

WestNet Rail

Audit of Compliance with the Initial Performance Standards as set out in the Track Infrastructure Leases

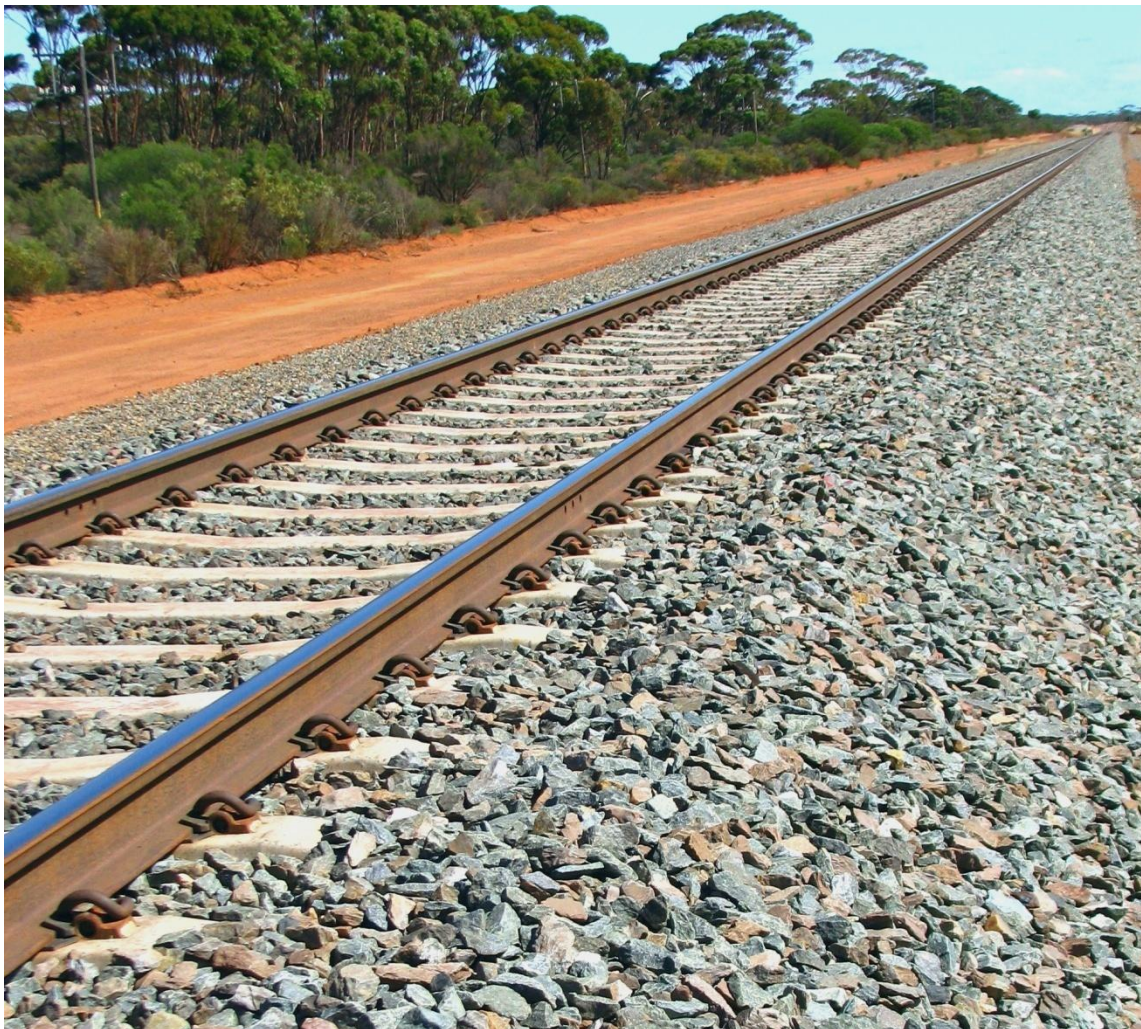


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EXECUTIVE SUMMARY

WestNet Rail Pty Ltd is the agent for WestNet Rail Standard Gauge Pty Ltd and WestNet Rail Narrow Gauge Pty Ltd (together the Lessees) who in December 2000 entered into leases with the Western Australian Government over the rail freight network previously owned and operated by the Western Australian Government Railways Commission.

The purpose of the Audit is to review WestNet Rail's (WNR) compliance with the Initial Performance Standards as set out in the Leases and to objectively verify that the existing track and civil infrastructure is capable of being operated at the Initial Performance Standards.

The Audit is for the Standard Gauge sections of railway and Narrow Gauge sections used primarily for the haulage of minerals freight. The Narrow Gauge railways used for the haulage of grain were audited in July-August 2009 and are not included in this Report.

The Audit and Report is in three parts consisting of;

1. Document and data verification audit;
2. Desk-top review; and
3. Field inspections.

The Audit was undertaken by Mr Garry Willox, an independent expert, authorised by the Minister for Transport and engaged by WestNet Rail. The work was carried out during March and April 2010.

Results of the Audit are summarised as follows;

1. Data and Document Verification Audit

The Performance Standards have been correctly transcribed from original lease documents into the WestNet Performance Standards Analysis. Only one variance was found; it was minor and corrected during the Audit.

The temporary and permanent speed restrictions applicable at the time of signing the Lease have been accurately documented by WNR.

The current promulgated maximum speeds and axle loads used in the analysis by WNR are accurate. There were some minor discrepancies in initial data that has since been corrected.

The Section Running Times used in the analysis by WNR are sufficiently accurate for the required purpose and are acceptable.

2. Desk Top Review of Compliance with Performance Standards

From examination of the data including the modelling there were very few non-compliances and where these did occur there were valid reasons. Where actual Section Running Times exceeded the Lease Section Running Times the primary reason was that longer and heavier trains were now being hauled.

3. Field Inspections of Physical Condition of the Railways

All of the sections of railway were found to be in Fit for Purpose condition.

There have been significant improvement works carried out since the time of entering into the Lease including railway upgrades in the last 5 years since the previous Audit. These include;

- Forrestfield to Kalgoorlie Railway is now fully concrete sleepered following the most recent concrete re-sleepering between Darrine and Kalgoorlie undertaken in 2008. Prior to that in 2001 concrete sleepers were also installed in part of that section.
- West Kalgoorlie to Esperance Railway has undergone significant improvement and further rehabilitation works are in progress. This includes replacement of old 41kg/m rail with new 50kg/m rail together with associated sleeper renewals under two major projects, being 120 kms in 2008/09 and approximately 55 kms during 2009/10.
- Kwinana to Bunbury Port is now fully concrete sleepered. The final section from Pinjarra to Brunswick Junction was converted to concrete sleepers in 2008/09. Prior to this in 2004/05 the sections from Kwinana to Pinjarra and Brunswick to Bunbury Harbour were concrete sleepered.
- Brunswick Junction to Worsley was concrete sleepered in 2005.
- The new railway from Narngulu to Geraldton Port was opened in 2005.
- Morawa to Perenjori has been upgraded from gravel to metal ballast with work recently completed in 2009.

4. Recommendation

The Lease and the Audit relies on Section Running Times (SRT) as a key performance measure and WestNet Rail has satisfied the Audit in either achieving this criteria or by providing an acceptable reason for the few occasions where the actual SRT is greater than the Lease SRT.

However it is considered that the use of SRT's has lost its relevance and is more a measure for the train operators and not WestNet Rail as the track provider and maintainer. The axle loads, maximum speeds, speed restrictions and condition of the railway are the more relevant performance measures.

In most cases the railway track is in better condition than at the time of the Lease. As a result of the improvements undertaken by WNR the trains can operate at higher speeds, the trains are heavier and longer and there are less temporary speed restrictions.

It is recommended that the use of Section Running Times as a key performance measure be jointly reconsidered by the Public Transport Authority and WestNet Rail. Refer to "Discussion of Section Running Times" on pages 22 – 23.

AUDIT SCOPE AND REQUIREMENTS

BACKGROUND

WestNet Rail Pty Ltd is the agent for WestNet Rail Standard Gauge Pty Ltd and WestNet Rail Narrow Gauge Pty Ltd (together the Lessees) who in December 2000 entered into leases with the Western Australian Government over the rail freight network previously owned and operated by the Western Australian Government Railways Commission.

The leases are essentially identical in their terms save for descriptions of physical infrastructure and some other specific matters not the subject of this report. The leases require the lessees to maintain the Leased Railway Infrastructure 'Fit for Purpose' which in the context of this means;

"Fit for purpose in respect of the Leased Railway Infrastructure comprising parts of the Network listed in Schedule 4, means the Leased Railway Infrastructure being in the physical condition necessary to meet the Initial Performance Standards or any other standard agreed to by the Minister and the Network Lessee from time to time".

The Initial Performance Standards are contained in Schedule 4 of each the leases and are subject to temporary and permanent speed restrictions that were in place at the time the lease agreements were executed. These temporary and permanent restrictions are sourced from a variety of operational documents including working timetables and weekly notices. The Initial Performance Standards for the Kwinana to Pinjarra line were increased in 2004 as a result of the re-sleeping of that line with concrete sleepers.

Temporary speed restrictions may be in place for a small section or a complete section of line and are put in place because the infrastructure at those locations cannot accept train operations at the normal rated speed.

Permanent speed restrictions are in place because of the need to limit the operating parameters because of design (e.g. speed limits on curves); because of operating risk (e.g. through major towns or rail junctions); or because of safety issues (e.g. limited sight distance at a level crossing).

The Audit is for the Standard Gauge sections of railway and Narrow Gauge sections used primarily for the haulage of minerals freight and the Millendon Junction to Dongara and Mullewa to Perenjori railways. The other Narrow Gauge railways used for the haulage of grain were inspected in July-August 2009 and are not included in this Audit and Report.

PURPOSE of the REPORT

The purpose of the report is to review WestNet Rail's compliance with the Performance Standards as set out in Schedule 4 of each of the leases and as varied by Deed of Variation and which, for each section of line, are expressed as;

- (i) sectional run times;
- (ii) maximum axle loading;
- (iii) maximum track speed.

The objective of the report is to objectively verify that, at the time of the report, the existing track and civil infrastructure is capable of being operated at the Initial Performance Standards and that in its current physical condition is capable of supporting operations at the Initial Performance Standards.

REQUIREMENTS

The report is in three parts consisting of a document and data verification audit; a desk-top review; and field inspections.

Data and Document Verification Audit

The document and data verification audit is required to be undertaken against the Performance Standards in relation to Section Run Times subject to temporary and permanent speed restrictions. The relevant documents and data will be provided by WestNet Rail. This will include a report that models theoretical Section Run Times on a line by line basis in train operating simulation software known as RAILSIM, which is an industry standard (the "WestNet Rail Performance Standards Analysis").

This analysis provides information on a line section basis that relates maximum permissible operating speeds for a given axle load (including the maximum axle load) and sectional running times. It shows the Initial Performance Standards and the currently promulgated operating standards.

As the following issues were reviewed in the lease Audit in 2004, the independent expert will be required to confirm that no changes have occurred in the interim:

- (i) The Performance Standards have been correctly transcribed from original lease documents into the WestNet Performance Standards Analysis;
- (ii) That the temporary and permanent speed restrictions applicable at the time of signing of the Lease (17th, December 2000) have been accurately documented by WestNet Rail. This should include sampling of the source documents.
- (iii) That the currently promulgated maximum speeds and axle loads used in the analysis by WestNet Rail are accurate and this should include sampling and verification of source documents.
- (iv) That the current temporary and permanent speed restrictions reported by WestNet Rail are accurate and this should include sampling and verification of source documents.
- (v) That the current section run times used in the analysis by WestNet Rail are accurate and this should include sampling and verification of source documentation.

Desk Top Review of Compliance with Performance Standards

When the independent expert is satisfied that the analysis is accurate they should then report on;

- (i) any circumstances where the current operations do not as a minimum meet the Performance Standards; and
- (ii) where they do not meet the Performance standards, comment on the validity of reasons advanced by WestNet Rail as to the reasons they are not being met (e.g. sectional run times may be slower because longer, heavier trains are in use).

Field Inspections

Field inspections are required to be carried out to verify that the physical condition of the track is capable of supporting the promulgated standards (i.e. the current standards in the Performance Standards Analysis document).

The independent expert must undertake an inspection of the following lines:

- (a) Kwinana to Kalgoorlie

- (b) Kalgoorlie to Esperance
- (c) Kwinana to Bunbury
- (d) Perth to Geraldton
- (e) Brunswick to Collie
- (f) Kalgoorlie to Leonora
- (g) Perenjori to Geraldton
- (h) Eneabba to Dongara

The bulk of the remainder of the Narrow Gauge network was audited in July- August 2009 and is not reviewed as part of this audit.

Inspections will be conducted continuously and will be by high-rail and will cover;

- (a) at least 50% of each line
- (b) spot assessments shall be conducted on a sufficient basis to verify the condition of the section of line.

The outcome of the field inspections is expected to be that the independent expert will be able to verify by visual inspections and spot sampling that the physical condition of the infrastructure is capable of meeting the currently promulgated operating standards.

That validation should be undertaken by reference to the criteria set out in Section 6 Monitoring and Maintenance from WestNet Rail's Narrow Gauge and Standard Gauge Mainline Code of Practice Track and Civil Infrastructure (The Codes).

During the hi-rail inspection, WestNet Rail will provide the vehicle and an appropriately qualified person to accompany the inspections and provide safe-working.

The independent expert will be accompanied by the Perway Superintendent for the district as well as senior WestNet Rail and Public Transport Authority representatives.

Documentation on maintenance programs will be provided where there is a need to clarify issues or to support the inspections.

WestNet Rail estimates that field inspections will take at least 10 working days.

The condition and operation of the signalling and communication systems is excluded from this report.

Centreline structures are assessed and validated as fit for purpose separately to this process and the expert should assume that centreline structures will support the promulgated train operations.

WestNet Rail is accredited as an Owner and Operator under the Rail Safety Act, 1998 and that accreditation is current with no special conditions attached.

The independent expert should assume therefore that WestNet Rail has adequate systems and processes in place to monitor and control risks

The rail network controlled and managed by WestNet Rail is also subject to the Railways Access Act.

Under that Act the Rail Access Regulator has determined that WestNet Rail will be subject to determined segregation arrangements designed to prevent disclosure of confidential information and to ensure all access seekers are treated fairly.

The parties undertaking the report will be required to undertake training in these segregation arrangements.

Supporting Documentation

WestNet Rail made available access to or copies of the following documents;

- (i) Rail Freight Corridor Land Use Agreement (Standard Gauge) and Railway Infrastructure Lease.
- (ii) Rail Freight Corridor Land Use Agreement (Narrow Gauge) and Railway Infrastructure Lease.
- (iii) WestNet Rail's Performance Standards Analysis.
- (iv) WestNet Rail's Narrow Gauge Mainline Code of Practice Track and Civil Infrastructure.
- (v) WestNet Rail's Standard Gauge Mainline Code of Practice Track and Civil Infrastructure.
- (vi) Working Timetables; Speed Restriction listings; Weekly Notices; Train Control diagrams and other operational materials.

Project Manager

WestNet Rail's Project Manager for this project is Mr Jelle Sibma, General Manager Infrastructure

Independent Expert Auditor

The Minister for Transport approved Mr Garry Willox (MIEA, PSM) to undertake the Audit and as required by the Lease, WestNet Rail engaged Mr Willox to carry out the work.

DATA AND DOCUMENT VERIFICATION AUDIT

Mr Willox accessed the relevant data and documents in WestNet Rail's offices at Welshpool on the days of 15th, 16th and 17th March 2010.

1. The Performance Standards have been correctly transcribed from original lease documents into the WestNet Performance Standards Analysis;

WestNet Rail's key document for recording the Initial Performance Standards and for detailing its actual performance standards is the WestNet Operating Matrix (WOM). A copy of this is attached as Appendix C. For ease of ready reference a sample of this is shown on the following page for the section of railway from Kwinana to Bunbury.

For each section of railway the WOM shows the Section Running Times (SRT) at the time of the Lease, the actual SRT's that are now being achieved, the allowable maximum speeds for the various train axle loads at the time of the Lease and current allowable maximum speeds.

A check was conducted to ensure that the Initial Performance Standards as contained in Schedule 4 of each the leases had been correctly transcribed into WOM. The only discrepancies found were for the Narngulu – Northern Gully and Northern Gully – Mullewa sections where for each section WOM showed the Lease SRT's to be 10 minutes more than those contained in Schedule 4. This was brought to WNR's notice and has since been corrected and the copy of WOM as shown in Appendix C is correct.

No other errors in transcribing the Initial Performance Standards to the WestNet Operating Matrix were found.

The other key document for comparing performance with the Lease requirements that has recently been introduced by WestNet Rail is the modelling of Sectional Train Running Times. This work was undertaken by AECOM engineering consultants, with the purpose to determine current sectional running times for both empty and loaded trains under the prevailing track and train operating conditions and compare these to the WNR Lease sectional running times. The modelling was undertaken by the RAILSIM software.

There were a number of issues raised with the AECOM Report and these are addressed separately further in this Audit Report.

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Extract from WestNet Operating Matrix – Kwinana to Bunbury Railway (For copy of full Matrix refer to Appendix C)

2. That the temporary and permanent speed restrictions applicable at the time of signing of the Lease (17th, December 2000) have been accurately documented by WestNet Rail. This should include sampling of the source documents.

The Temporary Speed Restrictions at the time of signing the Lease are contained in Weekly Notice No 50 dated December 16th 2000. A copy was obtained as a record for the Audit.

WNR holds a hard copy of the Permanent Speed Restrictions (PSR's) that were known to apply in 2000 at the time of entering into the Lease. This record was not considered to be entirely accurate at that time as changes made in the Districts were not always incorporated into what was a Head Office record.

WNR undertook a major review by its Districts in 2004/05 of what speed restrictions were actually in the field. The information was then entered into WNR's Railway Access Management System (RAMS). When further changes to PSR's are now made these are entered into RAMS and the since 2009 the original record is also archived. The current register of PSR's has been validated by the District per-way staff.

The conclusion is that the record of permanent speed restrictions at the time of the Lease was not completely accurate; however the record now held by WNR is accurate for current conditions.

WNR advises that a pdf copy of the PSR's can be preserved in "Livelihood" which is a corporate WNR document repository. Below is a sample of the record of PSR's on the Avon – Merredin section

Permanent Speed Restriction Locations								
Avon To Merredin								
Section	Warning Board Location (X)		DOWN Direction			UP Direction		
	Up Direction	Down Direction	Start KM	Finish KM	Speed	Start KM	Finish KM	Speed
Avon Yard - Seabrook			114.050		70/60	114.050		90
Avon Yard - Seabrook		117.100					114.050	50
Avon Yard - Seabrook	118.240		117.720		70/50	117.720		70/60
Avon Yard - Seabrook	121.320		120.920		75/50	120.972		70/50
Avon Yard - Seabrook			121.960		90/50	121.960		75/50
Seabrook - Grass Valley		123.900	123.340		110/50	123.340		90/50
Seabrook - Grass Valley	125.400			124.800	100/50	124.800		110/50
Seabrook - Grass Valley		125.240	125.740		120		125.740	120
Seabrook - Grass Valley	128.160			127.720	120	127.720		120
Seabrook - Grass Valley		128.900	129.400		120		129.400	120
Grass Valley - Meckering	132.400			131.880	120	131.880		120
Grass Valley - Meckering		132.500	132.950		100		132.950	100
Grass Valley - Meckering	134.480		133.900		110	133.900		100
Grass Valley - Meckering		135.400	135.880		100	135.880		110
Grass Valley - Meckering	137.500			137.000	100	137.000		100
Grass Valley - Meckering		137.560	138.100		120		138.100	120
Grass Valley - Meckering	139.170			139.640	120	138.720		120
Grass Valley - Meckering		139.480	139.960		100		139.560	100
Grass Valley - Meckering		140.500	141.000		90	141.000		100
Grass Valley - Meckering	145.100			144.560	90	144.560		90
Grass Valley - Meckering		146.880	147.280		100		147.280	100
Grass Valley - Meckering	148.160			147.640	100	147.640		100
Grass Valley - Meckering		151.050	151.550		90		151.550	90
Meckering-Cunderdin	152.800			152.100	90	152.100		90
Meckering-Cunderdin	154.800		154.260		120	154.260		130
Meckering-Cunderdin		155.240	155.720		120	155.720		130
Meckering-Cunderdin	158.440			157.900	120	157.900		120
Meckering-Cunderdin		159.000	159.560		120		159.560	120
Meckering-Cunderdin	160.480			159.890	120	159.890		120
Meckering-Cunderdin		161.880	162.480		120		162.480	120
Meckering-Cunderdin	163.160			162.720	120	162.720		120

Page 1 of 4

Standard Gauge Permanent Speed Restrictions 2000.xlsAvon Merredin

Sample of the Record of Permanent Speed Restriction as at Year 2000

3. That the currently promulgated maximum speeds and axle loads used in the analysis by WestNet Rail are accurate and this should include sampling and verification of source documents.

The first check was to ensure that the actual speeds shown in the WestNet Operating Matrix (WOM) for each of the various axle loads was correct. This was checked by reference to the Working Timetable Books.

- Book 4 – Standard Gauge Railway,
- Book 5 - South-West Railway, and
- Book 7 – Northern Railway.

This check showed no discrepancies and the conclusion of the Audit was the information contained in WOM was correct.

There were some errors in allowable speeds used in the RAILSIM modelling undertaken by AECOM and this is shown later in this Report. The errors have since been corrected.

4. That the current temporary and permanent speed restrictions reported by WestNet Rail are accurate and this should include sampling and verification of source documents.

Documentation showing both permanent speed restrictions and temporary speed restrictions applicable to the whole of the WNR network (including the grain lines) was provided for audit purposes. This documentation was dated 17 March 2010.

For permanent speed restrictions the information showed that of the total distance of 5027.81 kms there were a total of 928 restrictions with 1000.31 km being in the Up direction and 1057.73 km being in the Down direction.

For temporary speed restrictions the information showed there were a total of 144 restrictions with 927.13 km in the Up direction and 967.98 being in the Down direction. The majority of these were on the grain-lines not subject to this Audit.

Examples of the documentation for permanent and temporary speed restrictions are shown on the following pages. In addition to this information further data was obtained from WNR District Superintendents when carrying out field inspections.

Sample checking was undertaken as part of the field inspections and where these samples were taken this showed that the data provided was accurate. Obviously with the magnitude of speed restrictions it is not possible to provide assurance that the information is totally accurate.

The conclusion of the Audit is that WNR has a very good system in place for recording both permanent and temporary speed restrictions and that from the sampling undertaken in the field the information has a high probability of being accurate.

Summary of Speed Restrictions

Speed Restrictions as at: 17/03/2010 *** Track Warnings excluded *** Permanent speed restriction included

					Maximum Speed					Track Speed					Spd				SR	
Section	From	To	Len	Dir	11t	16t	19t	P*	O*	11t	16t	19t	P*	O*	Brd	Date	From	Date to lift	Cause	No.
BRUNSWICK East-WORSLEY	7.82	8.22	0.40	Down	40	40	40	40	40						Yes	Oct 12 2009 12:29PM			Level Crossings - Sight Distance	6296
BRUNSWICK East-WORSLEY	7.82	8.22	0.40	Down	40	40	40	40	40						Yes	Oct 12 2009 12:29PM			Level Crossings - Sight Distance	6296
BRUNSWICK East-WORSLEY	9.28	9.68	0.40	Down	40	40	40	40	40						Yes	Oct 12 2009 12:31PM			Level Crossings - Sight Distance	6297
BRUNSWICK East-WORSLEY	9.28	9.68	0.40	Down	40	40	40	40	40						Yes	Oct 12 2009 12:31PM			Level Crossings - Sight Distance	6297
BRUNSWICK East-WORSLEY	10.19	10.60	0.40	Down	40	40	40	40	40						Yes	Oct 12 2009 12:32PM			Level Crossings - Sight Distance	6298
BRUNSWICK East-WORSLEY	10.19	10.60	0.40	Down	40	40	40	40	40						Yes	Oct 12 2009 12:32PM			Level Crossings - Sight Distance	6298
BRUNSWICK East-WORSLEY	10.60	10.99	0.40	Up	40	40	40	40	40						Yes	Oct 12 2009 12:33PM			Level Crossings - Sight Distance	6299
BRUNSWICK East-WORSLEY	10.60	10.99	0.40	Up	40	40	40	40	40						Yes	Oct 12 2009 12:33PM			Level Crossings - Sight Distance	6299
BRUNSWICK East-WORSLEY	11.24	11.60	0.36	Down	40	40	40	40	40						Yes	Nov 2 2009 11:16AM			Level Crossings - Sight Distance	6435
BRUNSWICK East-WORSLEY	11.24	11.60	0.36	Down	40	40	40	40	40						Yes	Nov 2 2009 11:16AM			Level Crossings - Sight Distance	6435
BRUNSWICK East-WORSLEY	12.13	12.53	0.40	Down	40	40	40	40	40						Yes	Nov 2 2009 11:17AM			Level Crossings - Sight Distance	6436
BRUNSWICK East-WORSLEY	12.13	12.53	0.40	Down	40	40	40	40	40						Yes	Nov 2 2009 11:17AM			Level Crossings - Sight Distance	6436
BRUNSWICK East-WORSLEY	12.53	12.98	0.45	Both	45	45	45	45	45						Yes	Oct 19 2009 10:35AM			Curve Radius	6337
BRUNSWICK East-WORSLEY	12.53	12.98	0.45	Both	45	45	45	45	45						Yes	Oct 19 2009 10:35AM			Curve Radius	6337
BRUNSWICK East-WORSLEY	12.53	12.93	0.40	Up	40	40	40	40	40						Yes	Oct 12 2009 12:38PM			Level Crossings - Sight Distance	6302
BRUNSWICK East-WORSLEY	12.53	12.93	0.40	Up	40	40	40	40	40						Yes	Oct 12 2009 12:38PM			Level Crossings - Sight Distance	6302
BRUNSWICK East-WORSLEY	13.17	13.52	0.35	Down	40	40	40	40	40						Yes	Oct 19 2009 10:37AM			Level Crossings - Sight Distance	6338
BRUNSWICK East-WORSLEY	13.17	13.52	0.35	Down	40	40	40	40	40						Yes	Oct 19 2009 10:37AM			Level Crossings - Sight Distance	6338
BRUNSWICK East-WORSLEY	15.25	15.65	0.40	Down	40	40	40	40	40						Yes	Nov 2 2009 11:18AM			Level Crossings - Sight Distance	6437
BRUNSWICK East-WORSLEY	15.25	15.65	0.40	Down	40	40	40	40	40						Yes	Nov 2 2009 11:18AM			Level Crossings - Sight Distance	6437
BRUNSWICK East-WORSLEY	15.65	16.05	0.40	Up	40	40	40	40	40						Yes	Nov 2 2009 11:19AM			Level Crossings - Sight Distance	6438
BRUNSWICK East-WORSLEY	15.65	16.05	0.40	Up	40	40	40	40	40						Yes	Nov 2 2009 11:19AM			Level Crossings - Sight Distance	6438
BRUNSWICK East-WORSLEY	20.16	20.35	0.19	Both	45	45	45	45	45						Yes	Oct 19 2009 10:42AM			Curve Radius	6341
BRUNSWICK East-WORSLEY	20.16	20.35	0.19	Both	45	45	45	45	45						Yes	Oct 19 2009 10:42AM			Curve Radius	6341
BEELA-WORSLEY	22.40	24.30	1.90	Both	40	40	40	40	40						Yes	May 20 2005 3:55PM			Curve Radius	13731
BEELA-WORSLEY	22.40	24.30	1.90	Both	40	40	40	40	40						Yes	May 20 2005 3:55PM			Curve Radius	13731

Summary for BRUNSWICK East-WORSLEY

Sub-Total Up	11.92
Sub-Total Down	14.23
Sub Total KM track affected	18.14
Length	21.09 Km
No. Of Restrictions	36

Sample of WNR Record of Current Permanent Speed Restrictions

Summary of Speed Restrictions

Speed Restrictions as at: 17/03/2010 *** Track Warnings excluded *** Temporary speed restriction included

Section	From	To	Len	Dir	Maximum Speed					Track Speed					Spd	Brd	Date From	Date to lift	Cause	SR No.
					11t	16t	19t	P*	O*	11t	16t	19t	P*	O*						
MENZIES-KOOKYNE	129.96	131.36	1.40	Both	20	20	20	0	0	60	60	60	0	0	Yes	Apr 16 2009	9:37AM	Apr 16, 2010	Rail - other	5560
MYAMIN-KOOKYNE	158.50	158.60	0.10	Both	40	40	40	40		50	50	50	70	0	Yes	Feb 20 2010	8:50AM	Aug 22, 2010	Sleepers - condition	6653
KOOKYNE-KOOKYNE	189.20	191.55	2.35	Both	30	30	30	30	30	50	60	60	60	60	Yes	Mar 20 2009	11:45AM	Mar 20, 2010	Track - geometry	5435
MELITA-MALCOLM	207.28	207.69	0.41	Both	20	20	20			60	60	50	0	0	Yes	Jan 27 2010	6:00PM	Jun 01, 2010	Rail - other	6608
KOOKYNE-MALCOLM	225.30	225.64	0.34	Both	30	30	30	30	30	60	60	60	70	70	Yes	Mar 16 2001	8:00AM	May 30, 2011	Rail - other	8511
KOOKYNE-MALCOLM	229.24	229.80	0.56	Both	30	30	30	30	30	60	60	60	50	40	Yes	Apr 1 2008	7:59AM	May 30, 2011	Rail - other	3979
KOOKYNE-MALCOLM	235.80	235.88	0.08	Both	20	20	20	0	0	60	60	60	0	0	Yes	Nov 4 2008	11:42AM	May 30, 2010	Turnouts - geometry	4831
MALCOLM-LEONORA	236.50	236.60	0.10	Both	20	20	20	20	20	70	70	60	60	60	Yes	Dec 16 2005	10:59AM	May 30, 2010	Turnouts - geometry	14251

Summary for KALGOORLIE-LEONORA

Sub-Total Up	8.15
Sub-Total Down	8.15
Sub Total KM track affected	8.15
Length	259.00 Km
No. Of Restrictions	12

KAMBALDA-ESPERANCE

DANIEL-BEETE	237.60	237.70	0.10	Both	40	40	40	0	0	70	70	60	0	0	Yes	Jan 14 2010	12:51PM	Jun 30, 2010	Track - geometry	6577
BEETE-SALMON GUMS	256.20	256.30	0.10	Both	40	40	40	0	0	70	70	60	0	0	Yes	Jul 22 2009	9:10AM	Jun 30, 2010	Track - geometry	5927
SALMON GUMS-GRASS PATCH	291.30	291.50	0.20	Both	50	50	50	0	0	70	70	70	0	0	Yes	Dec 18 2009	8:10AM	Jun 30, 2010	Formation - other	6544
SALMON GUMS-GRASS PATCH	301.85	306.80	4.95	Both	40	40	40	0	0	70	70	60	0	0	Yes	Mar 9 2010	12:20PM	Mar 18, 2010	Gang - Working	6700
SALMON GUMS-GRASS PATCH	304.20	304.70	0.50	Both	20	20	20	20	20	70	70	60	70	70	Yes	Mar 16 2010	2:47PM	Mar 18, 2010	Track - other	6727
GRASS PATCH-SCADDAN	310.70	311.00	0.30	Both	40	40	40	0	40	70	70	60	0	50	Yes	Nov 7 2008	11:46AM	Jun 30, 2010	Formation - boghole(s)	4849
SCADDAN-FLEMING	333.90	334.53	0.63	Both	30	30	30	0	0	70	70	60	0	0	Yes	Aug 7 2009	1:34PM	Jun 30, 2010	Track - geometry	5969
SCADDAN-FLEMING	338.00	338.30	0.30	Both	30	30	30	0	0	70	70	60	0	0	Yes	Feb 16 2010	3:00PM	Jun 30, 2010	Ballast - boghole(s)	6638
SCADDAN-FLEMING	342.65	343.60	0.95	Both	40	40	40	0	0	70	70	70	0	0	Yes	Nov 6 2009	12:48PM	Jun 30, 2010	Track - geometry	6447
GIBSON-ESPERANCE	369.50	370.00	0.50	Both	30	30	30	30	30	70	70	60	70	70	Yes	Mar 17 2010	1:30PM	Mar 18, 2010	Track - geometry	6732
GIBSON-ESPERANCE	369.60	371.65	2.05	Both	30	30	30	0	0	70	70	60	0	0	Yes	Mar 12 2010	2:35PM	Apr 12, 2010	Sleepers - other	6712
GIBSON-ESPERANCE	377.00	380.45	3.45	Both	30	30	30	0	0	70	70	60	0	0	Yes	Mar 10 2010	2:15PM	Mar 19, 2010	Gang - Working	6704
GIBSON-ESPERANCE	379.15	379.20	0.05	Both	30	30	30	30	30	70	70	60	70	70	Yes	Mar 17 2010	1:30PM	Apr 17, 2010	Level Crossing/Townsite	6733

Summary for KAMBALDA-ESPERANCE

Sub-Total Up	14.08
Sub-Total Down	14.08
Sub Total KM track affected	14.08
Length	329.00 Km
No. Of Restrictions	13

Sample of WNR Current Record of Temporary Speed Restrictions

5. That the current section run times used in the analysis by WestNet Rail are accurate and this should include sampling and verification of source documentation.

The Section Running Times is an issue that requires further consideration and will be dealt with later in this Report.

The actual SRT's are shown in WOM as a comparison to the Lease SRT's. The SRT's are derived from examining the Train Running Diagrams and although these may be accurate for the start and a finish of a journey they are not necessarily accurate for the intermediate locations along the route.

For example a train operating from say Narngulu to Perenjori, a Train Order may be issued for the complete journey if there are no crossings of other trains along the route. In recording the journey a straight line would be drawn by the Train Controller from Narngulu to Perenjori showing the departure time and arrival time. Arrival at intermediate locations such as Northern Gully, Mullewa, Bowgada, Morawa, etc would show approximate times and not actual times. Therefore the actual section running times for these intermediate locations are approximations only.

Another factor is the train operations themselves as no two trains perform exactly the same. Depending on the load being hauled, the condition of the locomotive(s), the handling by the driver, whether the trains run at reduced speed to be just in time for a scheduled crossing, etc, there are many variables that contribute to reduced running times. WNR advised that the actual SRT's shown on WOM are an average of a number of sample trains. But this in itself is not an accurate measure for performance as WNR should be showing what is the least SRT that can be achieved as its measure of performance.

In sampling the source documents being the Train Running Diagrams the start and finish times for the journey rather than intermediate locations along the route were considered. A total of 22 train diagrams were examined and compared with what is shown in WOM as actual Section Running Times. An example of the results is as follows;

Picton Junction to Pinjarra South, 13 -14 March 2010,

- Train No 880, empty. Train diagram shows travel time of 70 minutes, WOM shows actual SRT as 83 minutes, Lease SRT is 95 minutes,
- Train No 879, loaded. Train diagram shows travel time of 92 minutes, WOM shows actual SRT as 85 minutes, Lease SRT is 138 minutes,
- Train No 881, loaded. Train diagram shows travel time of 96 minutes, WOM shows actual SRT as 85 minutes, Lease SRT is 138 minutes,
- Train No 7873, loaded. Train diagram shows travel time of 94 minutes, WOM shows actual SRT as 85 minutes, Lease SRT is 138 minutes,

From the above it is seen the actual running times are variable with one being less and the others being more than the actual SRT shown in WOM. WNR then made available the train diagrams for 11 March that showed actual running times for Train No 879 to be 86 minutes and Train No 877 to be 85 minutes; and on 12 March for Train No 881 to be 80 minutes. These times being close to or less than that shown in WOM.

Brunswick Junction to Hamilton, 13 – 14 March 2010,

- Train No 7812, loaded. Train diagram shows travel time of 62 minutes, WOM shows actual SRT as 95 minutes, Lease SRT is 85 minutes,
- Train No 7822, loaded. Train diagram shows travel time of 59 minutes, WOM shows actual SRT as 95 minutes, Lease SRT is 85 minutes,

- Train No 7823, empty. Train diagram shows travel time of 50 minutes, WOM shows actual SRT as 85 minutes, Lease SRT is 70 minutes,

From the above it can be seen the actual running times are much less than that shown in WOM.

Kwinana to Pinjarra, 12 – 13 March 2010,

- Train No 6964, loaded. Train diagram shows travel time of 80 minutes, WOM shows actual SRT as 72 minutes, Lease SRT is 85 minutes,
- Train No 7221, empty. Train diagram shows travel time of 56 minutes, WOM shows actual SRT as 64 minutes, Lease SRT is 69 minutes,

It can be seen that that Train No 6964 was slower than the actual time shown in WOM and that train No 7221 was faster than that shown in WOM.

The conclusion of the Audit is that the actual Section Running Times as shown in the WestNet Operating Matrix have a degree of variability. Very few trains perform alike due to a number of factors many of which are within the control of the train operator and not within the control of the track provider. WNR has recorded its actual section running times from the average of samples of train operations. It would be more meaningful to show actual Section Running Times as those for an “ideal” train and this is where modelling becomes important.

In cases where the actual SRT's shown in WOM may have been less than the SRT's on the initial sample Train Running Diagrams (TRD), WNR were able to produce a TRD to show that the SRT was achievable.

TRAIN MODELLING

In view of the difficulty in obtaining relevant data on actual train running times, WNR engaged AECOM engineering consultants, to undertake train running simulation i.e. modelling. All modelling was carried out using RAILSIM v8 which is commercially available Train Performance Calculator software that is well established and proven in the market and used by many organisations in a number of countries. The purpose of the work was to determine current sectional running time calculations for empty and loaded trains under the prevailing track and train operating conditions and compare these to WNR Lease sectional running times. Information on curvature, gradients, temporary and permanent speed restrictions, permissible axle loadings, permissible speeds, train loadings and locomotive information was provided by WNR.

AECOM Report

The AECOM Report initially made available for audit purposes for the non-grain lines was Revision 0, dated 14 December 2009. For the Millendon Junction to Geraldton and Perenjori to Geraldton grain line sections the AECOM Report Revision 2, dated 28 July 2009 was provided. From sampling undertaken as part of this Audit there were no obvious omissions in the data provided by WNR to AECOM.

There was however a number of matters relating to the output of the results produced by AECOM and these were raised with WNR during the Audit. These included;

- Kwinana – Bunbury, maximum speed from Pinjarra to Brunswick shown as 80k/h whereas it is still 70 k/h,
- Kwinana – Bunbury, the number of 40k/h speed restrictions that seem to coincide with crossing loops and where in fact there are no restrictions
- Kwinana – Bunbury, the 40k/h temporary speed restriction from 91.30 – 91.45 km is not apparent,

- Kwinana – Kalgoorlie. Near the 600 km section, Up trains are not speed restricted, whilst Down trains are restricted over an extended distance to 40k/h & 50k/h; similarly near the 536 km section Down trains are restricted for some distance to 100k/h whilst Up trains are not,
- Kalgoorlie – Esperance, the modelling report states the lease Section Running Time to be 1000 minutes. Calculation taken from WOM and IPS is 480 minutes.
- Kwinana – Forrestfield, the modelling report states the lease SRT to be 90 minutes whereas calculation from WOM and IPS is 45 minutes.

As a result of the above matters being raised with WNR they arranged for AECOM to review their modelling and as a result a revised version of the Report was issued being Revision 2, dated 26 March 2010. In their letter to WNR dated 30 March 2010, AECOM among other matters advised as follows;

“AECOM’s revised approach to compiling speed restriction data has removed the possibility of human error through automation, independent validation and graphical checks of results against raw data. As a result, AECOM has a high level of confidence that all errors and omissions in the analysis have now been identified and removed. AECOM sincerely apologises to WestNet Rail for the errors in the work as originally presented.”

Although it is not possible to be absolutely certain that the modelling now contains all the relevant data it is sufficient to conclude from the checks undertaken and the revision conducted and from the assurances provided from AECOM, that the information has a high probability of being correct. Copies of the relevant information from the AECOM Reports are attached, see Appendix D.

DESK TOP REVIEW of COMPLIANCE with PERFORMANCE STANDARDS

Circumstances where the current operations do not as a minimum meet the Performance Standards; and

Where they do not meet the Performance standards, comment on the validity of reasons advanced by WestNet Rail as to the reasons they are not being met (e.g. sectional run times may be slower because longer, heavier trains are in use).

WESTNET OPERATING MATRIX

The following matters where the actual SRT's in WOM did not meet the Lease SRT's were raised with WNR. Their responses are included;

1. Kalgoorlie – Esperance

Lease Section SRT by my calculation is 480 minutes. The 1000 minutes in WOM is return journey and includes the Redmine spur. WOM shows actual loaded SRT West Kalgoorlie to Esperance as 486 minutes. What is the reason for this slower running time?

WNR Response

The loaded SRT of 486 minutes is 6 minutes greater than the Lease SRT. This variation is attributable to sub optimal locomotive power combined with an average increase in train size by 37%. The best observed SRT is 480 minutes. The degree of SRT variability on any day can be up to +60 minutes. This suggests that SRT variability is attributable to a combination of locomotive handling practices and efficiency.

Audit Comment

The actual SRT shown is only marginally outside the Lease SRT and with larger trains and operational variables beyond WNR control the response is acceptable to the Audit.

2. Brunswick – Hamilton

WOM shows lease SRT for 19 tonne axle load as 85 minutes and actual SRT as 95 minutes. Also lease empty SRT as 70 minutes and actual empty SRT as 85 minutes. What are the reasons for these slower running times?

WNR Response

The Brunswick to Hamilton Initial Performance Standard SRT is 50 minutes, the 35 minutes refers to section Worsley to Collie which is not part of this route. The IPS as documented in the Lease is;

- Brunswick Junction to Beela 30 minute empty/ 30 minute loaded- distance 10km
- Beela to Worsley, no entry – distance 13 km

- Worsley to Hamilton, no entry – distance 11km
Clearly there has been an omission in the IPS in the Lease document. The planned scheduled run times allocated to these sections is as follows;
- Brunswick Junction to Beela, 20 minute empty/ 20 minute loaded
- Beela to Worsley 25 minute empty/ 25 minute loaded,
- Worsley to Hamilton 20 minute empty/ 20 minute loaded

The total SRT Brunswick to Hamilton is 65 minutes empty and loaded. The actual SRT recorded is 60 minutes empty and 65 minutes loaded. Therefore the actual loaded SRT loaded compared to the scheduled loaded SRT shows no variation.

Audit Comment

It is agreed that the Lease omits the Beela – Worsley section; however it is not agreed it omits the Worsley - Hamilton section as this is shown in the Lease as 15 minutes for empty trains and 20 minutes for loaded trains. Due to omission of the Beela – Worsley section, WNR has provided its own SRT in WOM based on the scheduled running times.

As the SRT for Worsley – Hamilton is shown in the Lease as 15 minutes then WNR should not change this and therefore the amended Lease SRT should be 60 minutes empty trains and 65 minutes loaded trains. As the actual SRT's do not exceed these times the audit is satisfied that the actual SRT's are acceptable. It also agrees that Worsley – Collie section is not part of the route.

3. Millendon Junction – Narngulu

WOM shows lease loaded SRT as 622 minutes and actual SRT as 654 minutes. Also lease empty SRT as 510 minutes and loaded SRT as 622 minutes. What are the reasons for these slower running times?

WNR Response

The average grain trains have increased in size by 45%.

Audit Comment

WNR was asked if increased locomotive power would compensate for this and the response was that increased locomotive power is applied to these services but the overall performance observed does not achieve the optimised section times. The Audit is satisfied with this response.

4. Narngulu – Mullewa

WOM shows lease SRT as 150 minutes and actual SRT as 175 minutes. What is the reason for this slower running time?

WNR Response

The average train size increased since 2000 by 90%.

Audit Comment

WNR was asked if increased locomotive power would compensate for this and the response was that increased locomotive power is applied to these services but the overall performance observed does not achieve the optimised section times. The Audit is satisfied with this response

5. Dongara – Eneabba

WOM shows lease empty SRT as 114 minutes and actual empty SRT as 130 minutes. What is the reason for this slower running time?

WNR Response

The SRT's were again observed during January 2010 and the actual empty running times ranged from 85 – 120 minutes.

Audit Comment

The Audit is satisfied that actual running times have been shown to be within the Lease SRT.

6. Collie – Premier

WOM shows lease empty SRT as 45 minutes and actual as 57 minutes. What is the reason for this slower running time?

WNR Response

Actual observations extracted from January 2010 indicate an empty SRT ranging from 25 – 41 minutes.

Audit Comment

The Audit is satisfied that actual running times have been shown to be within the Lease SRT.

7. Avon Yard – Koolyanobbing

In the Lease the maximum speed for general freight trains with 19 tonne axle loads was 115km/hr. As shown in WOM this has been reduced to 110km/hr.

WNR Response

Due to cracked concrete sleepers the speed was reduced slightly.

Audit Comment

This is a prudent measure and as actual SRT's are well under the Lease SRT is accepted by the Audit.

AECOM MODELLING RESULTS

The modelling provides a better indication of what Section Running Times can be achieved. The train types used in the modelling are the typical trains that operate on the section of railway.

Section of Railway	Loaded Axle	Loading	Direction	Lease SRT (min)	Modelled SRT (min)	Modelled vs Lease
Dongara - Eneabba	19 t	Empty	Dongara - Eneabba	114	108	95%
		Loaded	Eneabba - Dongara	160	123	77%
Kwinana – Bunbury Harbour	20 t	Loaded	Kwinana - Bunbury	248	163	66%
		Loaded	Bunbury - Kwinana	248	155	63%
Brunswick Jn - Hamilton	19 t	Empty	Brunswk - Hamilton	45	51	113%
		Loaded	Hamilton - Brunswk	50	52	104%
Brunswick Jn - Premier	19 t	Empty	Brunswk – Premier	100	90	90%
		Loaded	Premier - Brunswk	120	94	78%
Kwinana - Forrestfield	20.5 t	Loaded	Kwinana-Forrestfld	45	43	96%
		Loaded	Forrestfld-Kwinana	45	38	84%
Forrestfield – West Kalgoorlie	20.5 t	Loaded	Forrestfld -Kalgoorli	640	510	80%
		Loaded	Kalgoorli-Forrestfld	640	499	78%
Kalgoorlie - Leonora	20.5 t	Empty	Kalgoorlie-Leonora	725	308	42%
		Loaded	Leonora -Kalgoorlie	725	369	51%
West Kalgoorlie - Esperance	23 t	Loaded	Kalgoorlie- Esperan	480	527	110%
		Empty	Esperance - Kalgoo	480	390	81%
Geraldton - Maya	16 t	Empty	Geraldton - Maya	461	386	84%
		Loaded	Maya - Geraldton	520	466	90%
Marchagee to Geraldton	16 t	Empty	Geraldton - Marcha	295	279	94%
		Loaded	Marchagee - GERAL	353	340	96%
Millendon Jn- Watheroo	16 t	Empty	Millendon -Wathero	205	202	98%
		Loaded	Watheroo - Millend	249	234	96%

Audit Comment

The only routes where the model running times are shown to exceed the Lease SRT are the Brunswick Junction – Hamilton and Kalgoorlie - Esperance loaded.

There is an anomaly in the Lease SRT on the Brunswick Junction to Hamilton railway. The Audit believes that the amended Lease SRT's should be empty trains - 60 minutes, and loaded trains - 65 minutes. In such case with modelled SRT's of empty trains – 51 minutes and loaded trains - 52 minutes, the running times are acceptable.

The Lease SRT for West Kalgoorlie – Esperance loaded is 480 minutes whereas the current modelled time is 527 minutes. There are two reasons for the greater travel time, one being the increased length of trains and the other being increased axle loads. The Lease is structured on maximum train lengths of 940 metres and 21 tonne axle loads; whereas the trains are now running to approximately 1400 metres and 23 tonne axle loads. Despite additional locomotive power this does not completely compensate for the longer and heavier trains.

These reasons provided by WNR are acceptable to the Audit.

DISCUSSION of SECTION RUNNING TIMES

The use of Section Running Times as a key performance measure of the Lease should be re-considered for the following reasons.

Lease Section Running Time Anomalies

Firstly there are a number of anomalies with the Lease SRT's and rather than examine all of these the following is a list of a few examples;

- Brunswick Junction – Hamilton. The times shown are clearly not sufficient,
- Kalgoorlie – Leonora. Shown as 725 minutes whereas actual is approximately half this time,
- West Kalgoorlie – Esperance. The times are shown for 24 tonne axle loads whereas at the time of lease the maximum allowable axle load was 21 tonne.

The Lease SRT's contain anomalies and if they are to continue to be used should be reviewed.

Origin and Changed Circumstances

Secondly is the origin of how the SRT's were derived and under what circumstances of train operations and since then the many changes to the train operations that impact on the actual SRT's. For example;

- West Kalgoorlie – Esperance. At the time of entering into the Lease the maximum train lengths were 940 metres and 21 tonne axle loads. The current operation is approximately 1400 metre long trains with 23 tonne axle loads. This is a more efficient operation, however even with additional locomotive power it is not reasonable to travel the distance within the same time,
- Narngulu – Mullewa. Since the time of agreeing the Lease train lengths have increased by 90% for the new iron-ore freight and even though additional locomotive power is applied to these services the overall performance observed does not achieve the optimised section times,
- Avon Yard - Koolyanobbing. At the time of the Lease the Prospector railcar maximum speed was 140km/hr, whereas now it is 160Km/hr. Obviously faster SRT's are achievable.

Section Running Times not Relevant for Rail Provider/ Maintainer

Thirdly WNR other than determining maximum speeds and permanent and temporary speed restrictions does not have control over how the train operator performs. Depending on the load being hauled, the condition of the locomotive(s), the handling by the driver, whether the trains run at reduced speed to be just in time for a scheduled crossing, etc, there are many variables that contribute to reduced running times. This variability is seen in the sampling of actual running times on the train controllers Train Running Diagrams.

In order to overcome these variabilities WNR has chosen modelling to indicate what Section Running Times can be achieved. The train types used in the modelling are the typical trains that operate on the section of railway. This does not overcome the reality that the SRT's from the Lease that are being used for comparison may not be appropriate as a base case.

It is considered that the use of SRT's as a key performance measure has lost its relevance and is more a measure for the rail operator and not the track provider and maintainer. The axle loads, maximum speeds, speed restrictions and condition of the railway are the more relevant performance measures.

In undertaking the Audit much time has been spent in;

- Checking that Lease SRT's have been correctly transcribed into WOM and the Modelling data,
- Studying Train Control Diagrams to check that actual SRT's as shown in WOM are correct,
- Querying those where there may be a discrepancy and then locating Train Control Diagrams that demonstrate that some trains have achieved the shown SRT's,
- Obtaining and examining reasons where the Lease SRT's have not been met, and in most cases this is because the trains are much larger than at the time of the Lease or the Lease SRT was invalid,
- Having AECOM re-run the modelling.

Importantly the conclusion in many cases is that the train operator is not performing to their full potential; not the track provider.

What is known in many cases is that the railway track itself is in far better condition than at the time of the Lease. For instance;

- Kwinana to Bunbury has been completely concrete resleepered with work undertaken in 2004/05 and 2008/09,
- Darrine to Kalgoorlie has been completely concrete resleepered with work undertaken in 2001/02 and 2008/09,
- West Kalgoorlie to Esperance has been significantly upgraded with heavy 50kg/m rail and new sleepers,

Recommendation

The Lease and the Audit relies on Section Running Times (SRT) as a key performance measure and WestNet Rail has satisfied the Audit in either achieving this criteria or by providing an acceptable reason for the few occasions where the actual SRT is greater.

However it is considered that the use of SRT's has lost its relevance and is more a measure for the train operators and not WestNet Rail as the track provider and maintainer. The axle loads, maximum speeds, speed restrictions and condition of the railway are the more relevant performance measures.

In most cases the railway track is in better condition than at the time of the Lease. As a result of the improvements undertaken by WNR the trains can today operate at higher speeds, the trains are heavier and longer and there are less temporary speed restrictions than in December 2000. It is possible the train operators may not be performing to their full potential; not the track provider.

It is recommended that the use of Section Running Times as a key performance measure be jointly reconsidered by the Public Transport Authority and WestNet Rail. Refer to "Discussion of Section Running Times" on pages 22 – 23.

FIELD INSPECTIONS

Field inspections were undertaken by Hi-rail vehicle travelling along the railway and with stoppages approximately every 40 – 50 kms to examine the railway in greater detail and in particular to inspect and record the sleeper and rail condition. Additional stops were also made as required to examine any special features.

Approximately 2,300 kilometres of railway was inspected by travelling on the rail with the only sections not inspected in such manner being Hines Hill to Merredin, Gibson to Esperance, Lake Julia to Koolyanobbing and Myamin to Leonora. As required under the Audit more than 50% of each section was therefore inspected. Total time for field inspections was 11 days.

The Auditor, Mr Garry Willox was accompanied throughout by PTA representative, Mr Rob Davies, WNR senior representative Mr Bob Stawarz, and WNR District Superintendent and/or Perway Inspector for their respective Districts.

A summary of the inspections are provided in the following. Detailed notes of the inspections are contained in Appendix A and Appendix B.

KWINANA TO KALGOORLIE

KWINANA to AVON YARD

This railway is dual gauge track and comprises a number of sub-sections being;

- Kwinana - Cockburn East, single track with 60kg/m rail & concrete sleepers
- Cockburn East – Forrestfield, down main, 47kg/m rail, timber sleepers
- Forrestfield - Cockburn East, up main, 60kg/m rail, concrete sleepers
- Forrestfield - Avon Yard, down main, 47kg/m rail, concrete sleepers
- Avon Yard – Forrestfield, up main, 60kg/m rail, concrete sleepers

The concrete sleepers and 60kg/m rail were placed around 1980 as part of the Kwinana – Koolyanobbing Rehabilitation Project. The 47kg/m rail was installed as part of the original standard gauge construction around 1968.

Kwinana – Cockburn East

The geometry has very good line and very good top with only few irregularities. The formation is generally good and where slightly narrow in patches additional ballast has been placed to prevent any misalignment of the track. Cuttings are cleaned regularly and another cleaning is required in a number of areas. Being sandy soil the drainage is not a problem. Ballast is adequate with a few locations where there are minor deficiencies but still within the WestNet Code requirements. Rail is in good condition and kept that way with rail grinding. Ultrasonic rail flaw testing is carried out annually. Sleepers are concrete and in good condition.

Cockburn East – Forrestfield, down main

The geometry has good line and good top. It is planned to progressively replace timber sleepers with concrete by 2017. High risk areas on approaches to and under road overpasses have been strengthened with concrete sleepers e.g. North Lake Rd, and more of this work is currently in progress e.g. 13km overpass.

Embankments are generally of adequate width however some locations are marginal. Drains in cuttings are regularly cleaned however there are a number of locations where another clean will soon be required. This is an on-going maintenance task. Ballast profile is generally good and additional shoulder ballast has been recently placed. There are a number of locations where more ballast will be required in the next 12 months. The rail and welds despite being laid 50 years ago are in good condition with regular grinding being undertaken

Forrestfield - Cockburn East, up main

The geometry has good line and good top with only minor irregularities. Embankments are of sufficient width, however slightly narrow at the 45km location. A number of drains require cleaning, e.g. 26.5km, 29.5km, however being sandy soil with good soakage this is not a significant issue. The ballast shoulder is light in a number of locations and although there has been some ballast distribution more is planned. The rail and turnouts are in good condition.

Forrestfield - Avon Yard, down main,

The geometry has very good line and good top with only minor irregularities. Regular tamping of track to correct geometry faults is carried out. The tamper was operating in the Jumperkine – Moondyne section to recant curves and carry-out spot corrections. The rail is in good condition and maintained that way with regular grinding. 3 curves recently rerailed with 50kg/m rail due to head wear reaching the limits as per the SG Code of Practice. Concrete sleepers are in good condition and have fist fastenings and no sleeper replacements have been required.

The formation has adequate width and is well drained with drains in cuttings generally clean. The ballast profile was good and there were extended sections where additional ballast had been recently distributed to add shoulder ballast. 10,000 tonnes had been placed during the current year. There are some patches where more ballast will be needed prior to next summer. Turnouts are well maintained and in good condition. Level crossings are well maintained with major crossings upgraded in 2008.

Avon Yard – Forrestfield, up main,

The geometry both line and top is in very good condition with only minor irregularities. No face tamping is required only spot tamping to correct faults located by the track recorder. The rail is in very good condition with no corrugations and regular grinding maintains the rail accordingly. Two curves have been recently rerailed because of rail wear reaching the limits as per the SG Code of Practice. Turnouts and level crossings have been well maintained and in very good condition.

The formation and drains are in good condition although there are a small number of soft spots and this requires regular tamping to correct top faults. In the sandy areas south of Millendon some drain cleaning is required although being pervious soil it is not priority work. The majority of drains are well cleaned and free draining. Ballast profile is generally adequate and additional shoulder ballast has recently been distributed; however, there are a few locations where additional shoulder ballast may be required before next summer.

Sleepers are generally in good condition; however, there are patches where concrete sleepers have developed cracks that result in the shoulder of the sleeper supporting the Pandrol fastening breaking off. This is a well known problem that became apparent not long after the sleepers were placed circa 1980. It is not consistent throughout and is seen in patches believed to be associated with batches in the manufacturing process. WNR as a function of their maintenance replace approximately 300 – 400 annually in this section of railway. One such patch of replacement sleepers was observed in the 71 – 72km area where many sleepers had been replaced by the maintenance gang. In the vicinity of 54km the gang was replacing broken Pandrol clip insulators. These breakages occur on the outside of a number of sharp radius curves and shows as wide gauge when track recorded.

Avon Yard to Koolyanobbing

This section of railway carried 18,334,625 gross tonnes between Avon - Merredin and 15,955,287 gross tonnes between Merredin – Koolyanobbing in 2008/09. The track structure was upgraded in 1978 from timber sleepered track with 47kg/m rail to concrete sleepered track with 60kg/m rail.

The railway is in good condition with the most concerning feature being the cracking and failure of concrete sleepers and the presence of fouled ballast due to the degradation of the ballast stones that then result in bog-holes and subsequent deterioration of the track geometry at these locations.

The track geometry has very good line and good top with only minor irregularities. The most recent track recording on 10 February 2010 from Avon to Koolyanobbing showed very few faults these being:- Urgent, 8 faults; Priority 1, 9 faults; Priority 2, 31 faults. This is a good result. The geometry is in slightly better condition from West Merredin to Koolyanobbing than West Merredin to Avon. This is possibly due to better sleeper condition and the extensive works carried out on removing fouled ballast. The haulage of less tonnage and drier climate may also contribute to this.

Perhaps the best measure of the track geometry is the Track Quality Index (TQI) as obtained from the track recording data. In August 2001 being soon after the Lease Agreement the TQI for the Avon – Kalgoorlie section was 23.2. From the recording in October 2009 the TQI for the same railway was 18.7. The conclusion is that the track geometry is in better condition now than at the time of entering into the Lease.

The formation throughout is generally in good condition with acceptable width and well formed for good drainage. Many of the cuttings have been widened and cleaned for free flowing drainage. There are some drains in soft clay cuttings that will require further cleaning particularly around the Grass Valley area. This is an on-going requirement and many have recently been cleaned and more is planned prior to winter. In the order of \$300k is spent annually on drain cleaning. Scrub clearing has also been extensive in the last 2 years.

Ballast profile is generally very good and extended areas have had additional ballast distributed on the shoulders in the last year. There remain some areas that are marginally close to acceptable and it is planned to distribute additional ballast on these prior to next summer. However, even though slightly bare in patches the shoulder profile meets the WestNet SG Code of Practice requirements.

There has been extensive work carried out on the removal of bog-holes in the ballast. The ballast stones have degraded creating fines that clog the ballast and prevent good drainage. Tests have shown that the formation is sound. The fouled ballast is removed and geo-fabric place on top of the formation and new ballast then placed. In recent years approximately \$1 million has been expended annually on this work and is undertaken by the maintenance teams. Gang 203 is located at Avon and Gang 204 is located at Merredin. The team-days spent on this work are as follows;

- 2008/09:- Gang 203 – 24 team-days; Gang 204 – 53 team-days
- 2009/10:- Gang 203 – 11 team-days; Gang 204 – 61 team-days

Concrete sleeper replacement is a major maintenance task. Many concrete sleepers that were placed in 1978 when the track was converted from timber to concrete have cracked and failed. Replacements in 2007/08 totalled 9,180 sleepers, 2008/09 totalled 14,503 sleepers and 2009/2010 another 9,750 were replaced. Where possible new sleepers are replaced on a face as shrinkage of the fist fastener sleepers causes gauge and alignment problems when mixed with new Pandrol sleepers. The recovered fist sleepers that are in good condition are

then used for spot replacements. The work is undertaken by the local maintenance teams. Gang 203 spent 42 team-days in 2008/09 and 36 team-days in 2009/10 on this work.

Sleeper condition in the West Merredin to Koolyanobbing section is much better with no cracks sighted. These sleepers were manufactured in 1981/82 as compared to those from Avon to West Merredin that were manufactured in 1978. The manufacturing process at this later time may have improved resulting in a better sleeper.

The rail is in good condition and regular grinding is carried out to maintain the condition. The rail grinder was working in the section near Burracoppin. Rerailing of curves is carried out when head loss approaches the limits as per the SG Code of Practice. This requires 2 - 3 kms to be rerailed annually. There are a number of places that have flogging sleepers at welds. This is not a significant issue. Rail flaw detection is undertaken regularly with very few faults being found.

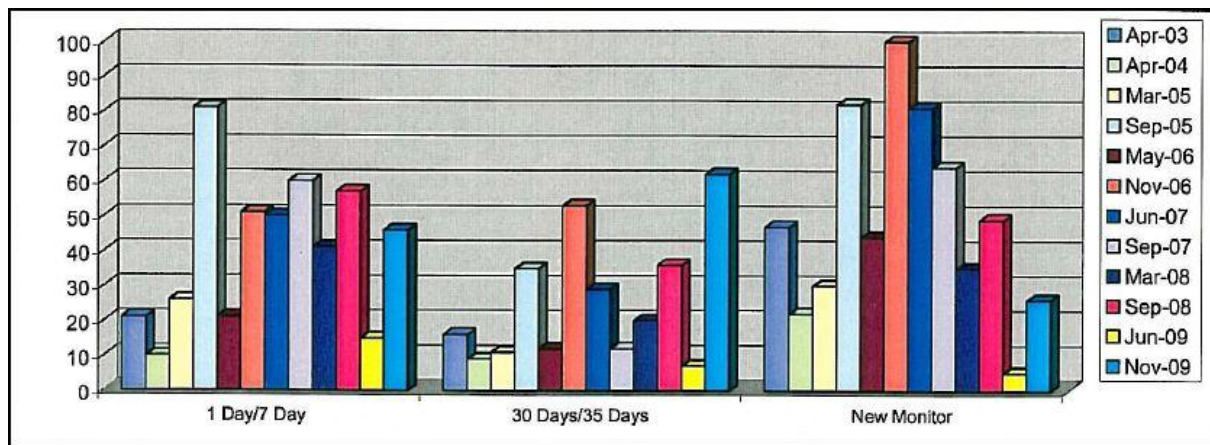
Many of the turnouts had been renewed and the others were well maintained. Four new 60kg/m rail turnouts with concrete bearers had been installed in 2007/08, another four in 2009/10 and another four planned for 2010/11. Level crossings were also in very good condition with an on-going renewal program. In 2005, 14 upgrades; 2006, 20 upgrades; 2007, 9 upgrades; 2008, 10 upgrades; 2009, 11 upgrades; 2010, 11 upgrades.

Koolyanobbing – Kalgoorlie

This section of railway is that which carries the most freight on the Kwinana to Kalgoorlie standard gauge railway. In 2008/09 the haulage was 28,464,038 gross tonnes. It is also the section that has comparatively light 47kg/m rail whereas, with the exception of the Down Main from Cockburn to Avon, the rest of the Kwinana to Kalgoorlie railway has heavy 60kg/m rail. There are high tonnages on this section as in addition to carrying interstate freight it also carries the iron-ore trains operating from Koolyanobbing to Esperance. The axle loads of these trains are 23 tonne and that is also the heaviest loading carried on the railway.

Considerable sleeper replacement work has been undertaken since the time of the Lease Agreement in 2000. At the time of entering into the Lease the only portion of this section of railway with concrete sleepers was from Koolyanobbing (455km) to the 481km near Darrine that had been resleepered with concrete in 1982 as part of the Kwinana Koolyanobbing Rehabilitation Project. The remainder of the railway to Kalgoorlie (655km) had timber sleepers. In 2001 concrete sleepers were installed from 525 – 622km. In 2008 concrete sleepers were installed from 481 – 525km and 622- 656km. As a result the whole of the railway from Koolyanobbing to Kalgoorlie now has concrete sleepers.

As a consequence of the heavy gross tonnage and heavy 23 tonne axle loads being carried on comparatively light 47kg/m rail that dates back to when this standard gauge railway was built in 1968, the condition of the rail is the most concerning feature. Ultrasonic rail flaw detection is carried out regularly to detect flaws and this has recently been increased to six tests per year. The ultrasonic testing in November 2009 showed 108 defects between Koolyanobbing and Kalgoorlie requiring action.



Koolyanobbing – West Kalgoorlie, Rail Flaw Defects

WNR has the situation under control and is maintaining the rail in an acceptable condition. There has been a considerable amount of replacement of worn 47kg/m rail. Of the 200 km of railway 25 kms has been replaced with 60kg/m rail and 7 kms with 50kg/m rail. All new rerailing is now with 60kg/m rail. In addition rail grinding is carried out periodically and the complete section had just been completed prior to the inspection. There are signs of rail corrugation that is too deep for removal by the recent grinding, however this does not appear to present any operational or maintenance problem. The welds are in better condition than observed west of Koolyanobbing and there is very little flogging of sleepers.

There has also been considerable work carried out on the replacement of 47kg/m insulated joints. In the last 2 years there are 46 locations where insulated joints have been replaced with heavy 60kg/m insulated joints. Turnouts are also in good condition with a number having been replaced with heavy 60kg/m types. Some of these have concrete bearers and others have timber bearers and Coldforge screws with better holding capacity.

The formation throughout is wide and kept well formed. The cuttings are wide and have been kept clean for good drainage. Scrub clearing has been carried out with only a few locations still to be cleared and this is planned for 2010/11.

In the areas that have been recently concrete sleepered the ballast profile is very good with plenty of shoulder. In other areas the profile is also adequate although there are patches where additional ballast is desirable. There has been additional ballast distributed and more is planned prior to summer. Even though in patches there is light shoulder ballast it still meets the Code requirements.

The geometry of the alignment is very good and the top is in good condition with only minor irregularities. Interestingly the sections from Darrine to Jaurdi and Bonnie Vale to Kalgoorlie that were resleepered most recently in 2008 have a harsher and bumpier ride than the section from Bonnie Vale to Jaurdi that was resleepered in 2001. The belief is that the resleepering process for the earlier work where the ballast was undercut and cleaned was a superior method and has resulted in better top and a smoother ride. Where there is 60kg/m rail on the 2008 sleepered works the top and ride is much better.

The number of Temporary Speed Restrictions on the railway has been significantly reduced. In April 2000 there was 13.7% of the Koolyanobbing – Kalgoorlie Railway under restriction and now in April 2010 it has reduced to 2.53%. There are in addition block section speed restrictions for the loaded iron-ore trains of 60km/hr; however these have been excluded in the above as it does not provide a true comparison of the track condition.

The conclusion of the Audit is that the overall Kwinana to Kalgoorlie Railway is Fit for Purpose.

WEST KALGOORLIE – ESPERANCE

This section of railway has undergone significant improvement in recent years and further rehabilitation works are currently in progress.

The most significant work has been a program for the replacement of the old 40/ 41kg/m rail with new 50kg/m rail together with associated works of sleeper renewals, pandrol plates on timber sleepers, additional ballast and track tamping and lining.

This work has been carried out under two projects the first being 120 km of railway upgrading between 55 – 210km in the 2008/09 year and the second being approximately 55 kms of railway from 295.6 – 333.6, 349.5- 380.45 and 343.5 – 343.7km points which is being carried out during the 2009/10 year and due for completion by July 2010.

In effect this will result in the railway from Kambalda to Esperance that was 40/ 41kg/m rail track less than 2 years ago being upgraded to 50kg/m rail track except for the section from 210 – 295.6km and 333.6- 349.5km that will for now remain as 40/ 41kg/m rail. Within this remaining section most of the curves have also been rerailed with 50kg/m rail.

Together with the section from West Kalgoorlie to Kambalda that was already 47kg/m rail this means that of the total distance of 383 km less than 95 km will remain as the lighter 40/ 41kg/m rail.

In addition to upgrading to heavier rail there has been extensive ballast replacement works carried out. This is in areas where the ballast is acidic resulting in corrosion and early failure after approximately 10 years of steel sleepers. This ballast is also badly fouled with fine material resulting in bog-holes in the track that cannot adequately support the railway structure. Poor top and line is the outcome of this with associated speed restrictions. In recent years approximately 10 kms of acidic/ fouled ballast has been replaced annually and with a further 10 kms planned for 2010. Works on widening cuttings to improve drainage have also been carried out. Total program is for 100 kms of which 80% has been completed.

The majority of the railway with the heavier 47/ 50kg/m rail is in very good condition. The sections of railway where the 40/ 41kg/m rail remains is not in as good condition and the geometry has minor alignment irregularities and moderate top irregularities. It is however in an acceptable condition to operate at the moderate speeds of 50km/hr loaded and 70 km/hr empty.

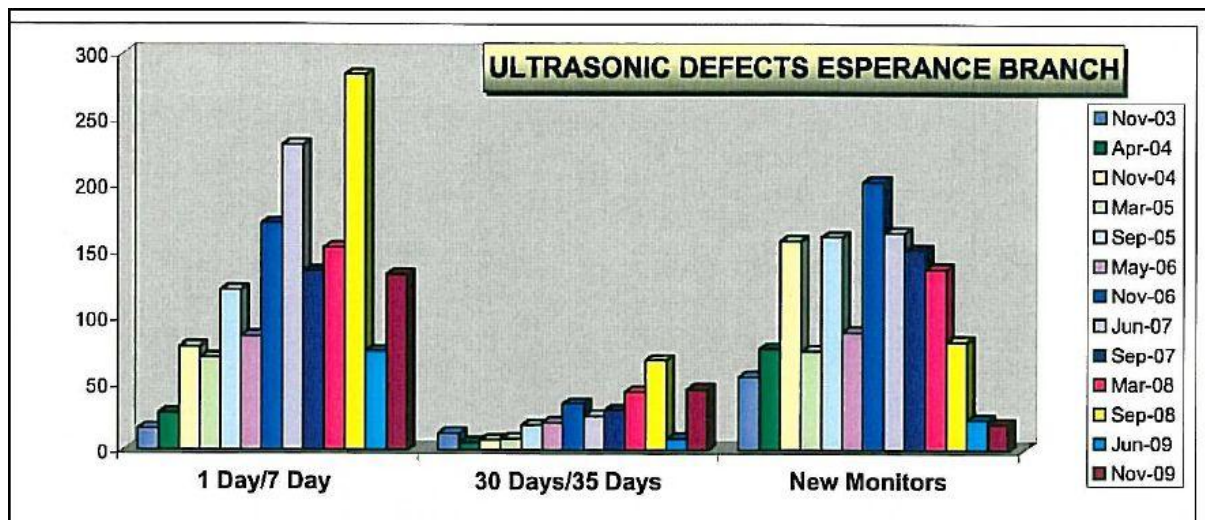
There are some patches of weakness on the lighter track particularly where there remains acidic/ fouled ballast and where this has weakened the steel and timber sleepers. Although still within the standard required by the WestNet Rail Codes of Practice some strengthening work is required and the IPW advises that this is soon to be undertaken.

In the vicinity of 312km location there are test sections of 100% steel sleepers that have been in place for approximately 8 years and the geometry is in very good condition. The IPW advised that it never had a face tamp and has never buckled in the heat.

The number of Temporary Speed Restrictions on the railway has been significantly reduced. In April 2000 there was 10.6% of the West Kalgoorlie – Esperance railway under Temporary Speed Restrictions. In March 2005 this had risen to 13.5% and now in April 2010 it has reduced to 3.1%. This reduction has been despite the traffic task increasing four-fold from 3mtpa to 12mtpa.

Another significant change has been in rail faults as detected by ultrasonic testing. There has been a significant increase brought about by the growth in iron-ore freight. In November 2003 the number of faults (exclusive of monitor faults) was 29, and by September 2008 this had

increased to 352 faults. In November 2009 this had decreased to 179 faults following the extensive replacement of 41kg/m rail with 50kg/m rail.



West Kalgoorlie - Esperance, Rail Flaw Defects

The conclusion of the Audit is the Kalgoorlie to Esperance railway is Fit for Purpose

KALGOORLIE – LEONORA.

The length of this railway is 259 km and was re-railed with 47kg/m rail in approximately 1980 using rail recycled from the Kwinana – Koolyanobbing railway (EGR) when it was converted to 60kg/m rail. In 1999 the track was resleepered to a 1 in 4 steel sleeper pattern.

Relatively light gross tonnages of freight are carried, being 2.4 million tonnes in 2008/09. The train speeds are moderate being 60km/hr for empty trains and 50km/hr for loaded trains with typically 21 tonne axle loads.

The track geometry is in fair condition with both line and top having moderate irregularities. It is satisfactory for the speeds of operation. The railway formation is in good condition with adequate width and well formed for good drainage. The ballast profile is also satisfactory with plenty of shoulder ballast. Additional ballast has recently been distributed in areas where the shoulders were deficient.

Rail is in fair condition and satisfactory for the loads carried. There are a number of locations showing rail-flow some of which would have been present when recycled from the EGR. It is adequate for the low gross tonnages of freight. Rail flaw detection is undertaken annually and very few faults are found. The rail has some corrugation but is not a problem with light haulage. No rail grinding has been undertaken in the last 5 years. Rerailing of curves is carried out when head wear approaches the limits as per the SG Code of Practice. Rail had been distributed in preparation for rerailing at the 21.5km location.

The condition of the timber sleepers is the worse feature of the railway. As can be seen from the inspection reports sampling shows that 54% of the timber sleepers are expired or have a remaining life of less than 5 years. The sleeper condition is however being maintained within WestNet Rail's Standard Gauge Mainline Code of Practice, Track and Civil Infrastructure.

WNR plans to resleeper over the next 4 years using appropriate resourced maintenance teams to carry out the work. This will include converting to a 1 in 2 steel pattern. Curves have already been strengthened to 1 in 2 steel. Some sections of tangent track have also been converted to 1 in 2 steel where heavy resleepering has been necessary.

The railway track is secure and well tied with the steel sleepers and those timber sleepers that are in good condition. All the timber sleepers have sleeper-plates and this helps hold the track. Where required temporary speed restrictions are applied until rectification work can be carried out. Tamping of the track is difficult due to poor sleeper condition. Continued vigilance is applied and spot replacements carried out.

The extent of speed restrictions from the time of the Lease to now is approximately unchanged being 7.66 km and 8.15 km respectively. The maximum speeds in the Lease and currently operating are also the same. It is puzzling as to how the Section Running Times in the Lease were derived as they are shown to be 725 minutes for 24 tonne axle load trains; whereas the maximum axle loading in the Lease is 21 tonne and the SRT is approximately twice that of actual and modelled operations. Needless to say WNR are achieving the Section Running Times.

The conclusion of the Audit is that the Kalgoorlie to Leonora Railway is Fit for Purpose.

KWINANA TO BUNBURY

This railway carries the largest tonnages of freight on the WestNet Rail narrow gauge network. In 2008/09 the section from Mundijong Junction to Kwinana carried 24,213,569 gross tonnes and the section from Picton to Bunbury Harbour carried 21,211,234 gross tonnes. With resleepering from Pinjarra to Brunswick carried out in 2008/09 the whole of the Kwinana to Bunbury railway is now fully concrete sleepered. The rail throughout is heavy 50kg/m with the exception of a small amount of 47kg/m rail between Picton and Bunbury Harbour. The maximum speed for loaded freight trains from Kwinana to Pinjarra is 80km/hr whilst from Pinjarra to Picton the speed remains at 70km/hr; however, it will soon be lifted to 80km/hr as a result of the improvements due to concrete resleepering. The Australind passenger trains operate at 110km/hr.

Kwinana to Pinjarra.

The track geometry both alignment and top is in very good condition with the top having only minor irregularities where not recently tamped. Resurfacing on a face is carried out approximately every 2 years. Intermediate tamping of faults is carried out as required. The formation is well formed and has good drainage. One section had been recently replaced with limestone to rectify soft formation. The ballast profile is very good with plenty of shoulder ballast. Bauxite is fouling the ballast in number of places and cleaning may be required at a future time but not yet. Geotextile fabric has been placed at turnouts to prevent fouling of the ballast. The rail is in very good condition and maintained that way with regular rail grinding. New 50kg/m rail was placed approximately 10 years ago. The concrete sleepers were placed in 2004/05 and are in excellent condition. Turnouts and level crossings are well maintained.

Pinjarra to Brunswick Junction.

The track geometry both alignment and top are in very good condition. No resurfacing on a face has been required since concrete resleepering 1 year ago, although it is planned to face tamp in the next 12 months. Intermediate tamping of faults is carried out as required. The formation is well formed and has good drainage. Ballast profile is very good with plenty of shoulder ballast. Rail is in good condition and maintained that way with regular rail grinding. There is some minor flogging at dipped Thermit welds. Turnouts at the crossing loops and level crossings are in good condition.

Brunswick Junction to Bunbury Harbour.

The track geometry of both alignment and top is in good condition. Intermediate tamping of faults is carried out as required approximately annually and the tamper and ballast regulator were working near 171km performing such work. Sleepers are in excellent condition having been concrete sleepered in 2005. Formation is well formed and has good drainage. Ballast profile is good with plenty of shoulder ballast. Rail is in good condition and kept that way with regular rail grinding. Ultrasonic rail flaw detection is conducted on an annual basis for all the sections on the Kwinana – Bunbury railway.

Picton Junction to Bunbury Passenger Terminal

This is a short 5 km section of track that is used solely by Australind Passenger Railcars at a permanently restricted speed of 60km/hr. This speed has applied from time of the Lease. Track is primarily timber sleepered however the curve has been strengthened to 1 in 2 steel sleepers. Track geometry of line and top are in good condition for this low speed and light loading.

The conclusion of the Audit is that the Kwinana to Bunbury Railway is Fit for Purpose

BRUNSWICK TO COLLIE

The Brunswick to Collie railway is made up of a number of sections best described as;

- Brunswick Junction to Worsley,
- Worsley to Hamilton, and
- Worsley to Premier (13 km past Collie)

The freight carried in 2008/09 on the main trunk route being the Brunswick Junction to Worsley section was 12,287,662 gross tonnes.

Brunswick Junction to Worsley

This railway was concrete sleepers in 2005 and has a combination of 47kg/m and 50kg/m rail. The geometry is very good for terrain that has many small radius curves and steep grades. Formation is well formed and has good drainage. There are a few locations of narrow formation on high embankments where it is difficult to carry out widening and to compensate there is additional ballast to hold the track alignment. Rail wear is a problem on the small radius curves and a program of annual re-railing is carried out where head loss of the rails reaches the limits of the NG Code of Practice. Annual rail flaw detection testing is conducted. Rail grinding to shape the rail and remove rail flow is carried out on regular basis of annually for curves and bi-annually for tangents. Ballast profile is very good and is heavily ballasted on tight curves in order to hold the track in position. Additional ballast had been recently added in many areas. Turnouts at Beela, 60kg/m on concrete bearers, had been recently renewed in February 2010.

Worsley to Hamilton

This railway has 1 in 2 steel sleepers following resleepering in 2006 with the intermediate sleepers being timber. The condition of the timber sleepers is fair with approximately half having a remaining life of more than 5 years. All of the timber sleepers are fastened to the rail with Pandrol fastenings and sleeper-plates. As a result and together with the 1 in 2 steel combination the track is very solid. The rail is 47kg/m and in good condition. Track geometry of both alignment and top is very good. Formation is in good condition with well shaped top and good drainage. Turnouts and level crossings are in good condition. Ballast is well formed and plentiful with adequate shoulders to hold the track alignment.

Worsley to Premier

Sleeper replacements are carried out under annual gang maintenance programs and within 2 years the section will be completely 1 in 2 steel. At present the majority has been converted to 1 in 2 steel. Rail is 47kg/m and in good condition and regular grinding of the curves is carried out to maintain the correct rail profile. Track geometry comprising both line and top is in good condition. Formation has a number of soft locations and there has been an ongoing annual program of ground improvement works to rectify the problem areas. There are a number of locations where the top geometry is irregular due to these soft spots.

The section beyond Collie to Premier consists of 40 & 41kg/m rail. Approximately 12 years ago steel sleepers were placed with a 1 in 2 pattern on curves and 1 in 4 pattern on tangent track. With spot renewal of sleepers there is progression to an overall 1 in 2 pattern. Timber sleepers are in good condition. A permanent speed restriction of 30km/h applies as has been the case from the time of the Lease. Through regular gang maintenance the track is held in acceptable condition to continue to operate at this slow speed. Level crossings are well maintained with rehabilitation of one recently completed. The ballast profile is satisfactory.

The conclusion of the Audit is that the Brunswick to Collie railway is Fit for Purpose.

PERTH TO GERALDTON

The Perth to Geraldton railway comprises a variety of track structures and for the purpose of this audit inspection report have been categorised into the following primary sections;

- Millendon Junction to Watheroo that is mainly used for the haulage of grain south to Kwinana,
- Watheroo to Mingenew that is used for the haulage of grain north to Geraldton, and
- Mingenew to Geraldton that carries the grain plus the mineral sands from Dongara where the Eneabba railway joins the network.

The freight tonnages hauled in 2008/09 were Watheroo to Millendon Junction 703,295 gross tonnes, Watheroo to Dongara 1,355,912 gross tonnes and Dongara to Narngulu 2,946,236 gross tonnes.

Millendon Junction to Watheroo

The first section of this railway from Millendon – Mooliabeenie is a heavier railway with continuous welded rail (CWR) with a mixture of 41kg/m, 47kg/m & 119lb/yd (approx 60kg/m). Maximum axle loading is 19 tonne operating at a maximum speed of 60km/hr. Track geometry has good alignment and the top is also good with only minor irregularities. No face tamp has been required since resleepering in 2005 only the spot tamping of track faults. Next tamping cycle is planned within 12 months. Rails are in good condition for this class of line. The 119lb/yd section is very solid but has some dips at welds. This is not a concern regarding rail being fit for purpose. The 47kg/m section has very good line and top.

Sleepers are 1 in 2 steel with the intermediates being timber. Timber sleepers are in fair to good condition and will not require a resleepering cycle in the near future. No signs of breakages were evident from the hi-rail inspection and the sampling showed 64% had more than 5 years remaining life. Formation is wide and well formed and well drained. Ballast profile is satisfactory with sufficient shoulder ballast to prevent any misalignment. The Superintendent advised there were no heat buckles during the recent summer. Turnouts and level crossings are in good condition and well maintained.

The next section from Mooliabeenie to Watheroo has lighter 31kg/m CWR with 1 in 2 steel sleepers with the intermediates being timber. Maximum axle loading is 16 tonne operating at a maximum speed of 50km/hr. The 31kg/m rail is in an acceptable condition despite being around 80 years old. Replacement of worn rail as part of normal track maintenance is carried out as required. For example at the 80.5km new rail was next to the track ready for rail replacement. There are locations with 41kg/m and 47kg/m where there has been worn rails replaced.

Timber sleepers are in fair to good condition with no breakages sighted from the Hi-rail. The bulk of the track was resleepered in 2007. The exception is in the section from Moora to Watheroo where the local gang has converted the track from 1 in 4 steel to 1 in 2 steel and was completed in 2009. Regular replacements are carried out by the gang to minimise speed restrictions. Sampling showed that 62% of the timber sleepers had more than 5 years remaining life.

The track geometry has good alignment and good top with some minor to moderate irregularities. The formation is wide, well formed, free draining and clear of vegetation. There are some areas of soft formation in the Koojan to Moora section and between Moora and Coomberdale. Lime stabilisation has been carried out in a number of areas and more is planned in 2010/11. Meantime regular tamping is undertaken to correct any subsidence of the top.

Ballast is well profiled and with plentiful shoulder ballast to restrain the track from lateral movement. The Perway Superintendent advised there had been no heat buckles during the recent summer. Turnouts are in good condition and well maintained. Level crossings are in good condition and well maintained.

Watheroo to Mingenew

The section of railway from Marchagee to Mingenew carries a maximum of 16 tonne axle loads at a speed of 50km/hr and is constructed of 31kg/m CWR with 1 in 4 steel sleepers and with the intermediates being timber. Small radius curves have 1 in 2 steel sleepers. The last resleepering cycle was in 1998 and the next is planned for 2012/13. Rail is generally in good condition considering its age of approximately 80 years. Some curves have been rerailed with heavier 40kg/m rail. Timber sleepers are in fair condition but many are reaching life expiry and resleepering in 2012/13 is warranted. Sampling showed 69% to have less than 5 years remaining life.

The track geometry has good alignment and fair to good top with moderate to minor irregularities. Formation has adequate width and is well formed and well drained and clear of vegetation. There are a number of isolated locations of soft formation and lime injection has been carried out around 267-8km location to strengthen the soil. Ballast has good profile and plenty of shoulder ballast to restrain lateral movement. Throughout the whole section the turnouts and level crossings have been well maintained. A number of level crossings have been upgraded and strengthened.

The section from Watheroo to Marchagee is not used for freight haulage, however is strategically important as the only connection for transfer of locomotives and rollingstock to the Geraldton area from the south. It is constructed of 31kg/m CWR with nominal 1 in 4 steel sleepers. There are 4 tight radius curves that have been re-railed with 40kg/m rail and a 1 in 2 steel sleeper pattern.

There has not been a resleepering cycle in this area since 1989; however, it has been progressively resleepered by the local maintenance gang to firstly 1 in 4 steel and now being converted to 1 in 2 steel as the timber sleepers reach life expiry. The majority of timber sleepers have less than 5 years life (67% from sampling); however, most are supporting the rail and the steel sleepers are holding the gauge. Any completely broken sleepers are replaced. Occasional broken sleepers were observed from the Hi-rail inspection vehicle.

The track geometry has good line and fair top and is acceptable for the limited use made of this section. Formation is well formed with good drainage and clear of vegetation. Ballast is well profiled with plentiful shoulder ballast to secure the track.

Mingenew to Geraldton

The major part of the railway consists of 41kg/m CWR with 1 in 2 steel sleepers with the intermediates being timber. The exception to this being the new railway from Narngulu to Geraldton Port that is 50kg/m rail on concrete sleepers. The railway carries 19 tonne axle loads at 60km/hr and 16 tonne axle loads at 70km/hr.

The section from Mingenew to Dongara was resleepered in 1999 and many of the timber sleepers are approaching life expiry and replacement in 2012/13 is warranted. Meanwhile with 1 in 2 steel sleepers the track is solid and safe although it would be difficult to tamp the track without causing many breakages. From sampling the indication is that 80% of the timber sleepers have a remaining life of less than 5 years.

The rail is generally in good condition and re-railing of worn rail is planned over the next 12 months. Rail has been distributed next to the track at a number of places in preparation for this, e.g. 384½km. Rail has also been transposed at a number of locations. Ballast profile is well maintained with plenty of shoulder ballast to prevent lateral movement. The track

geometry has very good alignment and good top with minor irregularities. Formation is generally in good condition with good drainage and free of vegetation. There are only isolated areas where it is soft such as in the Yardarino area. Lime injection to strengthen the formation has been undertaken over a number of years and more such work is planned. Level crossings and turnouts are well maintained.

Dongara to Narngulu was also resleepered in 1999 and the timber sleepers are nearing life expiry and contributing to top deterioration. With 1 in 2 steel sleepers the track is solid and fit for normal speeds; however, resleepering in 2012/13 is warranted. Sampling showed 88% of the timber sleepers had a remaining life of less than 5 years. Rail is in good condition with rail grinding undertaken every 2 years and ultrasonic testing yearly. Turnouts are in good condition and well maintained. Alignment is generally good and top is good to fair with minor and moderate irregularities.

Formation is wide, well formed and drained and free of vegetation. There are a few areas of soft formation e.g. 399km & 441 – 448km. Lime stabilisation has been undertaken in areas, e.g. 441km. Ballast has good profile with plenty of shoulder ballast. There are a number of areas, where the ballast is badly fouled by windblown sand. Some of these areas have been lifted and new ballast placed, e.g. 448km. Other areas are planned to be similarly treated prior to the next resleepering cycle. Level crossings are in good condition with many recently upgraded with concrete sleepers and 50kg/m rail.

The Narngulu to Geraldton Port railway is near new having been opened on 10 September 2005. It is constructed of 50kg/m rail and concrete sleepers and is in excellent condition. It is a different route to the old railway that formed part of the Lease Agreement. In 2008/09 it carried 8,661,454 gross tonnes.

The conclusion of the Audit is that the Perth (Millendon Junction) to Geraldton railway is Fit for Purpose

PERENJORI TO NARNGULU (GERALDTON)

The Perenjori to Narngulu railway is comprised of 31kg/m CWR with 1 in 2 and 1 in 4 steel sleepers with intermediate timber sleepers all on metal ballast. The maximum axle loading is 16 tonnes operating at a maximum of speed of 50km/hr from Narngulu to Morawa and a maximum speed of 40 km/hr from Morawa to Perenjori. In 2008/09 the Narngulu to Mullewa section carried 5,795,198 gross tonnes, whilst the Mullewa to Perenjori section carried only 163,456 gross tonnes.

The section from Narngulu to Mullewa has 1 in 2 steel sleepers having been upgraded to this from 1 in 4 steel pattern when resleepered in 2007. The timber sleepers are nearing life expiry as when the resleepering was carried out the strategy was to minimise replacements pending the possibility of a total line upgrade using concrete sleepers for major iron-ore projects. Sampling showed that 88% of the timber sleepers have a remaining life of less than 5 years. Despite the poor condition of the timber sleepers the track is solid and well tied with the 1 in 2 steel sleepers.

Rail is corroded on the foot at a number of locations and breakages are not uncommon. A number of sections totalling 20 kms have been rerailed in the last 5 years with 41kg/m rail particularly on curves. The track geometry has good line and good top with moderate irregularities and is quite adequate for the speeds of 50km/hr for loaded trains and 60km/hr for empty trains.

The formation is generally adequate with wide embankments. A number of narrow sections have been widened and more is planned in the next 3 months. Drainage improvements have been on-going over the past 5 years. There are some soft spots that require additional maintenance. Vegetation has been cleared by scrub slashing.

Many new culverts have been built in the last 5 years to improve drainage and to prevent washaways. The major bridge over the Greenough River has new transoms and concrete sleepers on the approaches. Many level crossings have been upgraded and strengthened with concrete sleepers and 50kg/m rail. Turnouts are in good condition and well maintained. The overall maintenance effort has been very effective and the railway reserve cleared of old sleepers, vegetation and general rubbish.

The Mullewa to Morawa section was resleepered with a 1 in 4 steel pattern in 2000. From Morawa to 364.8 km it is a 1 in 2 steel pattern. Many of the timber sleepers are nearing life expiry with sampling showing 68% have less than 5 years remaining life. Despite this the railway is well tied with the steel sleepers and there are not many signs of broken sleepers. Where there are broken sleepers, and these are only by exception, they have been marked in preparation for replacement in the near future by the maintenance gang. Small radius curves have been strengthened with 1 in 2 steel sleepers and with Pandrol plated fastenings on the timber sleepers

The track geometry has good alignment and good top with minor to moderate irregularities and quite acceptable for the operational speeds. The rail is old, rolled in 1937, and has foot corrosion in a number of areas as a legacy of being in damp and salty gravel ballast prior to metal ballasting. Bank widening of the railway formation has recently been carried out at a number of locations. Rock facing has been recently placed in washaway prone areas. Lime injection has been carried out recently in the 386km area to stabilise soft formation. The ballast profile is acceptable with plenty of shoulder ballast.

The Morawa to Perenjori section has recently been upgraded in 2009 with the gravel ballast being replaced by metal ballast. Final work in tamping and rail destressing is currently being carried out. When the work has been fully completed and the track has had time to consolidate then the speed will be raised. The section still operates at the lower speed of 40km/hr for loaded trains and 50km/hr for empty trains.

The sleeper pattern is 1 in 4 steel. As part of the reballasting, broken sleepers have been replaced. The remaining timber sleepers are in fair condition. Any further breakages following the next tamping will be replaced by the gang. Sampling showed that 58% of the timber sleepers have a remaining life of less than 5 years. A number of steel sleepers were corroded due to being in salty gravel ballast and are being replaced as required.

The track alignment is good and the top has moderate irregularities. It will have another partial tamp after destressing and prior to raising the speed. The ballast profile is very good with plenty of shoulder. Formation is in good condition and well formed and drained and clear of vegetation. Level crossings have been upgraded with concrete sleepers and 50kg/m rail.

The conclusion of the Audit is that the Perenjori to Narngulu railway is Fit for Purpose

ENEABBA TO DONGARA

The Eneabba to Dongara railway is constructed of 41kg/m CWR with a 1 in 2 steel sleeper pattern on metal ballast. The intermediate sleepers are timber. In 2008/09 the railway carried 1,810,099 gross tonnes. The maximum axle loading is 19 tonnes operating at a speed of 60km/hr.

The railway was last resleepered in 2005/06 and was converted from a 1 in 4 steel pattern to a 1 in 2 pattern. The intermediate timber sleepers are in fair condition with sampling showing that approximately half have a remaining life of more than 5 years. There are no obvious broken sleepers as these are replaced by the maintenance gang when they occur. The track geometry both alignment and top are in very good condition with only minor top irregularities around the 57km location and few other locations due to areas of soft formation.

Rail is in good condition with curves railed on an as required basis. Regular rail grinding is carried out with the most recent being in 2009. There are some dipped welds and a program to cut out the worst of these is being undertaken. Ultrasonic rail testing is carried out on an annual basis.

Formation is wide, well formed and well drained. At the time of inspection recent heavy rains had eroded parts of the formation and repair work was in progress. The formation is clear of vegetation with slashing of scrub having been recently carried out. Level crossings were in very good condition with many having been strengthened with concrete sleepers and 50 kg/m rail. Turnouts are in good condition. The ballast profile is adequate with plenty of shoulder ballast.

At the very end of the railway in the area of South Mine the ballast is contaminated with sand from the mining activities. A 30km/hr speed applies and being at the end of the line has minimal effect on operation times. Very little can be done to clean the ballast, nor is it warranted at this stage.

The conclusion of the Audit is that the Dongara to Eneabba railway is Fit for Purpose.

SUMMARY and CONCLUSION

DATA and DOCUMENT VERIFICATION AUDIT

Checks were conducted to verify that the Performance Standards have been correctly transcribed from original lease documents into the WestNet Performance Standards Analysis;

- WestNet Rail's key document for recording the Initial Performance Standards and for detailing its actual performance standards is the WestNet Operating Matrix (WOM).
- The only variance found was the Lease (Section Running Times) SRT's on the Narngulu – Mullewa section of railway. This was brought to WNR's notice and has since been corrected and the copy of WOM as shown as Appendix C is correct.
- No other errors in transcribing the Initial Performance Standards to the WestNet Operating Matrix were found.

Checks were conducted to verify that the temporary and permanent speed restrictions applicable at the time of signing of the Lease (17th, December 2000) have been accurately documented by WestNet Rail. This included sampling of the source documents.

- The Temporary Speed Restrictions at the time of signing the Lease are contained in Weekly Notice No 50 dated December 16th 2000. A copy was obtained as a record for the Audit and is an accurate document.
- WNR holds a hard copy of the Permanent Speed Restrictions (PSR's) that were known to apply in 2000 at the time of entering into the Lease. This record was not considered to be entirely accurate as changes made in the Districts were not always incorporated into what was a Head Office record.
- WNR undertook a major review of what speed restrictions were actually in the field and the information has been entered into WNR's Railway Access Management System (RAMS). When further changes to PSR's are now made these are entered into RAMS and the current register of PSR's has been validated by the District per-way staff.
- The conclusion is that the record of permanent speed restrictions at the time of the Lease was not completely accurate; however the record now held by WNR is accurate for current conditions.

Checks were conducted to verify that the currently promulgated maximum speeds and axle loads used in the analysis by WestNet Rail are accurate and this included sampling and verification of source documents.

- The actual speeds shown in the WestNet Operating Matrix (WOM) for each of the various axle loads were checked by reference to the Working Timetable Books. This showed no discrepancies and the conclusion is the information contained in WOM is correct.
- There were some errors in allowable speeds used in the RAILSIM modelling undertaken by AECOM consulting engineers, and this is shown later in this Report. The errors have since been corrected.

Checks were conducted to verify that the current temporary and permanent speed restrictions reported by WestNet Rail are accurate and this included sampling and verification of source documents.

- Documentation showing both permanent speed restrictions and temporary speed restrictions applicable to the whole of the WNR network as at 17th March 2010 was viewed. In addition to this information further data was obtained from WNR District Superintendents when carrying out the field inspections.
- Sample checking was undertaken as part of the field inspections and where these samples were taken this showed that the data provided was accurate. Obviously with the magnitude of speed restrictions it is not possible to provide assurance that the information is totally accurate.
- The conclusion of the Audit is that WNR has a very good system in place for recording both permanent and temporary speed restrictions and from the sampling undertaken in the field the information has a high probability of being accurate.

Checks were undertaken to verify that the current section running times used in the analysis by WestNet Rail are accurate and this included sampling and verification of source documentation.

- The actual SRT's are shown in WOM as a comparison to the Lease SRT's. The SRT's are derived from examining the Train Running Diagrams (TRD) and although these may be accurate for the start and a finish of a journey they are not necessarily accurate for the intermediate locations along the route.
- In sampling the source documents being the TRD's the start and finish times for the journey rather than intermediate locations along the route were considered. A total of 22 train diagrams were examined and compared with what is shown in WOM as actual Section Running Times.
- In cases where the actual SRT's shown in WOM may have been less than the SRT's on the initial sample Train Running Diagrams (TRD), WNR were able to produce a TRD to show that the SRT was achievable.
- The actual Section Running Times as shown in the WestNet Operating Matrix have a degree of variability. Very few trains perform alike due to a number of factors many of which are not within the control of the track provider. WNR has recorded its actual section running times from the average of samples of train operations. It would be more meaningful to show actual Section Running Times as those for an "ideal" train and this is where modelling becomes important.

Checks were undertaken to verify that the data used in train modelling was accurate. In view of the difficulty in obtaining relevant data on actual train running times, WNR engaged AECOM to undertake train running simulation i.e. modelling. Information on curvature, gradients, temporary and permanent speed restrictions, permissible axle loadings, permissible speeds, train loadings and locomotive information was provided by WNR.

- The AECOM Report initially made available for audit purposes for the non-grain lines was Revision 0, dated 14 December 2009. For the Millendon Junction to Geraldton and Perenjori to Geraldton grain line sections the AECOM Report Revision 2, dated 28 July 2009 was provided. From sampling undertaken as part of this Audit there were no obvious omissions in the data provided to AECOM by WNR.

- There was however a number of anomalies relating to the allowable maximum speeds and the Lease SRT's that AECOM had shown in their Reports and these were raised with WNR during the Audit.
- As a result of these matters being raised WNR arranged for AECOM to review their modelling and as a result a revised version of the Report was issued being Revision 2, dated 26 March 2010. Further to this, re-modelling of the Geraldton – Maya and Kalgoorlie – Esperance railways were again undertaken.
- Although it is not possible to be absolutely certain that the modelling now contains all the relevant data it is sufficient to conclude from the checks undertaken and the revision conducted and from the assurances provided from AECOM, that the information has a high probability of being correct.

DESK TOP REVIEW of COMPLIANCE with PERFORMANCE STANDARDS

Examination was undertaken on circumstances where the current operations do not as a minimum meet the Performance Standards; and where they do not meet the Performance standards, comment on the validity of reasons advanced by WestNet Rail as to the reasons they are not being met.

- In examining WOM there were six sections of railway where the actual SRT's were outside the Lease SRT's. Of these three of the reasons were due to much larger trains now being hauled; two of the reasons were due to incorrect actual SRT's being shown as further checks by WNR of Train Running Diagrams revealed that faster times within the Lease SRT's were achievable; and one was due to an anomaly in the Lease with an in-complete SRT.
- The anomaly in the Lease SRT was on the Brunswick Junction to Hamilton railway. As a result WNR has adopted its own scheduled SRT. Although a minor matter the Audit believes this SRT should be 60 minutes for empty trains, not 65 minutes. The actual SRT does not exceed this and is therefore found to be acceptable.
- There was one case where the maximum allowable speed had been reduced marginally below the Lease allowable speed and this was due to concrete sleeper condition. This speed reduction did not impact on the ability to achieve the Lease SRT.
- The reasons provided by WNR are found to be acceptable.

The modelling undertaken by AECOM using the RAILSIM software provides a better indication of what Section Running Times can be achieved. The train types used in the modelling are the typical trains that operate on the section of railway.

- Examination of the results shows the only routes where the model running times exceed the Lease SRT are the Brunswick Junction – Hamilton and Kalgoorlie - Esperance loaded.
- As indicated above there is an anomaly in the Lease SRT on the Brunswick Junction to Hamilton railway. The Audit believes that the amended Lease SRT's should be empty trains - 60 minutes, and loaded trains - 65 minutes. In such case with modelled SRT's of empty trains – 51 minutes and loaded trains - 52 minutes the running times are acceptable.
- The Lease SRT for West Kalgoorlie – Esperance loaded is 480 minutes whereas the modelled time is 527 minutes. There are two issues one being the increased length of trains and the other being increased axle loads. The Lease is structured on maximum train lengths of 940 metres and 21 tonne axle loads; whereas the trains are much

longer being approximately 1400 metres and 23 tonne axle loads. Despite additional locomotive power this does not completely compensate for the longer and heavier trains. This is the reason for a greater SRT.

- The reasons provided by WNR are found to be acceptable.

FIELD INSPECTIONS

All of the sections of railway were found to be in Fit for Purpose condition. There were some sections that have had significant improvement works carried out since the time of entering into the Lease including railway upgrades in the last 5 years since the previous Audit.

Kwinana – Kalgoorlie Railway

With the exception of a short section of the Down Main between Cockburn East and Forrestfield the railway is now concrete sleepersed throughout. The most recent concrete sleepers was undertaken in 2008 and that work completed the section between Darrine and Kalgoorlie. In 2001 concrete sleepers were installed from 525 – 622km.

The railway is generally in very good condition with the main problem being cracking of some of the original concrete sleepers that were placed in 1978-82. This occurs primarily between Avon Yard – Merredin (being the first section to be concrete sleepersed in 1978) and the Up Main between Avon Yard and Forrestfield (being the second section to be resleepersed circa 1980). The problem is confined to small sections and not consistent throughout. WNR is carrying out sleeper replacements as required to maintain the railway to its Lease and operational requirements.

An indication of the benefit from improvements can be seen by the reduction in the number of Temporary Speed Restrictions (TSR) on the railway. In April 2000 there was 13.7% of the Koolyanobbing – Kalgoorlie Railway under TSR's and now in April 2010 it has reduced to 2.53%.

West Kalgoorlie – Esperance

This section of railway has undergone significant improvement in recent years and further rehabilitation works are currently in progress. The most significant works have been the replacement of the old 40/ 41kg/m rail with new 50kg/m rail together with associated works of sleeper renewals, pandrol plates on timber sleepers, additional ballast and track tamping and lining.

This work has been carried out under two projects the first being 120km of railway upgrading in 2008/09 and the second being approximately 55 kms of railway which is being carried out during the 2009/10 year and due for completion by July 2010. In effect this will result in the railway from Kambalda to Esperance that was 40/ 41kg/m rail track less than 2 years ago being upgraded to 50kg/m rail track except for 95 km that will remain as the lighter 40/ 41kg/m rail.

In addition there has been extensive work on the removal of acidic/ fouled ballast that has corroded steel sleepers and caused bog-holes in the track.

The majority of the railway with the now heavier rail is in very good condition and those sections where the original 40/ 41kg/m rail remain are in fair but acceptable condition for the promulgated speeds.

Kalgoorlie – Leonora.

Relatively light gross tonnages of freight are carried, being 2.4 million tonnes in 2008/09. The train speeds are moderate being 60km/hr for empty trains and 50km/hr for loaded trains with typically 21 tonne axle loads. The track geometry is in fair condition with both line and top having moderate irregularities. It is satisfactory for the speeds of operation. The ballast profile is also satisfactory with plenty of shoulder ballast.

The sleeper pattern is nominally 1 in 4 steel with 1 in 2 steel on curves. The condition of the timber sleepers is the worse feature as approximately half have a remaining life of less than 5 years. The sleeper condition is however being maintained within WestNet Rail's Standard Gauge Mainline Code of Practice, Track and Civil Infrastructure.

The railway track is secure and well tied with the steel sleepers and those timber sleepers that are in good condition. All the timber sleepers have sleeper-plates and this helps hold the track. Continued vigilance is applied and spot replacements carried out.

Kwinana - Bunbury

This railway carries the largest tonnages of freight on the WestNet Rail narrow gauge network. In 2008/09 the section from Mundijong Junction to Kwinana carried 24,213,569 gross tones and the section from Picton to Bunbury Harbour carried 21,211,234 gross tonnes.

Significant improvement works have been undertaken with resleepering from Pinjarra to Brunswick carried out in 2008/09. Prior to this in 2004/05 the sections from Kwinana to Pinjarra and Brunswick to Bunbury Harbour were concrete sleepered. The whole of the Kwinana to Bunbury railway is now fully concrete sleepered. The rail throughout is heavy 50kg/m with the exception of a small amount of 47kg/m rail between Picton and Bunbury Harbour.

The whole of the railway is in very good condition.

Brunswick - Collie

The Brunswick to Collie railway is made up of a number of sections being Brunswick Junction to Worsley, Worsley to Hamilton and Worsley to Premier. The freight carried in 2008/09 on the main trunk route being the Brunswick Junction to Worsley section was 12,287,662 gross tonnes.

Brunswick Junction to Worsley was concrete sleepered in 2005 and has a combination of 47kg/m and 50kg/m rail. The geometry is very good for terrain that has many small radius curves and steep grades. Rail wear is a problem on the small radius curves and a program of annual re-railing is carried out. Ballast profile is very good and is heavily ballasted on tight curves in order to hold the track in position. The railway is in very good condition.

Worsley to Hamilton has 1 in 2 steel sleepers with the intermediate sleepers being timber. The condition of the timber sleepers is fair with approximately half having a remaining life of more than 5 years. All of the timber sleepers are fastened to the rail with Pandrol fastenings and sleeper-plates. As a result and together with the 1 in 2 steel combination the track is very solid. The rail is 47kg/m and in good condition. Track geometry of both alignment and top is very good.

Worsley to Collie is nominally 1 in 2 steel sleepers with the intermediates being timber and with replacements carried out under annual gang maintenance programs. Track geometry is

in good condition. The section beyond Collie to Premier consists of 40 & 41kg/m rail. There are steel sleepers with a 1 in 2 pattern on curves and 1 in 4 pattern on tangent track. Timber sleepers are in good condition. A permanent speed restriction of 30km/h applies as has been the case from the time of the Lease. Through regular gang maintenance the track is held in acceptable condition to continue to operate at this slow speed.

Perth - Geraldton

The Perth to Geraldton railway comprises a variety of track structures and for the purpose of this audit inspection report has been categorised into the primary sections of Millendon Junction to Watheroo, Watheroo to Mingenew and Mingenew to Geraldton.

Millendon Junction to Watheroo. The first section from Millendon – Mooliabeenie is a heavier railway with continuous welded rail with a mixture of 41kg/m, 47kg/m & 119lb/yd. Track geometry is good with only minor irregularities. Sleepers are 1 in 2 steel with the intermediates being timber in fair to good condition and will not require a resleeper cycle in the near future. The next section from Mooliabeenie to Watheroo has lighter 31kg/m rail with 1 in 2 steel sleepers. Timber sleepers are in fair to good condition and were resleepered in 2007. The track geometry is good with minor to moderate irregularities.

Watheroo to Mingenew is constructed of 31kg/m rail with 1 in 4 steel sleepers and with the intermediates being timber. Small radius curves have 1 in 2 steel sleepers. Timber sleepers are in fair condition but many are reaching life expiry and resleepering in 2012/13 is warranted. Track geometry has good alignment and fair to good top with moderate to minor irregularities.

Mingenew to Geraldton consists of 41kg/m CWR with 1 in 2 steel sleepers, the exception being the new railway from Narngulu to Geraldton Port that is 50kg/m rail on concrete sleepers. Many of the timber sleepers are approaching life expiry and replacement in 2012/13 is warranted. Meanwhile with 1 in 2 steel sleepers the track is solid and safe. The track geometry has good alignment and top with minor irregularities. The Narngulu to Geraldton Port railway was opened in 2005 and is in excellent condition.

Perenjori - Narngulu

The Perenjori to Narngulu railway consists of 31kg/m rail on sections of 1 in 2 and 1 in 4 steel sleepers. The last section with gravel ballast from Morawa to Perenjori has now been upgraded to metal ballast with work recently completed in 2009.

Narngulu to Mullewa has 1 in 2 steel sleepers having been upgraded to this from 1 in 4 steel pattern when resleepered in 2007. Most of the timber sleepers are nearing life expiry as when the resleepering was carried out the strategy was to minimise replacements pending the possibility of a total line upgrade using concrete sleepers for major iron-ore projects. Despite the poor condition of timber sleepers the track is solid and well tied with the 1 in 2 steel sleepers.

Mullewa to Morawa section was resleepered with a 1 in 4 steel pattern in 2000. From Morawa to 364.8km it is a 1 in 2 steel pattern. Most of the timber sleepers are nearing life expiry. Despite this the railway is well tied with the steel sleepers and there are not many signs of broken sleepers. Where there are broken sleepers these have been marked in preparation for replacement in the near future by the maintenance gang.

Track geometry has good alignment and good top with minor to moderate irregularities and quite acceptable for the operational speeds. The rail is old, rolled in 1937, and has foot

corrosion in a number of areas as a legacy of being in damp and salty gravel ballast prior to metal ballasting.

In the Morawa to Perenjori section following upgrading to metal ballast, the final work of tamping and rail destressing is currently being carried out. When the work has been fully completed and the track has had time to consolidate then the speed will be raised. As part of the reballasting, broken sleepers have been replaced. The remaining timber sleepers are in fair condition.

RECOMMENDATION

The Lease and the Audit relies on Section Running Times (SRT) as a key performance measure and WestNet Rail has satisfied the Audit in either achieving this criteria or by providing an acceptable reason for the few occasions where the actual SRT is greater than the Lease SRT.

However it is considered that the use of SRT's has lost its relevance and is more a measure for the train operators and not WestNet Rail as the track provider and maintainer. The axle loads, maximum speeds, speed restrictions and condition of the railway are the more relevant performance measures. It is possible the train operators may not be performing to their full potential; not the track provider.

In many cases the railway track is in better condition than at the time of the Lease. As a result of the improvements undertaken by WNR the trains can today operate at higher speeds, the trains are heavier and longer and there are less temporary speed restrictions than in December 2000.

It is recommended that the use of Section Running Times as a key performance measure be jointly reconsidered by the Public Transport Authority and WestNet Rail. Refer to "Discussion of Section Running Times" on pages 22 – 23.