



AUSTRALIAN RAIL TRACK CORPORATION LTD

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Illawarra Division

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TRAIN OPERATING CONDITIONS

Illawarra

Illawarra Section Pages

ILLAWARRA SECTION PAGES

Status sheet 11 (Issued August 2004)

This table shows the current status of units in this manual.

This sheet must be used to check that your manual contains all of these units and that each unit is up to date.

When a new status sheet is forwarded to you, it is your responsibility to add, remove or replace any pages or units from this manual as instructed in the **bold** print on the new status sheet.

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Section Location Map	June 2000

SECTION 1

ENFIELD YARDS - BOMADERRY

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1	August 2004
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SECTION 2

INNER HARBOUR / PORT KEMBLA - MOSS VALE

Page	Issued
1	August 2004
2	August 2004
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5	August 2004
6	August 2004

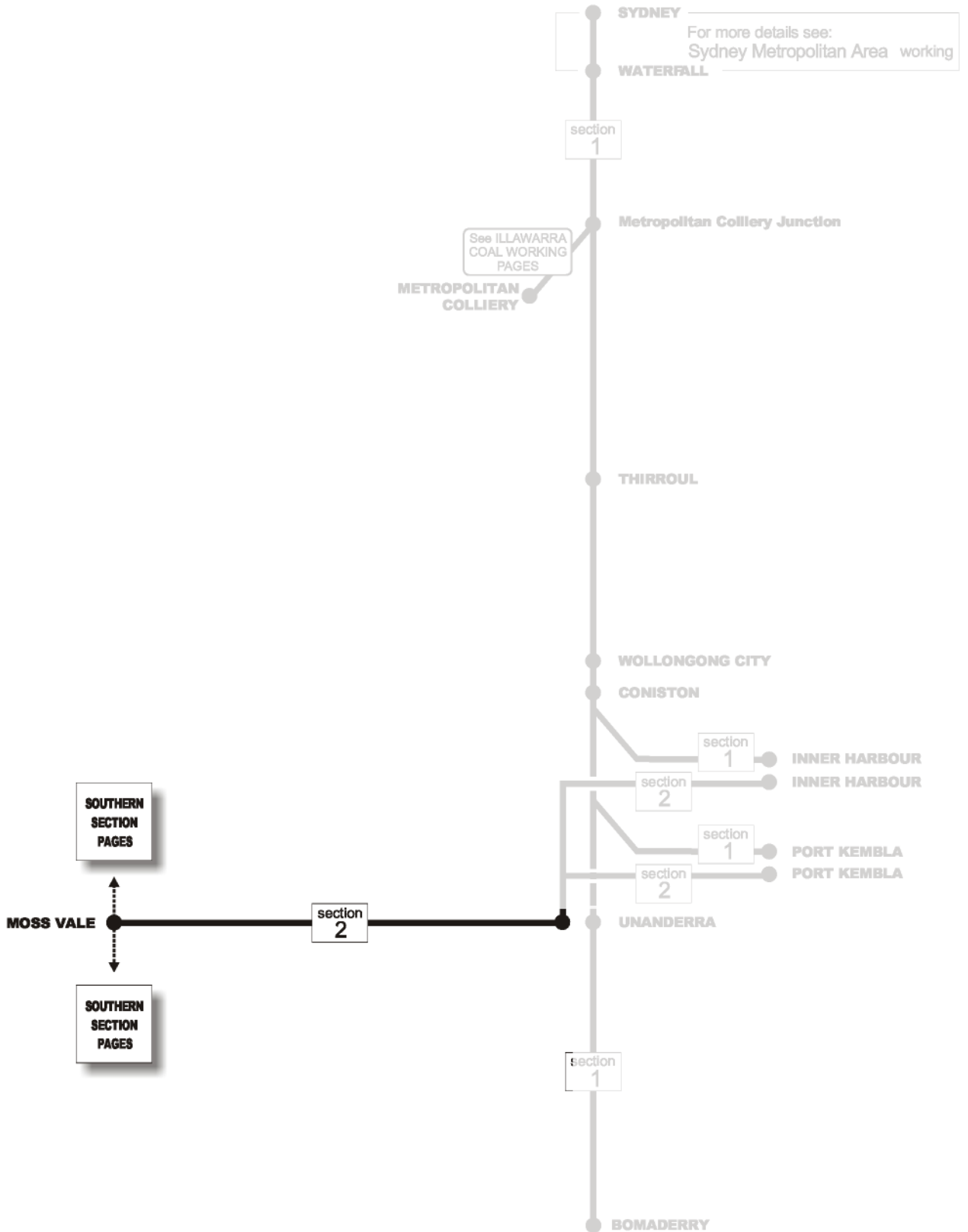
ILLAWARRA TRACK DIAGRAMS

Page / Map	Issued
Index	June 2000
Explanation of symbols	September 2002
1	August 2004
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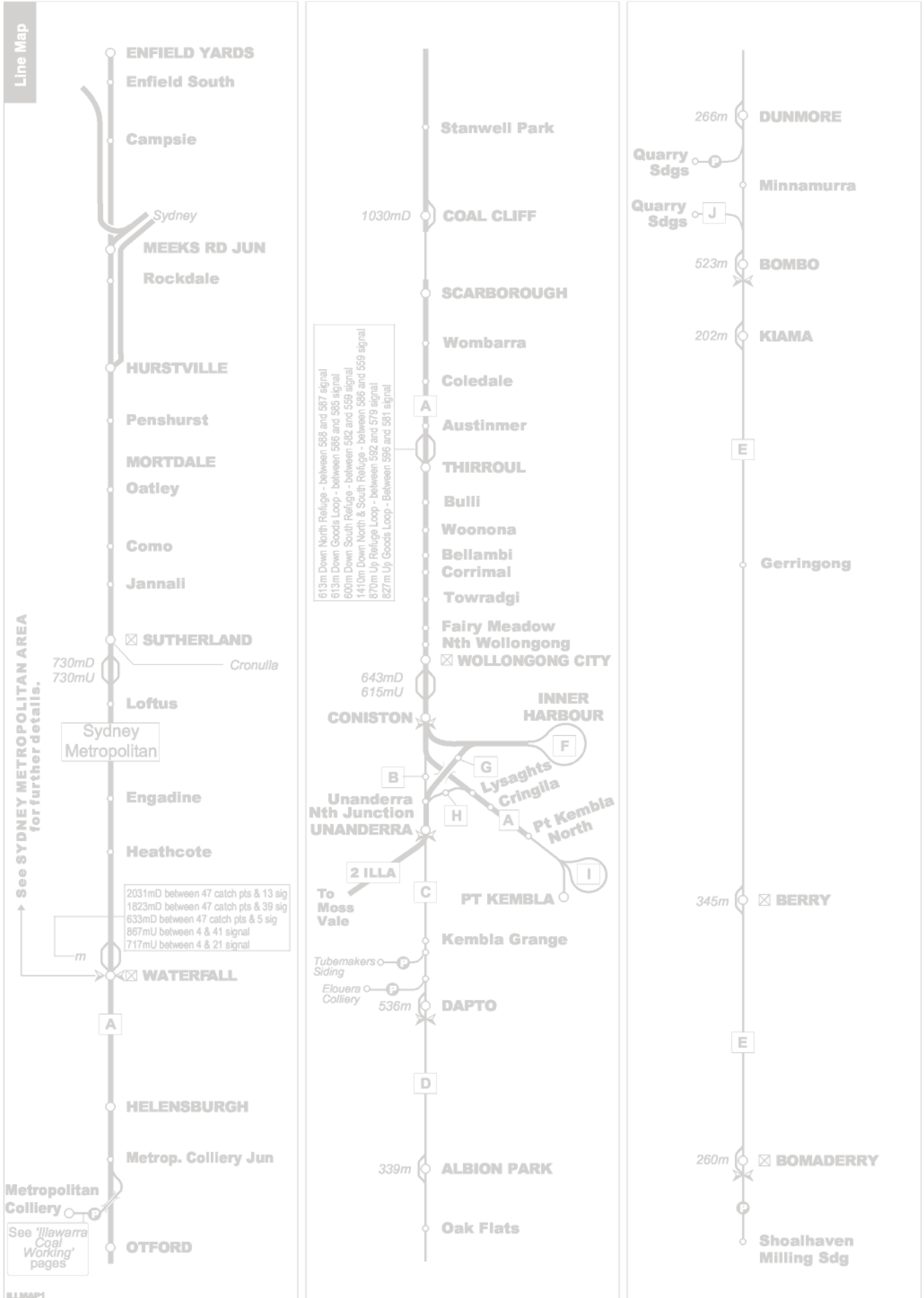
Section location Map

Section 1	Enfield Yards – Port Kembla - Bomaderry
Section 2	Inner Harbour – Port Kembla – Moss Vale

SECTION LOCATION MAP



Enfield Yards - Pt Kembla - Bomaderry section 1



Enfield Yards - Pt Kembla - Bomaderry section 1

Maximum Speed of Locomotives and Rolling Stock

Class of Track	SECTIONS										Notes									
	Waterfall - Pt Kembla	Coniston - Unanderra	Unanderra - Dapto	Dapto - Bombo	Bombo - Bomaderry	Coniston - Inner Hbr	South Fork - Unanderra North Jun	Allans Creek - Unanderra North Jun	Port Kembla Balloon Loop	Quarry Sliding Bombo										
Line Map reference	1	1	1	1	2	1	1	1	1	2										
	A	B	C	D	E	F	G	H	I	J										
Locomotives																				
Multiple Locos	4	4	4	4	4	4	4	4	4	4										
S1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A										
S2	100	100	100	100	70(a)	25	35	60	25	15										
S3	115	100	80	80	80(a)	25	35	60	25	15										
S4	100	100	80	80(b)	N/A	25	35	60	25	N/A										
S5	115	100	80	80	80	25	35	60	25	15										
S6	115	100	80	80	80	25	35	60	25	15										
S7	90	90	80	80	80	25	35	60	25	15										
S8	115	100	80	80	80	25	35	60	25	15										
S9	115	100	100	100	100	25	35	60	25	15										
S10	115	100	100	100	100	25	35	60	25	15										
S11	80	80	80	80	80	25	35	60	25	15										
S12	100	100	100	100	100	25	35	60	25	25										
S13	100	100	100	100	100	25	35	60	25	25										
Freight																				
Class A	115	100	100	100	100	25	35	60	25	25										
Class B	100	80	80	80	80(a)	25	35	60	25	25										
Class C	80	80	80	80	80	25	35	60	25	25										
Class D	65	60	60	60	60	25	35	60	25	25										
Class E	80	70	70	70	70	25	35	60	25	15										
Class F	65	65	65	65	65(a)	25	35	60	25	N/A										
Class G	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A										
Passenger																				
XPT	115	100	100	100	100	25	35	60	25	25										
Xplorer	115	100	100	100	100	25	35	60	25	25										
Diesel Train	115	100	100	100	100	25	35	60	25	25										
Loco Hauled	115	100	100	100	100	25	35	60	25	25										
Accident Cranes																				
70 tonne	60	60	60	60	60	25	35	30	25											
110 tonne	115	100	100	100	80	25	35	60	25											
120 tonne	50	50	50	50	50	25	30	30	25											
Notes																				

NOTES:

(a) Locomotives included in speed categories S2 and S3 and freight vehicles when loaded to axle loads greater than 22 tonnes are not permitted to use Berry Loop.

(b) S4 (NR) category locomotives restricted to operate between Unanderra and Dunmore.

Safeworking systems

Waterfall to Bomaderry

SECTION	SYSTEM
Waterfall to Coal Cliff	Rail Vehicle Detection (Bidirectional)
Coal Cliff to Scarborough	Rail Vehicle Detection
Scarborough to Wollongong (WG466D,WG468U)	Rail Vehicle Detection (Bidirectional)
Austinmer to Bulli	Thirroul Yard Area
Wollongong (Unanderra North - WG1001,WG1003,WG1005,WG1007) to Unanderra	Rail Vehicle Detection (Bidirectional)
Unanderra to Dapto	Rail Vehicle Detection
Dapto to Albion Park	Rail Vehicle Detection
Albion Park to Dunmore	Rail Vehicle Detection
Dunmore to Bombo	Rail Vehicle Detection
Bombo to Kiama	Rail Vehicle Detection
Kiama to Berry	Electric Staff
Berry to Nowra	Electric Staff

Inner Harbour

Wollongong (WG121D) to Inner Harbour Balloon Loop	Wollongong Yard Area
Unanderra North (WG1003,WG1005) to Inner Harbour Balloon Loop	Wollongong Yard Area

Port Kembla Branch

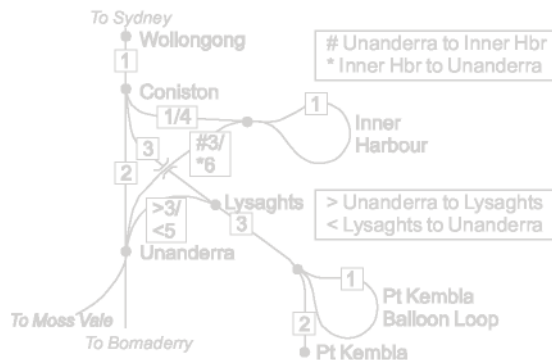
Wollongong (WG121D,WG114U) to Lysaghts (WG81D, WG80U)	Rail Vehicle Detection
Lysaghts to Port Kembla North	Port Kembla Yard Area
Port Kembla North to Port Kembla	Port Kembla Yard Area

Wollongong Local Area - Loads

WOLLONGONG - PORT KEMBLA - INNER HARBOUR - UNANDERRA - Local area Full sectional Loads

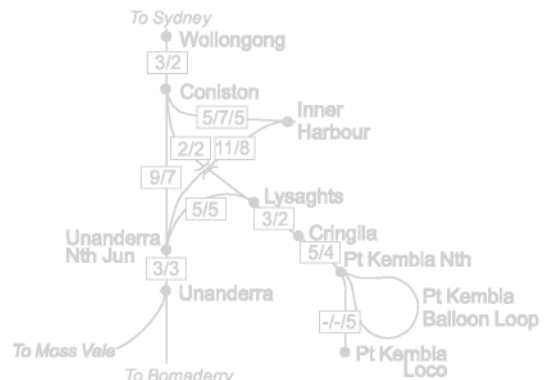
FULL LOAD TABLE	LOCOMOTIVE CATEGORY													
	①	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13
1	N/A	3300	3047	2882	2711	2395	2330	2271	1959	1887	1737	1621	1131	
2	N/A	3096	2858	2702	2541	2245	2185	2128	1835	1768	1627	1518	1059	
3	N/A	2881	2659	2514	2363	2086	2032	1975	1704	1643	1511	1410	984	
4	N/A	2654	2449	2315	2175	1920	1870	1818	1567	1511	1388	1295	904	
5	N/A	1752	1613	1523	1427	1256	1228	1186	1020	986	901	841	587	
6	N/A	1607	1479	1396	1307	1149	1125	1085	933	902	823	768	536	

Refer to table for loads. Where only one figure is shown e.g. [1] this represents the Down and Up load. Where two figures are shown the first figure represents the Down load and the second figure represents the Up load e.g. [3/5]. This table does not give the authority for all classes of locomotives to run on all sections of line. Refer to MAXIMUM SPEED OF LOCOMOTIVES AND ROLLING STOCK table for authority to run on each section



Local area Sectional Running Times

Where two figures are shown:
 1st Figure shown represents Full sectional load running times.
 2nd Figure represents "Locomotive Only" running times.
 Where three figures are shown:
 1st Figure = Down Full sectional load running times
 2nd Figure = Up Full sectional load running times
 3rd Figure = "Locomotive only running times"



UP	LOADS & CONDITIONS SECTIONS	LOCO-MOTIVE CLASS = L	LOCOMOTIVES					TRAIN DATA		NOTES
			SINGLE	DOUBLE	TRIPLE	QUAD	QUIN	VEHICLE CLASS	SECT RUN TIMES	
			LOADS TONNES							
1	BOMADERRY- SYD METROP	L3/L4	750	1500	2250	--	--	ABC	1	
2	BOMADERRY- SYD METROP	L3/L4	1140	2280	3420	4560	--	ABCDE	2	
3	BOMADERRY- SYD METROP	L6	1062	2124	3186	4248	--	ABCDE	2	
4	BOMADERRY- SYD METROP	L7	1040	2080	3120	4160	--	ABCDE	2	
5	BOMADERRY- SYD METROP	L8	1002	2004	3006	4008	--	ABCDE	2	
6	BOMADERRY- SYD METROP	L9	860	1720	2580	3440	--	ABCDE	2	
7	BOMADERRY- SYD METROP	L11	759	1518	2277	3036	--	ABCDE	2	
8	BOMADERRY- SYD METROP	L12	708	1416	2124	2832	--	ABCDE	2	
9	DUNMORE – SYD METROP	L2/L3/L4	1400	2800	--	--	--	ABCDE	2	
10	DUNMORE – SYD METROP	L4/L5 +L2	--	2760	--	--	--	ABCDE	2	
11	DUNMORE – SYD METROP	L5	--	2780	--	--	--	ABCDE	2	2
12	PT KEMBLA –SYD METROP	L10	805	1610	--	--	--	ABCDE	2	1
13	BOMADERRY – BOMBO	L13	585	1170	1755	2340	--	ABCDE	3	
14	BOMBO – PT KEMBLA	L13	510	1020	1530	2040	--	ABCDE	3	
15	PT KEMBLA –SYD METROP	L13	785	1570	2355	3140	--	ABCDE	3	1
16	PT KEMBLA –SYD METROP	L2	2230	4460	6690	--	--	ABC	4	1
17	PT KEMBLA –SYD METROP	L4	2000	4000	6000	--	--	ABC	5	1
18	PT KEMBLA –SYD METROP	L5	1850	3700	5550	--	--	ABC	5	1
19	WONGAWILLI JCT – U'DERRA	L4	1600	--	--	--	--	ABC	6	3

Notes:

- 1 Includes Inner Harbour
- 2 Tested and approved double unit load.
- 3 Tested and approved single unit load.

UP	SECTIONAL RUNNING TIMES							FULL SECTIONAL LOADS														GRADE	
	LOCOMOTIVE CATEGORIES = L																						
	1	2	3	4	5	6	Loco	1	2	3	4	5	6	7	8	9	10	11	12	13	14		
BOMADERRY																							
BERRY	15	17	21				11			2227	2104	1976	1743	1699	1650	1422	1372	1259	1175	820		1:80	
Gerringong							10			2111	1995	1872	1651	1610	1563	1346	1299	1191	1112	776		1:76	
KIAMA	25	27	33				9			1992	1882	1766	1557	1519	1473	1268	1224	1122	1047	731		1:70	
BOMBO	3	4	5				3			4274	4044	3809	3369	3274	3199	2761	2658	2452	2288	1600		DG	
DUNMORE	6	7	9				8			1607	1479	1396	1307	1149	1125	1085	933	902	823	768	536	1:50	
ALBION PARK	7	12	9				10			1488	1369	1292	1208	1062	1040	1002	860	833	759	708	494	1:46	
DAPTO	8	10	10				8			1607	1479	1396	1307	1149	1125	1085	933	902	823	768	536	1:50	
WONGAWILLI JCT	--	--	--				--			1607	1479	1396	1307	1149	1125	1085	933	902	823	768	536	1:50	
UNANDERRA	6	7	6			10	8			1607	1479	1396	1307	1149	1125	1085	933	902	823	768	536	1:50	
UNANDERRA NTH JCT	3	3	3				3			4624	4274	4044	3809	3369	3274	3199	2761	2658	2452	2288	1600	Level	
CONISTON	5	5	5				3			4624	4274	4044	3809	3369	3274	3199	2761	2658	2452	2288	1600	Level	
WOLLONGONG	2	2	2	2	2		3			4624	4274	4044	3809	3369	3274	3199	2761	2658	2452	2288	1600	Level	
CORRIMAL	5	6	7	5	6		5			2881	2659	2514	2363	2086	2032	1975	1704	1643	1511	1410	984	1:100	
THIRROUL	6	6	7	6	6		6			2289	2111	1995	1872	1651	1610	1563	1346	1299	1191	1112	776	1:75	
SCARBOROUGH	8	12	22	12	16		8			2289	2111	1995	1872	1651	1610	1563	1346	1299	1191	1112	776	1:75	
COAL CLIFF	3	4	6	5	5		4			3300	3047	2882	2711	2395	2330	2271	1959	1887	1737	1621	1131	1:120	
OTFORD	7	9	14	10	12		7			2289	2111	1995	1872	1651	1610	1563	1346	1299	1191	1112	776	1:75	
HELENSBURGH	8	9	12	12	12		8			2289	2111	1995	1872	1651	1610	1563	1346	1299	1191	1112	776	1:75	
WATERFALL	9	19	20	18	20		8			2414	2227	2104	1976	1743	1699	1650	1422	1372	1259	1175	820	1:80	
SUTHERLAND	12	13	18	13	14		12			3300	3047	2882	2711	2395	2330	2271	1959	1887	1737	1621	1131	1:120	
MORTDALE	7	9	10	8	10		8			2414	2227	2104	1976	1743	1699	1650	1422	1372	1259	1175	820	1:80	
HURSTVILLE	3	4	5	4	4		3			2289	2111	1995	1872	1651	1610	1563	1346	1299	1191	1112	776	1:75	
MEEKS RD JCT	8	12	12	8	9		8			2881	2659	2514	2363	2086	2032	1975	1704	1643	1511	1410	984	1:100	
WARDELL RD JCT	5	7	6	5	5		5			2881	2659	2514	2363	2086	2032	1975	1704	1643	1511	1410	984	1:100	
BALMAIN RD JCT	..	12a	..	..	..		13a			2881	2659	2514	2363	2086	2032	1975	1704	1643	1511	1410	984	1:100
CAMPSIE	5		7	7	7		4			2881	2659	2514	2363	2086	2032	1975	1704	1643	1511	1410	984	1:100	
ENFIELD SOUTH	5		5	5	5		4			2881	2659	2514	2363	2086	2032	1975	1704	1643	1511	1410	984	1:100	
ENFIELD YARDS	6a		6a	6a	6a		5a			2881	2659	2514	2363	2086	2032	1975	1704	1643	1511	1410	984	1:100	

Pt Kembla – Coniston

PT KEMBLA																							
PT KEMBLA NTH	5	5	5	5			5			2881	2659	2514	2363	2086	2032	1975	1704	1643	1511	1410	984	1:100	
CRINGILA	5	5	5	5			4			4624	4274	4044	3809	3369	3274	3199	2761	2658	2452	2288	1600	DG	
CONISTON	5	5	5	5			4			2881	2659	2514	2363	2086	2032	1975	1704	1643	1511	1410	984	1:100	

Inner Harbour - Coniston

INNER HARBOUR																							
CONISTON	7	7					5			2654	2449	2315	2175	1920	1870	1818	1567	1511	1388	1295	904		1:90

Location of Speed signs

Waterfall to Port Kembla

LOCATION	KILO-METRAGE	DOWN NORM	UP NORM	DOWN
For previous speed signs See SYDNEY METROPOLITAN section				
WATERFALL	38.741			
^ On Up Refuge Loop	38.800	..	..	X50^
^ On Up Refuge Loop	38.835	..	..	X50^
	38.910	..	..	X50
	39.200	..	..	50
	39.234	75	40	..
	39.500	..	..	75
	40.220	..	75	..
	40.520	60	60	75 60
	40.840	50	..	60 50
	41.700	60	50	50 ..
	42.000	..	..	60
	45.350	..	60	..
	45.690	50	..	60 50
HELENSBURGH	46.384			
	46.800	60	50	.. ..
	47.070	..	..	50 ..
	47.370	50	..	.. 60
Metropolitan Colliery Jct	48.947			
	49.960	..	..	60 55
	50.630	80	60	55 ..
	50.930	..	..	80
	51.450	..	80	.. ..
	51.750	50	..	80 50
OTFORD	52.639			
	52.990	60	50	50 ..
	53.290	..	..	60
	54.300	75	60	.. ..
	55.180	..	75	.. ..
	55.380	60	..	.. ..
STANWELL PARK	55.950			
	56.434	..	60	60 ..
Stanwell Park Viaduct	56.542	20/ *40MU	..	.. 20/ *40MU
Stanwell Park Viaduct	56.908	..	20/ *40MU	20/ *40MU ..
	57.418	60	..	.. 60
	58.540	75	60	60 ..
	58.840	..	..	80
COAL CLIFF	59.273			
	59.490	..	75	.. ..
	59.860	..	..	80 40
	59.875	X40	..	.. ..
	60.330	80	40	X40 80
	61.340	50	..	80 ..
	61.670	..	..	50 ..
	61.800	35	..	.. 35
	61.910	..	35	35 ..
	62.200	75	..	.. 75
SCARBOROUGH	62.529			
	63.750	..	75	.. ..
	63.810	..	..	75 65
	64.050	70	..	.. ..
WOMBARRA	64.335			
	65.780	..	..	65 ..
	66.000	80	70	.. 100
COLEDALE	66.233			
	66.850	..	..	100 70
	66.890	..	80	.. ..
	67.190	70	..	.. ..
	67.460	100	70	70 ..
	67.750	115	..	.. 115

LOCATION	KILO-METRAGE	DOWN NORM	UP NORM	DOWN
AUSTINMER	68.585			
THIRROUL	70.237			
	70.250	..	115	.. ..
	70.330	..	..	115 70
	70.550	70	..	.. ..
	71.030	100	70	70 ..
	71.330	..	..	.. 80
	72.040	..	100	.. ..
BULLI	72.151			
	72.340	80	..	.. ..
	73.610	100	80	80 ..
	73.921	..	..	.. 100
WOONONA	73.993			
BELLAMBI	75.547			
	76.743	90	100	.. ..
	76.859	..	..	.. 90
CORRIMAL	76.989			
TOWRADGI	78.021			
FAIRYMEADOW	79.358			
NORTH WOLLONGONG	81.320			
WOLLONGONG CITY	82.919			
	83.801	..	..	90 75
	83.805	80	90	.. ..
CONISTON	84.097			

LOCATION	KILO-METRAGE	DOWN NORM	UP NORM	DOWN
206 Points	84.190	X25	..	.. ..
Down Sgn Up Main 205 Points	84.190	X25	..	.. ..
204 Points	84.298	X25	..	.. ..
204 Points	84.382	..	..	X25 ..
Down Sgn Up Main 203 Points	84.382	X25	..	.. ..
	84.553	60	..	.. ..
	85.020	..	..	60 ..
	85.282	80	..	.. ..
LYSAGHTS	86.267			
197 Points	86.386	..	..	X25 ..
	87.241	..	..	75 ..
CRINGILA	87.650			
	88.233	60	..	.. ..
	88.325	..	..	60 ..
186 Points	88.667	..	..	X30 ..
PORT KEMBLA NORTH	88.771			
	89.700	..	..	60 ..
	89.950	25	..	.. ..
	90.000	..	..	25 ..
PORT KEMBLA	90.239			

Coniston to Inner Harbour

LOCATION	KILO-METRAGE	DOWN NORM	UP NORM	DOWN
CONISTON	84.097			
206 Points	84.190	X25	..	.. ..
Down Sgn Up Main 205 Points	84.190	X25	..	.. ..
206 Points	84.296	..	X25	.. ..
205 Points	84.296	..	..	X25

* Speed sign applies to XPT type trains as well as multiple unit trains. See Network Rules NSG604

Location of Speed signs

Coniston to Bomaderry

LOCATION	KILO- METRAGE	DOWN NORM	XPT	UP NORM	XPT
CONISTON	84.097				
206 Points	84.190	X25	..	..	..
Down Sgn Up Main 205 Points	84.190	X25	..	..	..
204 Points	84.298	X25	..	..	..
204 Points	84.382	..	..	X25	..
Down Sgn Up Main 203 Points	84.382	X25	..	..	..
203 Points	84.431	..	..	X25	..
	84.488	65	..	..	..
	85.050	40	..	..	..
	85.199	..	..	65	..
	85.900	100	..	..	..
UNANDERRA	88.273				
	88.700	X50	..	..	..
	88.870	..	..	X50	..
	89.840	100	..	..	..
KEMBLA GRANGE	91.586				
	94.900	..	..	100	..
DAPTO	95.047				
	102.932	..	..	100	..
	103.264	..	..	40	..
ALBION PARK	103.341				
	104.520	..	..	100	..
	105.240	100	..	..	..
OAK FLATS	105.522				
	106.540	..	..	100	..
	106.790	85	..	..	..
	106.930	..	..	85	..
	107.180	100	..	..	..
	107.930	80	..	100	..
	108.790	100	..	80	..
DUNMORE/ SHELLHARBOUR	110.657				
	112.210	..	..	100	..
	112.270	75	..	..	..
	113.040	..	..	75	..

LOCATION	KILO- METRAGE	DOWN NORM	XPT	UP NORM	XPT
	113.300	90	..	..	..
MINNAMURRA	113.372				
	114.770	75	..	90	..
	116.130	..	..	75	..
	116.170	50	..	..	..
	116.820	..	..	50	..
	116.880	80	..	..	..
BOMBO	117.551				
	117.861	..	..	80	..
	117.940	60	..	..	..
	118.810	..	..	60	..
	118.965	25	..	..	..
KIAMA	119.160				
	119.430	100	..	25	..
	123.210	50	..	100	..
	124.360	100	..	50	..
GERRINGONG	128.560				
	139.000	80	..	100	..
	139.430	..	..	80	..
	139.490	90	..	..	..
BERRY	140.844				
	142.588	100	..	..	..
	142.590	..	..	90	..
⊗ Level crossing sign	144.800	⊗ 60	..	..	..
	145.771	..	..	100	..
	145.879	90	..	..	..
	146.470	..	..	90	..
	146.530	100	..	..	..
	152.290	80	..	..	..
	153.169	..	..	100	..
BOMADERRY	153.348				

Unanderra North Junction to Lysaghts

LOCATION	KILO- METRAGE	DOWN NORM	XPT	UP NORM	XPT
ILLAWARRA LINE 1102 Pts	85.318	..	..	X25	..
TRIANGLE LOOP LINE	+84.833	60	..	..	..
TRIANGLE LOOP LN 1102 Pts	+84.843	X25	..	..	..

+ Kilometrage measured from Port Kembla Line

LOCATION	KILO- METRAGE	DOWN NORM	XPT	UP NORM	XPT
TRIANGLE LOOP LINE	+86.222	..	..	60	..
TRIANGLE LOOP LN 197 Pts	+86.315	X25	..	..	..
PT KEMBLA LINE 197 Pts	+86.386	..	..	X25	..

Out-of-gauge steel trains

Out-of-gauge steel trains may operate between Cringila and Enfield yards subject to the conditions shown for Out-of-gauge steel trains contained in the **General Instruction Pages** section.

The locations where crossings may be made as authorised are as follows:

# Wollongong	Down and Up Refuge loops
Thirroul	Up Refuge Loop No 1 and 2 Up Siding
Clifton	Up Main (Signal WG628U)
Coal Cliff	Up Main (Island Platform) Down Refuge
Helensburgh	Up Main (Island Platform) clear from control Signal WG 754 for 417 metres
Waterfall	Up Refuge loop and Up Goods loop
Sutherland	Up Refuge loop

The Out-of-gauge steel train may cross another train when standing at this location, provided a clear running line is maintained between the two trains.

The speed of the Out-of-gauge train must be reduced to 15km/h whilst travelling through Clifton Tunnel.

Station Data

Waterfall to Bomaderry

Station	Kilo-metrage	Signal box Status	Hours of signal box	Facilities
Waterfall	38.627	A	Always	P,TT
Helensburgh	46.384	C	Controlled from Wollongong Signal Box	P,LP
Metropolitan Colliery Junction	48.947	C	Controlled from Wollongong Signal Box	L
Metropolitan Colliery	*50.221	C	* On Branch	PS
Otford	52.639		Controlled from Wollongong Signal Box	P,LP
Stanwell Park	55.950			P
Coal Cliff	59.273		Controlled from Wollongong Signal Box	P,LP
Scarborough	62.529	C	Controlled from Wollongong Signal Box	P,LP
Wombarra	64.335			P
Coedale	66.233			P
Austinmer	68.585			P
Thirroul	70.237	C	Controlled from Wollongong Signal Box	P,LP
Bulli	72.151			P
Woonona	73.993			P
Bellambi	75.547			P
Corrimal	76.989			P
Towradgi	78.021			P
Fairy Meadow	79.358			P
North Wollongong	81.320			P
Wollongong	82.919	C	Controlled from Wollongong Signal Box	P,TT
Wollongong Sig Box		A	Always	
Coniston	84.097	C	Controlled from Wollongong Signal Box	P,LP
Unanderra Nth Jun	86.541	C	Controlled from Wollongong Signal Box	L
Unanderra	88.273	C	Controlled from Wollongong Signal Box	P,LP
Kembla Grange	91.586			P
Tubemakers Siding				PS
Dapto	95.047	C	Controlled from Wollongong Signal Box	P,LP
Albion Park	103.341	C	Controlled from Wollongong Signal Box	P
Oak Flats	105.522			P
Dunmore	110.657	C	Controlled from Wollongong Signal Box	P
Quarry Siding	*112.060		* On Branch	PS
Minnamurra	113.372			P
Bombo Quarry Sdg	*117.212		* On Branch	PS
Bombo	117.551	C	Controlled from Wollongong Signal Box	P
Kiama	119.160	P	Controlled from Wollongong Signal Box	P,TT
Gerringong	128.560			P
Berry	140.844	P	Monday to Friday: 0445 – 2030 Saturday, Sunday, and Public Holidays: 0535 – 2120	P
Bomaderry	153.348	A	Always	P,TT
Mill Siding	*155.913		* On Branch	PS

Port Kembla Branch

Allans Creek	86.267	C	Controlled from Wollongong Signal Box	L
Cringila	87.650	C	Controlled from Wollongong Signal Box	P
Port Kembla North	88.771	C	Controlled from Wollongong Signal Box	P
Port Kembla	90.239	C	Controlled from Wollongong Signal Box	P

Inner Harbour Branch

Inner Harbour	84.488	C	Controlled from Wollongong Signal Box	G, L
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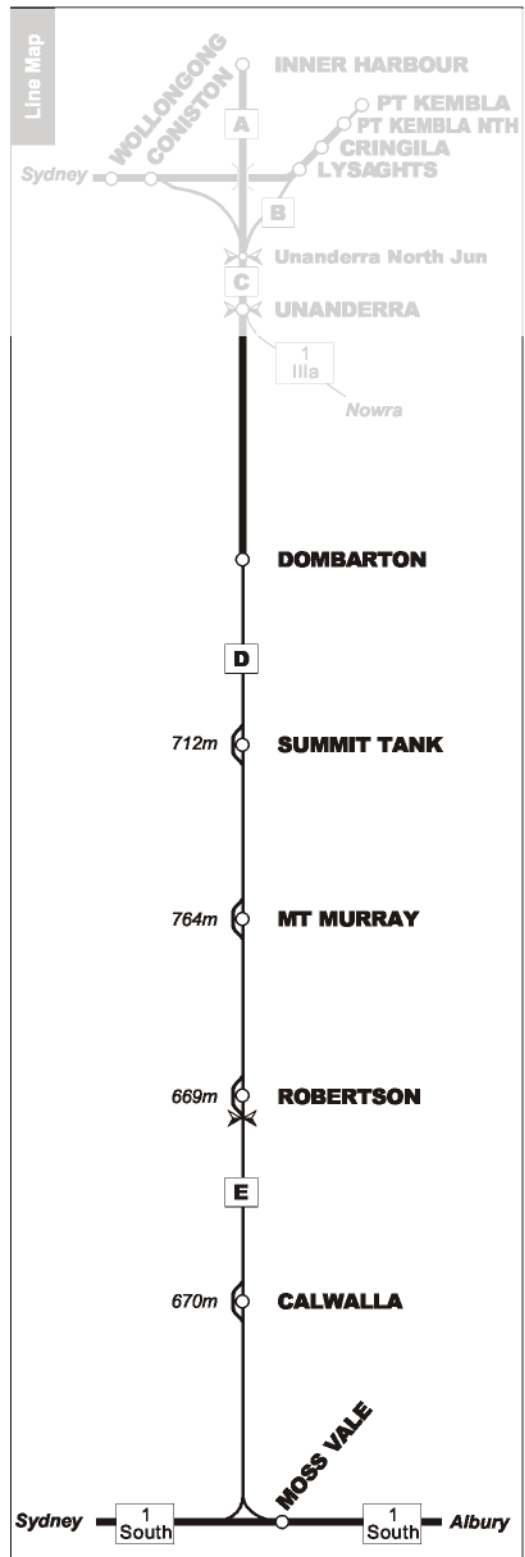
Inner Harbour/Pt Kembla - Moss Vale section 2

Maximum Speed of Locomotives and Rolling Stock

Class of Track	SECTIONS			1	1	Notes
	Inner Harbour - Unanderra North Jun	Port Kembla - Unanderra Nth Jun	Unanderra Nth Jun - Robertson - Moss Vale			
Line Map reference	A	B	C	D	E	
Locomotives						
Multiple Locos	REFER TO SECTION 1	REFER TO SECTION 1	REFER TO SECTION 1	5	5	
S1				N/A	N/A	
S2				50	100	
S3				50	115	
S4				50	115	
S5				50	115	
S6				50	115	
S7				50	90	
S8				50	115	
S9				50	115	
S10				50	115	
S11				50	80	
S12				50	100	
S13				50	100	
Freight						
Class A				50	115	
Class B				50	100	
Class C				50	80	
Class D				50	65	
Class E				50	80	
Class F				50	65	
Class G				N/A	N/A	
Passenger						
XPT				N/A	N/A	(a)
Xplorer				N/A	N/A	(a)
Diesel Train				50	115	(a)
Loco Hauled				50	115	
Accident Cranes						
70 tonne				50	60	
110 tonne				50	115	
120 tonne				30	30	
Notes				(b)		

NOTES:

- (a) See page 5 of this section for operating restrictions between Unanderra and Moss Vale.
 (b) See instructions contained in **General Instruction Pages - Train Operations Section 3** for operation of trains and light locomotives over this section.



Safeworking System

Inner Harbour and Pt Kembla to Unanderra

Unanderra to Dombarton
 Dombarton to Summit Tank
 Summit Tank to Mt Murray
 Mt Murray to Robertson
 Robertson to Calwalla
 Calwalla to Moss Vale

See Illawarra Section 1 Page 3

Rail Vehicle Detection (Bi-directional)
 Rail Vehicle Detection
 Rail Vehicle Detection
 Rail Vehicle Detection
 Rail Vehicle Detection
 Rail Vehicle Detection

DOWN LOADS & CONDITIONS SECTIONS	LOCO- MOTIVE CLASS = L	LOCOMOTIVES					TRAIN DATA			
		SINGLE	DOUBLE	TRIPLE	QUAD	QUIN	VEHICLE CLASS	SECT RUN TIMES	NOTES	
		LOADS TONNES								
1	I/HBR PT KEMBLA – M' VALE	L3/L4	500	1000	1500	--	--	ABCDEF	1	1
2	I/HBR PT KEMBLA – M' VALE	L2	900	1800	2700	3600	4500	ABCDEF	2	
3	I/HBR PT KEMBLA – M' VALE	L3/L4	750	1500	2250	3000	3750	ABCDEF	2	
4	I/HBR PT KEMBLA – M' VALE	L5	690	1380	2070	2760	3450	ABCDEF	2	
5	I/HBR PT KEMBLA – M' VALE	L6	551	1102	1653	2204	--	ABCDEF	2	
6	I/HBR PT KEMBLA – M' VALE	L7	543	1086	1629	2172	--	ABCDEF	2	
7	I/HBR PT KEMBLA – M' VALE	L8	517	1034	1551	2068	--	ABCDEF	2	
8	I/HBR PT KEMBLA – M' VALE	L9	485	970	1455	1940	--	ABCDEF	2	
9	I/HBR PT KEMBLA – M' VALE	L10	430	860	1290	1720	--	ABCDEF	2	
10	I/HBR PT KEMBLA – M' VALE	L11	388	776	1164	1552	--	ABCDEF	2	
11	I/HBR PT KEMBLA – M' VALE	L12	362	724	1086	1448	--	ABCDEF	2	

Notes

(1) Empty wheat / coal vehicles.

Assisting Unanderra to Summit Tank

To assist in operational flexibility a portion of the motive power can be marshalled on the rear of the train. Vehicles with light gross masses that are marshalled in the trailing 1000 tonnes of the consist govern the number of locomotives that can be marshalled powering on the rear of the train this is demonstrated in the following examples a, b and c:

a.	MAXIMUM HORSEPOWER OF BANK LOCOMOTIVES = 4000	Minimum allowable vehicle mass 16 tonnes	LEADING TONNAGE	TRAIN LOCOS
b.	MAXIMUM HORSEPOWER OF BANK LOCOMOTIVES = 8000	Minimum allowable vehicle mass 40 tonnes	LEADING TONNAGE	TRAIN LOCOS
c.	MAXIMUM HORSEPOWER OF BANK LOCOMOTIVES = 12000	Minimum allowable vehicle mass 60 tonnes	LEADING TONNAGE	TRAIN LOCOS

When hauling locomotives are marshalled at the rear of the train it also effects the draw capacity of vehicles in the train consist. The new draw capacity can be calculated as follows:-

New draw capacity = Actual draw capacity + assisting locomotives Full sectional load

e.g. 0.75 actual draw capacity on 1 in 30 grade (refer to Trailing Tonnage table General Instructions) = 1414 tonnes. However when the train is assisted in the rear with an L4 category locomotive the new draw capacity can be calculated thus.= 1414 tonnes + 745 = 2159 tonnes.

DOWN	SECTIONAL RUNNING TIMES							FULL SECTIONAL LOADS LOCOMOTIVE CATEGORIES = L														GRADE			
	1	2	3	4	5	6	Loco	1	2	3	4	5	6	7	8	9	10	11	12	13	14				
PORT KEMBLA																									
PT KEMBLA NTH							4	2881	2659	2514	2363	2086	2032	1975	1704	1643	1511	1410	984						1:100
CRINGILA	5	5					4	4624	4274	4044	3809	3369	3274	3199	2761	2658	2452	2288	1600						DG
LYSAGHTS	3	3					3	4624	4274	4044	3809	3369	3274	3199	2761	2658	2452	2288	1600						Level
UNANDERRA	5	5					4	1752	1613	1523	1427	1256	1228	1186	1020	986	901	841	587						1:55
INNER HARBOUR																									
UNANDERRA	10	10					8	2881	2659	2514	2363	2086	2032	1975	1704	1643	1511	1410	984						1:50
DOMBARTON	19	26					17	903	791	745	696	551	543	517	442	430	388	362	253						1:30
SUMMIT TANK	24	34					20	903	791	745	696	551	543	517	442	430	388	362	253						1:30
MT MURRAY	15	20					15	1892	1743	1646	1543	1359	1328	1285	1105	1068	977	912	636						1:60
ROBERTSON	15	20					15	1892	1743	1646	1543	1359	1328	1285	1105	1068	977	912	636						1:60
CALWALLA	9	13					13	2414	2227	2104	1976	1743	1699	1650	1422	1372	1259	1175	820						1:80
MOSS VALE	8a	12a					13a	2289	2111	1995	1872	1651	1610	1563	1346	1299	1191	1112	776						1:75

Alternate method for determining mixed full sectional loads for Pacific National Locomotives:

For every locomotive other than an Category 2 (NR) class deduct 100 tonnes from the Full Sectional loads.

e.g. **Category 2 (NR) + Category 2 (NR) + Category 5 (DL)** = 903t + 903t + (696t – 100t) = 2402 tonnes

Category 2 (NR) + Category 4 (81) + Category 4 (BL) = 903t + (745t – 100t) + (745t – 100t) = 2193 tonnes

UP	LOADS & CONDITIONS SECTIONS	LOCO- MOTIVE CLASS = L	LOCOMOTIVES					TRAIN DATA		
			SINGLE	DOUBLE	TRIPLE	QUAD	QUIN	VEHICLE CLASS	SECT RUN TIMES	NOTES
			LOADS TONNES							
1	MOSS VALE - I/HBR / PT KEMBLA	L2	--	3600	--	--	--	ABCDEF	1	2, 3
2	MOSS VALE - I/HBR / PT KEMBLA	L4/L9	--	3300	--	--	--	ABCDEF	1	2, 3
3	MOSS VALE - I/HBR / PT KEMBLA	L2	2080	2400	--	--	--	ABCDE	1	1, 3
4	MOSS VALE - I/HBR / PT KEMBLA	L3/L4	1840	2400	--	--	--	ABCDE	1	1, 3
5	MOSS VALE - I/HBR / PT KEMBLA	L5	1872	2400	--	--	--	ABCDE	1	1, 3
6	MOSS VALE - I/HBR / PT KEMBLA	L6	1651	2400	--	--	--	ABCDE	1	1, 3
7	MOSS VALE - I/HBR / PT KEMBLA	L7	1610	2400	--	--	--	ABCDE	1	1, 3
8	MOSS VALE - I/HBR / PT KEMBLA	L8	1563	2400	--	--	--	ABCDE	1	1, 3
9	MOSS VALE - I/HBR / PT KEMBLA	L9/L10	1200	2400	--	--	--	ABCDE	1	1, 3
10	MOSS VALE - I/HBR / PT KEMBLA	L11	1191	2382	2400	--	--	ABCDE	1	1, 3
11	MOSS VALE - I/HBR / PT KEMBLA	L12	1112	2224	2400	--	--	ABCDE	1	1, 3
12	MOSS VALE - I/HBR / PT KEMBLA	L13	500	1000	1500	2000	--	ABCDE	1	3

Note 1:

SINGLE PIPE TRAINS –

On steeply falling grades between Summit tank and Unanderra loads for single pipe trains are limited due to air brake capacity to a maximum load of 2400 tonnes. The combination of loaded and empty vehicles in a train shall not exceed that listed in Table A below. For multipack/ articulated vehicles the number of platforms shall be counted instead of vehicles. i.e. an RRAY 5 pack shall count as 5 vehicles. For trains over 2400 tonnes see section Special Working on page 6.

TABLE A	LOADED VEHICLES	MAXIMUM EMPTIES	LOADED VEHICLES	MAXIMUM EMPTIES	LOADED VEHICLES	MAXIMUM EMPTIES	LOADED VEHICLES	MAXIMUM EMPTIES
0		45	9	33	18	21	27	10
1		43	10	32	19	20	28	9
2		42	11	30	20	19	29	7
3		41	12	29	21	18	30	6
4		39	13	28	22	16	31	5
5		38	14	27	23	15	32	3
6		37	15	25	24	14	33	2
7		36	16	24	25	12	34	1
8		34	17	23	26	11	35	0

Note 2:

TWO PIPE TRAINS –

This includes all vehicles shown listed in General Instruction pages SECTION 10 Locomotive and Rolling Stock Data that are identified e.g. ●●B4 in the Brake Type column.

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

Note 3:

Lead locomotives on freight trains operating from Summit Tank to Unanderra should have pressure maintaining brake valves (26L brake equipment or equivalent). Where the lead locomotive is not fitted with a pressure maintaining brake valve, and the train is to be held stationary on the grade for periods in excess of ten (10) minutes, handbrakes must be applied in accordance with the requirements in the General Instruction Pages, Section 3 Train Operations, Holding a train stationary on a grade.

UP	SECTIONAL RUNNING TIMES							FULL SECTIONAL LOADS														GRADE			
								LOCOMOTIVE CATEGORIES = L																	
	1	2	3	4	5	6	Loco	1	2	3	4	5	6	7	8	9	10	11	12	13	14				
MOSS VALE	↻	↻					↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻
CALWALLA	17						15	2289	2111	1995	1872	1651	1610	1563	1346	1299	1191	1112	776						1:75
ROBERTSON	17						15	2289	2111	1995	1872	1651	1610	1563	1346	1299	1191	1112	776						1:75
MT MURRAY	20						15	2289	2111	1995	1872	1651	1610	1563	1346	1299	1191	1112	776						1:75
SUMMIT TANK	21						16	2289	2111	1995	1872	1651	1610	1563	1346	1299	1191	1112	776						1:75
DOMBARTON	36						28	2055	1894	1789	1678	1200	1200	1200	1200	1200	1200	500	500						Note 1
UNANDERRA	22						22	2055	1894	1789	1678	1200	1200	1200	1200	1200	1200	500	500						Note 1
INNER HARBOUR	10a						8a	2881	2659	2514	2363	2086	2032	1975	1704	1643	1511	1410	984						1:100
SUMMIT TANK							↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻						
DOMBARTON							28	2289	2111	1995	1872	1200	1200	1200	1200	1200	1200	500	500						Note 2
UNANDERRA							22	2289	2111	1995	1872	1200	1200	1200	1200	1200	1200	500	500						Note 2
UNANDERRA	↻						↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻						
CONISTON	9						10	4624	4274	4044	3809	3369	3274	3199	2761	2658	2452	2288	1600						Level
WOLLONGONG	3						3	4624	4274	4044	3809	3369	3274	3199	2761	2658	2452	2288	1600						Level
UNANDERRA	↻						↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻						
LYSAGHTS	5						4																		
CRINGILA	3						3	4624	4274	4044	3809	3369	3274	3199	2761	2658	2452	2288	1600						Level
PT KEMBLA NTH	5						4	2881	2659	2514	2363	2086	2032	1975	1704	1643	1511	1410	984						1:100
PT KEMBLA LOCO	5						4a	4624	4274	4044	3809	3369	3274	3199	2761	2658	2452	2288	1600						Level

Location of Speed signs

LOCATION	KILO-METRAGE	DOWN NORM	DOWN XPT	UP NORM	UP XPT	LOCATION	KILO-METRAGE	DOWN NORM	DOWN XPT	UP NORM	UP XPT	
UNANDERRA	88.273					ROBERTSON	127.240	65	..	40	..	
	88.400	..	..	65	..		128.306	128.970	70	..	..	..
	88.800	..	..	X25	..		130.640	..	..	70	..	
	88.900	50	..	..	..		130.920	80	..	..	..
	89.430	60	..	..	..		133.480	..	..	80	..	
	89.500	..	..	40	..		133.680	115	..	..	..
DOMBARTON # Passenger trains only	96.968					CALWALLA	139.366					
	107.970	..	..	#40	..		149.850	50	..	115	..	
	107.970	..	..	30	..		150.300	..	..	50	..	
SUMMIT TANK	108.272					MOSS VALE	150.898					
	108.230	45	..	..	..				
	116.070	..	..	45	..							
	117.200	..	..	65	..							
MT MURRAY	118.992											

Station Data

Station	Kilo-metrage	Signal box Status	Hours of signal box	Facilities
Unanderra	88.273		Controlled from Wollongong Box	P
Dombarton	96.968	C	Controlled from Wollongong Box	LP
Summit Tank	108.272	C	Controlled from Wollongong Box	P,LP
Mt Murray	118.992	C	Controlled from Wollongong Box	P,LP
Ranlagh House	126.679			P
Robertson	128.306	U	Controlled from Wollongong Box	P,LP
Calwalla	139.366		Controlled from Wollongong Box	LP
Moss Vale Junction	150.002	P	Always	Tri
Moss Vale	150.898	U	Always	P,F

Out-of-gauge steel trains

Out-of-gauge steel trains may operate between Cringila and Moss Vale subject to the conditions shown for Out-of-gauge steel trains contained in the *General Instruction Pages* section.

The locations where crossings may be made as authorised are as follows:

Mt Murray	Loop line
Robertson	Loop line
Calwalla	Loop line
Moss Vale	No 1 Branch storage siding

Unanderra – Moss Vale – Special conditions of operation

Conditions of operation Self propelled diesels Unanderra – Moss Vale

XPT	XPLORER / ENDEAVOUR	620 CLASS DIESEL	900 CLASS DIESEL	
CONDITIONS OF OPERATION				
Down Direction Unanderra - Moss Vale				
✓				All power cars operating
	✓	✓	✓	All engines operating
✓				Maximum of 7 trailers with 2 power cars or 3 trailers with 1 power car
✓	✓	✓	✓	All compressors operating
✓	✓	✓	✓	Emergency coupler available
✓	✓	✓	✓	No brake cut outs allowed
✓	✓	✓	✓	Electro-pneumatic (EP) brake, automatic brake, hand and all spring parking brakes fully operational
			✓	Train to comprise of 4 car units i.e. motor-trailer-trailer-motor (only units equipped with Cummins engines)
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. 2 power cars or 1 power car + 1 trailer)
	✓	✓	✓	All engines operating
	✓			At least half traction engines working. Single car not permitted
✓				Maximum of 7 trailers with 2 power cars or 3 trailers with 1 power car
		✓	✓	All compressors operating
✓	✓			All compressors operating (compressor on any dead power car to be switched to hotel supply)
✓	✓	✓	✓	Emergency coupler available
✓	✓	✓	✓	No brake cut outs allowed
✓	✓	✓	✓	Electro-pneumatic (EP) brake, automatic brake and all spring parking brakes fully operational
			✓	Train to comprise of 4 car units i.e. motor-trailer-trailer-motor (only units equipped with Cummins engines)

Conditions of operation Freight Trains Unanderra – Summit Tank

Braking requirements: Down Direction

- (1) Freight Trains with grade control valves are required to have had a HP grade inspection carried out on the train.
- (2) Grade Control valves are to be set in EX position.

Braking requirements: Up Direction

- (1) Unless at least 80% of the train mass is fitted with approved fixed exhaust chokes, freight trains are required to have an HP grade inspection.
- (2) Grade control valves (where fitted) are to be set in the IP position at the inspection location or other approved location.
- (3) Dynamic brake must be used if available.
- (4) Main reservoir piped freight trains subject to Periodic Maintenance Programme must be under current "Periodic Maintenance" and are required to have had a **Full Train Inspection or General train Inspection**.
When these trains are operated out of the Port Kembla area, the **Full Train Inspection or General train Inspection** may be conducted in the Port Kembla area and no further full train inspection is required during the round trip.
These trains may have consecutive **General train Inspections**.
- (5) At run round locations the train crew must carry out a Brake holding test and endorse the train manifest to that effect. A holding test is not required if the first three vehicles are included on the unit train brake certificate or the train manifest was endorsed by the driver conducting a double ended holding test prior to the previous departure from the Port Kembla area.

Special Working

Operation of single pipe trains in excess of 2400 tonnes and up to 1500 metres long from Summit Tank to Unanderra.

Single pipe train between **2400 and 4000 tonnes and up to 1500 metres long** may operate from Summit Tank to Unanderra under mandatory dynamic brake conditions as follows:

1. These trains must have a HP Grade Inspection and grade control valves set in 'IP'.
2. The minimum allowable vehicle mass for vehicles in the front third of the train must not be less than 25 tonnes. In the case of multipack vehicles the minimum allowable vehicle mass shall be the gross mass divided by the number of platforms (decks). There must not be any empty platforms (decks).
3. Maximum train length 1500 metres plus locomotives.
4. Maximum train mass 4000 tonnes plus locomotives.
5. Train must have three (3) locomotives at the front of the train and up to two (2) locomotives at the rear of the train from Summit Tank to Unanderra.
6. One locomotive shall be provided for each 800 tonnes or part thereof of train load.
7. All locomotives must have operable extended range dynamic brake and a minimum mass of 129 tonnes.
8. The speed of the train must be controlled by dynamic brake supplemented by use of the air brake as required.
9. The speed of the train must not exceed 25 km/h.
10. Crews must have clear understanding of procedures for operating these trains in the event of loss of radio communication.

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 in 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 grade control valves must be placed in the 'HP' position.
- 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 in 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.

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 brake.

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 single pipe train load & length limits as specified in the Train Operating Conditions Manual, Illawarra Section Pages, Section 2, Inner Harbour/Port Kembla – Moss Vale, page 3, Note 1.

Operation of Intermodal (container trains) between Summit Tank and Tempe via Unanderra.

This requirement shall apply to all intermodal (container) trains diverted from the Main South 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 **Train Operating Conditions Manual** (General Instructions, Section 5, page 6).

As the UP and DOWN tracks between Moss Vale and Tempe via Unanderra are presently only authorised for container traffic operating to a maximum height of 3916mm above rail, all trains conveying container traffic, which have been diverted from the Main South, 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:

1. A maximum speed of **15km/hr** is imposed on all tunnels between Moss Vale and Tempe. The speed limit shall apply for the full length of the train.
2. Train Control shall ensure that all crews are reminded of this requirement prior to the operation.