246.6 km Newlands end – Approximately 272.1 km
Rolling stock gauge	Electric – Rollingstock Gauge Electric Locomotive Diesel – Rollingstock Gauge Non-Electric Rollingstock	Refer to QR Standard Rollingstock Gauge Electric Locomotive (Drawing 2237) and Rollingstock Gauge Non-Electric Rollingstock (Drawing 2236)

### Track Alignment Parameters

Design Aspect	Design Criteria	Comments
Track gauge	1,067 mm	
Design speed	80 km/hr	
Track centre spacing	4,200 mm	Refer to QR Standard Track Formation Drawing 2567
Maximum grade	Compensated 1 in 105 (0.95%) max Loaded Direction Compensated 1 in 105 (0.95%) max Unloaded Direction 1 in 200 max at passing loop	Loaded direction means heading north towards the Newlands System. Unloaded direction means heading south towards the Goonyella System
Minimum VC length	40 metres	
Minimum vertical radii	Summit – R6670 metres (0.06 m/chord) Sag – R13340 metres (0.03 m/chord)	Insert VC at any grade change greater than 1 in 200
Transitions	100 metres for main line 40 metres for balloon loops	As advised by QR
Minimum horizontal radii	R500 for main line R300 for balloon loops	As advised by QR
Minimum distance between sags and summits	Change in grade should be separated by the length of the longest train to operate in the section	As advised by QR
Minimum length of straight between tangent points of reverse curves	60 km/hr – 20 metres 70 km/hr – 40 metres 80 km/hr – 60 metres 90 km/hr – 80 metres 100 km/hr – 100 metres 110 km/hr – 100 metres 120 km/hr – 120 metres 130 km/hr – 120 metres 140 km/hr – 140 metres 150 km/hr – 140 metres 160 km/hr – 150 metres	As advised by QR
Turnouts	1 in 25 (80kph) 1 in 16 (65kph)	Turnouts are to be located on straights and constant grade

#### Track Structure Parameters

Design Aspect	Design Criteria	Comments
Design life	50 years	
Design axle load	26.5 tonnes	
Rail size	60 kg/metre AS	
Sleeper	Concrete	
Fastenings	Resilient	
Ballast level	Minimum 300 mm and maximum 400 mm ballast below sleeper	
Turnout size and geometry	60kg/m 1 in 16 and 1 in 25	
Track length	Continuously Welded Rail (CWR)	

#### General Civil Works Parameters

Design Aspect	Design Criteria	Comments
Corridor width	Minimum 60 metres	Refer to QR Standard Track Formation Drawing No. 2571 for areas with extensive earthworks
Track formation	Single Track – Crown position at centreline of track Loops – Crown position between centrelines of both tracks	Refer to QR Standard Track Formation – Dimensions and Drainage Details (Drawings No. 2567, 2568, 2570, 2571 and 2572) Provision may be required for future double tracking of corridor
Capping layer	600 mm on embankment 300 mm max on cutting (varies in cutting depending on subgrade strength)	Max CBR 30
Earthworks	Embankment and cutting as per QR standards Provision for electrification mast	Refer to QR Standard Track Formation – Dimensions and Drainage Details (Drawings No. 2567, 2568, 2570, 2571 and 2572)
Access roads	4,000 mm wide on side of electrification mast Access road at formation level.	Refer to QR Standard Track Formation Drawing No. 2570
Fencing	Type of fencing subject to risk assessment	Refer to QR Standard Drawing No. 2548 & 2549

#### At-Grade Crossing Parameters

Design Aspect	Design Criteria	Comments
At Grade Crossing	At-grade crossing to be designed in accordance with Department of Main Roads (DMR) requirements and QR Standard drawing.	Level of protection for each crossing to be determined following risk assessment.

#### Drainage Parameters

Design Aspect	Design Criteria	Comments
Flood immunity	50-year ARI flood immunity to top of formation	
Culvert type	Reinforce Concrete Box Culvert (RCBC) or Corrugated Metal Pipe (CMP)	

#### Rail Underbridge Design Parameters

Design Aspect	Design Criteria	Comments
Design live loading	300-A-12 (Refer to QR Standard Drawings No: 2581)	
Bridge span	Standard PSC spans 15.24 m	

#### Rail Overbridge Design Parameters

Design Aspect	Design Criteria	Comments
Overline bridge clearance	QR standard clearances for proposed structures	Refer to QR Standard Clearances for Proposed Structures (Drawing 2461)
Minimum vertical clearance to track	6.4 m from top of rail	
Minimum horizontal clearance	3.0 m from centre line of track	