Hunter Valley Coal Network Access Undertaking
2016 Annual Compliance Assessment

ATTACHMENT 1: Hunter Valley Network Operating Costs

Submission To

Australian Competition & Consumer Commission

August 2019

PUBLIC VERSION

ARTC

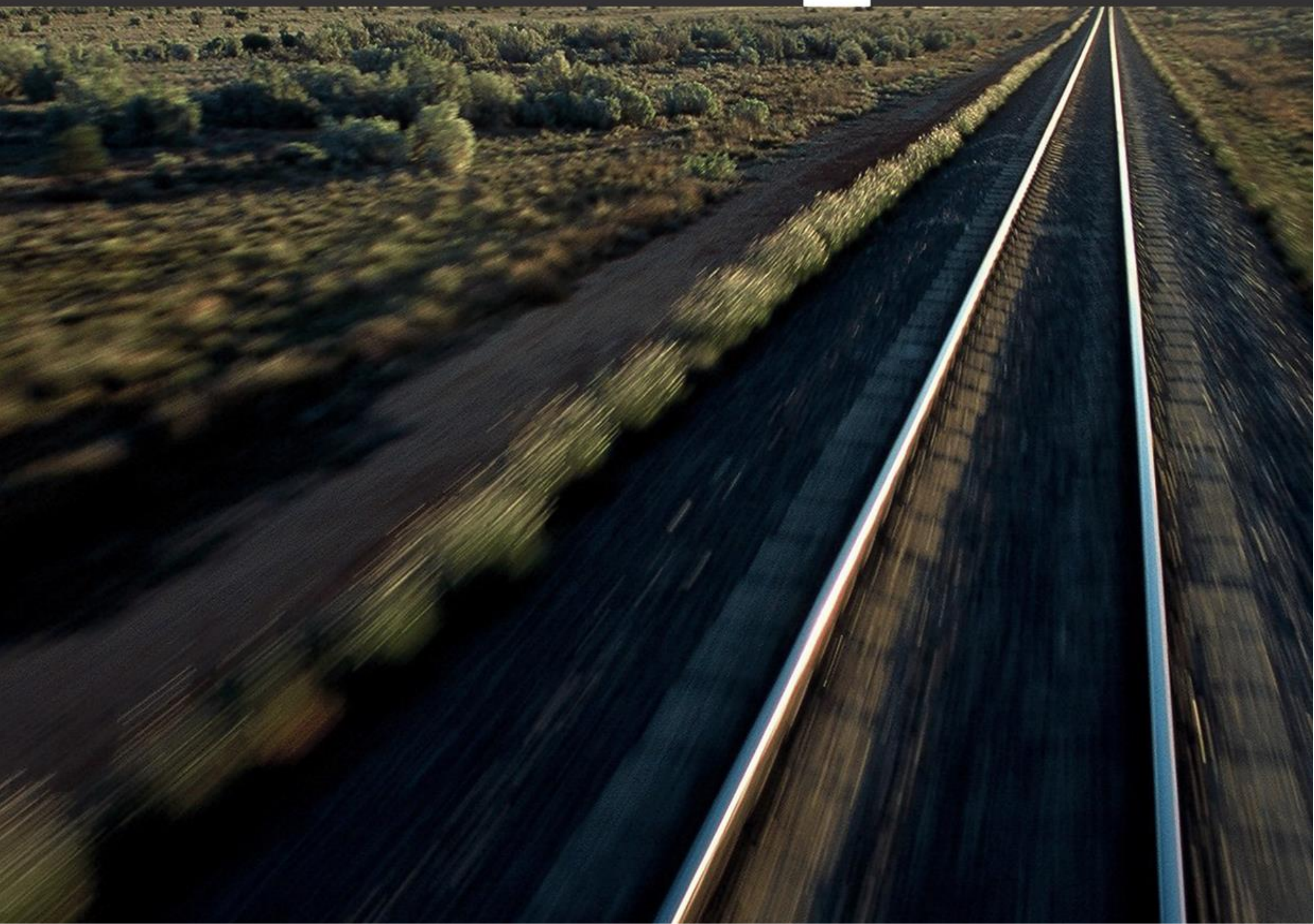


TABLE OF CONTENTS

1. INTRODUCTION

This document contains additional information and analysis relating to ARTC's Network operating costs for the 2016 calendar year. It is intended to supplement the information contained in ARTC's submission to the ACCC for the assessment of compliance with ARTC's Hunter Valley Access Undertaking (**HVAU**) during 2016.

As a background reference point, export thermal coal prices dropped significantly between 2014 and 2016. During this time customers maintained an increased focus on cost reduction across the value chain. While this was also a focus for ARTC in 2016 in response to our Customers' context, unforeseen severe weather events, incidents and GTK growth, particularly west of Muswellbrook in the Upper Hunter Valley resulted in an unavoidable increase in operating expenditure to ensure service levels.

The GTKs for the network increased 8% between 2015 and 2016 which ultimately resulted in an increase in operating costs (particularly maintenance). This 8% increase in GTKs is reflected in a corresponding increase of 8.8% in infrastructure maintenance costs for 2016. The majority of the 2016 increase in GTK levels has been west of Muswellbrook in Pricing Zone 2 and 3 both having 12% and 15% increases over 2015 respectively.

Table 1: Hunter Valley Network Coal Gross Tonne Kilometres (GTK)

Pricing Zone	CY13 GTK ,000	CY14 GTK ,000	CY15 GTK ,000	CY16 GTK ,000	Variance 2013 - 2016	Variance 2014 - 2016	Variance 2015 - 2016
Pricing Zone 1	23,730,685	24,677,499	25,700,939	26,745,352	13%	8%	4%
Pricing Zone 2	[redacted]				42%	22%	12%
Pricing Zone 3					215%	71%	15%
Total GTKs	**32,233,338**	**36,702,187**	**41,145,902**	**44,270,699**	**37%**	**21%**	**8%**

Incidents included January severe weather storms creating electrical outages, and heavy rainfall resulting in flooding through the lower Hunter network area causing disruption to network services. Attached (Attachment OPEX1) is an extract from the February 2016 RCG papers outlining the extent of the flooding. In 2015 there was a significant flooding event that disrupted network operations for over a week as well as the costs associated with re-establishing services. Whilst the weather events were not as severe in 2016 as 2015, the combination of the weather events ultimately culminated in a spike in track 'mudhole' issues and costs to maintain adequate below rail running conditions through 2016 as indicated in the maintenance tables below.

Table 2 sets out a comparison of the total operating costs in 2016 against 2015 for the Hunter Valley Coal Network. An explanation for the changes in costs is discussed below.

Table 2: Hunter Valley Coal Network Operating Expenditure $'000

	2015 (a)	2016 (b)	% Variance (b)/(a)-1
Infrastructure Maintenance	100,928	109,763	8.8%
Loss on Disposals	7,643	8,590	12.4%
Expensed Project Costs	-	-	-
Network Control	13,168	12,490	-5.1%
Business Unit Management	23,754	25,830	8.7%
Corporate Overheads	16,368	18,012	10.0%
Less Non-Coal Allocation	(2,890)	(3,921)	35.7%
Total Operating Expenditure	**158,970**	**170,764**	**7.4%**

2015 figures are in alignment with the 2015 Final Determination.

2. INFRASTRUCTURE MAINTENANCE

Infrastructure Maintenance includes Major Periodic Maintenance (MPM) and Routine Corrective and Reactive Maintenance (RCRM) work programs.

MPM are cyclical or planned activities that maintain the operating performance and asset life of operational infrastructure and aim to reduce the level of defects and corrective maintenance.

RCRM are scheduled activities used to inspect or service asset condition on a routine basis. RCRM extends to include reactive and corrective activities that are required as a result of inspections or defect identification that, because of their nature, are dealt with on the spot or as soon as is reasonably practical thereafter.

ARTC has provided further details of the top 10 maintenance activities by value in 2016 at a Network level in Table 3A. A zonal break down of these top 10 maintenance activities is provided in Table 3B to 3D below.

The amounts reflect the underlying maintenance costs for each activity before allocating a share of incremental maintenance to the non-coal traffics.

Table 3A: Top 10 Hunter Valley Maintenance Activities $'000

Activity	MPM/RCRM	2015 (a)	2016 (b)	% Variance (b)/(a)-1
Ballast Cleaning	MPM	[redacted]	[redacted]	-15.5%
Mudholes Full Track Reconditioning	MPM	4,634	10,290	122.1%
Maintenance Resurfacing	MPM	9,522	9,257	-2.8%
Rail Grinding	MPM	[redacted]	[redacted]	-2.4%
Turnout Steel Component Replacement	MPM	3,997	4,892	22.4%
Engineering Investigations	MPM	3,430	4,020	17.2%
Ballast Undercutting	MPM	7,007	3,471	-50.5%
Turnout Resurfacing	MPM	2,709	3,370	24.4%
Rail Defect Removal	RCRM	2,493	3,165	27.0%
Cutting, Embankment Maintenance & Geotech	MPM	1,350	2,877	113.1%
Top 10 Total		**68,291**	**70,536**	**3.3%**
Top 10%		67.7%	64.3%	
Other Activities	MPM/RCRM	32,637	39,227	20.2%
Total Maintenance		**100,928**	**109,763**	**8.8%**

Infrastructure Maintenance Summary $'000

Activity	2015 (a)	2016 (b)	% Variance (b)/(a)-1
Major Periodic Maintenance	80,655	87,204	8.1%
Routine Corrective and Reactive Maintenance	20,273	22,559	11.3%
Total Maintenance	**100,928**	**109,763**	**8.8%**

Table 3B: Top 10 Hunter Valley Maintenance Activities Pricing Zone 1 $'000

Activity	MPM/RCRM	2015 (a)	2016 (b)	% Variance (b)/(a)-1
Ballast Cleaning	MPM	[redacted]	[redacted]	-42.6%
Mudholes Full Track Reconditioning	MPM	962	2,262	135.2%
Maintenance Resurfacing	MPM	2,641	3,167	19.9%
Rail Grinding	MPM	[redacted]	[redacted]	-10.9%
Turnout Steel Component Replacement	MPM	3,582	4,163	16.2%
Engineering Investigations	MPM	2,065	2,434	17.9%
Ballast Undercutting	MPM	1,869	2,290	22.5%
Turnout Resurfacing	MPM	2,232	2,426	8.7%
Rail Defect Removal	RCRM	1,671	1,750	4.7%
Cutting, Embankment Maintenance & Geotech	MPM	10	825	7863.0%
Top 10 Total		**31,426**	**30,349**	**-3.4%**
Top 10%		63.9%	57.5%	
Other Activities	MPM/RCRM	17,730	22,445	26.6%
Total Maintenance		**49,156**	**52,794**	**7.4%**

Infrastructure Maintenance Pricing Zone 1 $’000

Activity	2015 (a)	2016 (b)	% Variance (b)/(a)-1
Major Periodic Maintenance	37,412	40,405	8.0%
Routine Corrective and Reactive Maintenance	11,745	12,390	5.5%
Total Maintenance	**49,156**	**52,794**	**7.4%**

Table 3C: Top 10 Hunter Valley Maintenance Activities Pricing Zone 2 $'000

Activity	MPM/RCRM	2015 (a)	2016 (b)	% Variance (b)/(a)-1
Ballast Cleaning	MPM	[redacted]		-87.8%
Mudholes Full Track Reconditioning	MPM	1,246	2,840	127.9%
Maintenance Resurfacing	MPM	1,639	1,626	-0.8%
Rail Grinding	MPM	[redacted]		66.8%
Turnout Steel Component Replacement	MPM	130	120	-7.2%
Engineering Investigations	MPM	384	245	-36.2%
Ballast Undercutting	MPM	302	213	-29.6%
Turnout Resurfacing	MPM	217	290	33.3%
Rail Defect Removal	RCRM	287	314	9.4%
Cutting, Embankment Maintenance & Geotech	MPM	1,070	975	-8.8%
Top 10 Total		**19,944**	**11,499**	**-42.3%**
Top 10%		83.7%	68.2%	
Other Activities	MPM/RCRM	3,888	5,359	37.8%
Total Maintenance		**23,833**	**16,858**	**-29.3%**

Infrastructure Maintenance Pricing Zone 2 $’000

Activity	2015 (a)	2016 (b)	% Variance (b)/(a)-1
Major Periodic Maintenance	21,435	14,204	-33.7%
Routine Corrective and Reactive Maintenance	2,398	2,654	10.7%
Total Maintenance	**23,833**	**16,858**	**-29.3%**

Table 3D: Top 10 Hunter Valley Maintenance Activities Pricing Zone 3 $'000

Activity	MPM/RCRM	2015 (a)	2016 (b)	% Variance (b)/(a)-1
Ballast Cleaning	MPM	[redacted]		6732.0%
Mudholes Full Track Reconditioning	MPM	2,426	5,187	113.8%
Maintenance Resurfacing	MPM	5,242	4,464	-14.8%
Rail Grinding	MPM	[redacted]		-52.1%
Turnout Steel Component Replacement	MPM	285	608	113.8%
Engineering Investigations	MPM	982	1,341	36.6%
Ballast Undercutting	MPM	4,835	968	-80.0%
Turnout Resurfacing	MPM	260	654	151.8%
Rail Defect Removal	RCRM	535	1,101	106.0%
Cutting, Embankment Maintenance & Geotech	MPM	270	1,077	299.0%
Top 10 Total		**16,920**	**28,689**	**69.6%**
Top 10%		60.6%	71.5%	
Other Activities	MPM/RCRM	11,018	11,422	3.7%
Total Maintenance		**27,939**	**40,111**	**43.6%**

Infrastructure Maintenance Pricing Zone 3 $’000

Activity	2015 (a)	2016 (b)	% Variance (b)/(a)-1
Major Periodic Maintenance	21,808	32,595	49.5%
Routine Corrective and Reactive Maintenance	6,131	7,516	22.6%
Total Maintenance	**27,939**	**40,111**	**43.6%**

The following sections provide an explanation for the key drivers for the movements in maintenance activities across the network:

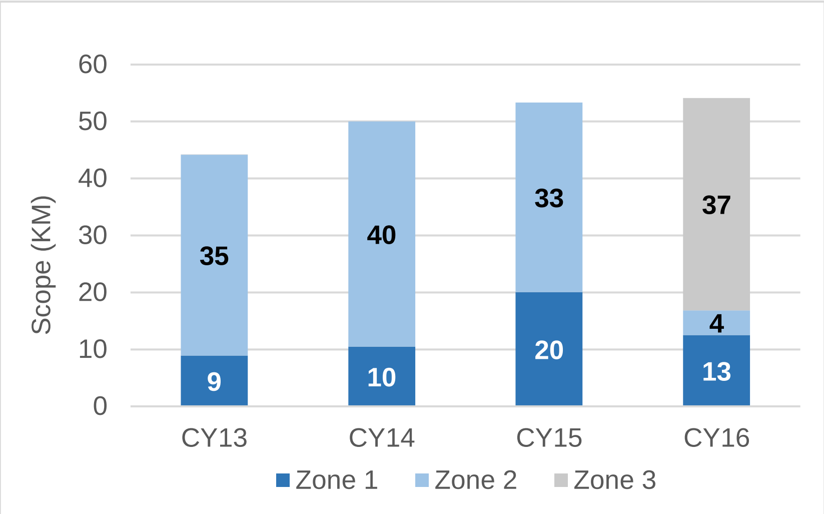
2.1 Ballast Cleaning

Ballast cleaning is the mechanical excavation of deteriorated track ballast up to 500mm below the bottom of the sleeper across the entire track cross-section. The activity’s purpose is to reinstate the function of the ballast as a free-draining medium that holds the track to its correct geometry under the passage of trains. Ballast cleaning is a cyclical maintenance activity across the network, with timing driven by the cumulative tonnages over specific segments of track. It is a large component of the recurrent operating costs at an aggregate level, recognising that the activity will move through the zones across a number of years.

The segments of track requiring ballast cleaning in 2016 were primarily located in Pricing Zone 1 and Pricing Zone 3. The initial cleaning of Pricing Zone 2 track was completed 2013-2015, accordingly, costs reduced by [redacted] as the program wound down in that zone. Pricing Zone 3 costs increased by [redacted] as the ballast cleaner began its initial cycle. Pricing Zone 1 saw a [redacted] decrease in the ballast cleaning cost as the scope of works reduced from 20km to 13km.

Overall, 2016 saw a reduction in the unit cost from [redacted] per metre in 2015 to [redacted] per metre in 2016 as the scope of works reduced in complex multi-track areas in Pricing Zone 1. For these complex areas, the ballast cleaning machines were deployed during night shift operations on the coal roads whilst coal traffic transited to Port via the Mains. Equipment was kept on standby during the day when the Mains were required for passenger traffics. This approach was adopted to minimise disruption to coal traffic. Unit rates fluctuate year on year dependent on contract rates, ballast reclamation levels, ballast age and maintenance possession scheduling.

Figure 1: Ballast Cleaning Work Scope – CAL 13-16 in KM



2.2 Mudholes Full Track Reconditioning

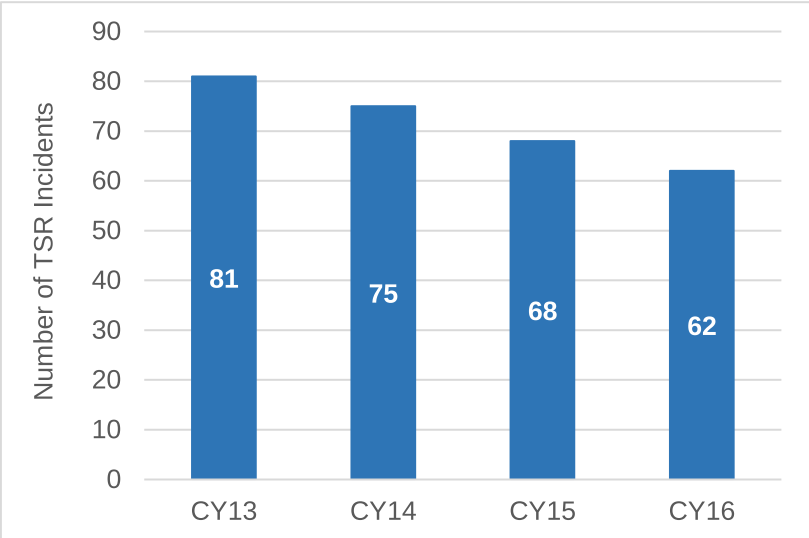
Track reconditioning is the reconstruction of the track formation (track bed) arising from persistent mudholes due to impeded drainage. Track reconditioning includes subgrade treatment, the installation of structural earthworks, a capping layer and new ballast, followed by track and drainage restoration. The purpose being to effectively manage the risk to rail operations from track geometry deterioration. Key drivers of reconditioning include track failure rates and type of failure; track performance; maintenance effectiveness intervals; and formation and subgrade configuration. This consists of formation reconstruction work on short track sections, which are in response to immediate/localised problem areas. It should be noted that sites that are 200m or more in length are treated as capital track upgrades.

Pricing Zone 1 increased $1.3m overall due to continued works subsequent to the April 2015 Hunter flood and January 2016 flooding. There may be a maintenance exposure precipitated from these major flooding events over time. Additionally, significant works of $1.1m were undertaken in the Drayton Junction to Glennies Creek segments to address poor ballast and drainage conditions.

Pricing Zone 2 increased $1.6m as planned reconditioning projects continued in the Wilpinjong to Sandy Hollow region, extending to Mangoola and Bengalla Junction.

Pricing Zone 3 increased $2.8m due to four projects targeting removal of Temporary Speed Restrictions (TSRs). TSRs are put in place when the track is deemed unfit to fulfil a 60km per hour loaded speed due to poor track formation. ARTC has had a focus on reducing the level of TSRs in Pricing Zone 3 to accommodate increased train axle loads and customer capacity requirements.

Figure 2: Track Geometry Related TSRs Pricing Zone 3[1]



[1] *Coal Up Direction Only with TSR <60km*

2.3 Maintenance and Turnout Resurfacing

Track resurfacing (tamping) restores the track geometric parameters of top, line, superelevation and alignment by mechanised on-track machinery. Similar to ballast cleaning, the accumulated gross tonnage over the line segment determines the initial resurfacing scope. Frequency is also influenced by the environment, track structure and condition, train axle loads and speeds.

Overall expenditure on maintenance resurfacing remained stable with minor changes to the locations where resurfacing work was undertaken. Pricing Zone 1 saw an increase of $0.7m which largely reflects the 13% increase in GTKs over this pricing zone since 2013. Pricing Zone 2 expenditure was comparable between the years. Pricing Zone 3 decreased by $0.4m reflecting the reduced tamping frequency required following the implementation of 30TAL.

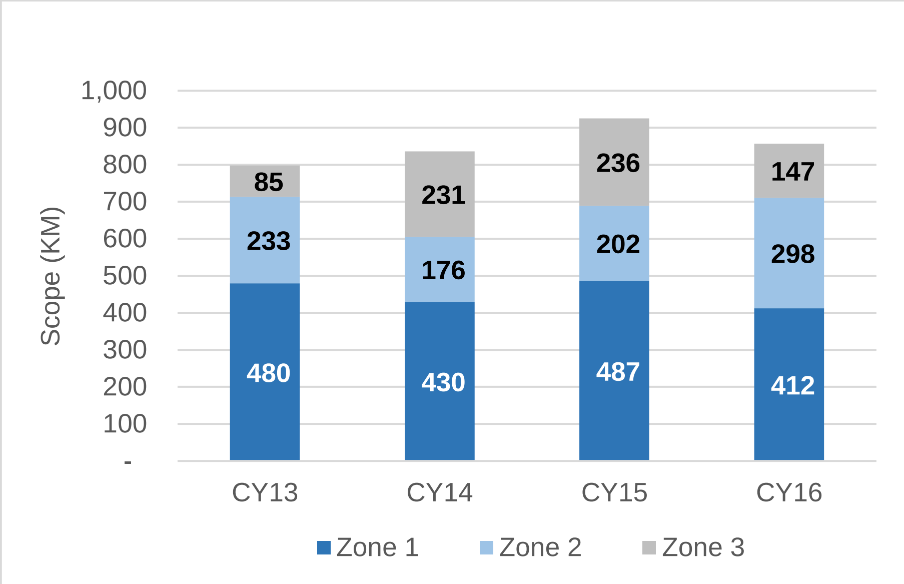
2.4 Rail Grinding

Rail grinding is the periodic grinding of rail to manage its profile and stress-related fatigue. Grinding improves wheel and rail interaction to reduce rail and wheel wear and rail defects. The frequency of rail grinding is dependent upon rail and traffic type, tonnages (in Million Gross Tonnes (MGT)) and track geometry. In determining the optimal rail grinding frequency a detailed analysis of rail performance is undertaken to maximise rail life and minimise the development of rail defects.

Overall, rail grinding costs remained consistent with 2015 costs. Pricing Zone 2 increased [redacted] as a result of increased GTKs of 42% since 2013.

Pricing Zone 3 costs decreased [redacted] reflecting the ongoing 30TAL rerailing project including the initial profile grind. Following the initial grind, frequency of rail grinding cycles is determined by ARTC's Rail Grinding Strategy. Pricing Zone 1 decreased slightly by [redacted].

Figure 3: Rail Grinding Work Scope – CAL 13-16 in KM



2.5 Turnout Steel Component Replacement

Replacement of worn and defective turnout rail components reduces the risk of turnout rail component failure and derailment. Sites are identified by field staff based on a condition assessment. The scope of this activity is not steady from year to year and depends on the timing of asset wear.

Pricing Zone 1 costs increased $0.6m compared to 2015 due to the higher number of turnouts and associated tonnage traversing the pricing zone. Pricing Zone 1 turnouts are more complex in nature and vary in type which influences cost outcomes. Major expenditures were incurred in Waratah to Port Waratah ($0.6m), Kooragang East Junction to Kooragang Island ($0.7m) and Sandgate to Maitland ($0.9m). Pricing Zone 2 costs remained comparable to 2015. Pricing Zone 3 costs increased slightly by $0.3m, with the majority of costs incurred between Willow Tree to Werris Creek ($0.3m).

2.6 Engineering Investigations

Engineering Investigations relates to specialist investigations, technical support, assessments or designs, e.g. geotechnical, track, civil, structural, signals and communications, and includes some condition monitoring costs. It does not include major detailed design engagements for capital projects.

Pricing Zone 1 costs increased $0.4m due to a Ground Penetrating Radar survey being performed on the Waratah to Hanbury Junction section to provide track formation management data. Additionally, Pricing Zone 3 costs increased $0.4m arising from Instrumented Coal Wagons (ICW) data analysis by the Institute of Rail Technology (Monash University) which provides feedback on track condition to assess response to 30 TAL operations. Pricing Zone 2 costs remained comparable.

2.7 Ballast Undercutting

Ballast undercutting addresses localised defects on track sections (typically less than 100m in length), and involves a small crew using an excavator and cutter bar to remove a mud-hole and/or area of highly fouled ballast which impedes drainage. Ballast Undercutting provides a lower cost and short-term solution to mud hole removal where the track condition does not require a full track reconditioning.

Ballast undercutting decreased significantly in Pricing Zone 3 compared to 2015 by $3.9m reflecting the significant ballast undercutting undertaken due to the introduction of 30TAL in January 2015. Works in 2016 have seen a return to routine levels.

2.8 Rail Defect Removal

Rail defect removal is the removal of surface or internal defects through replacing and welding in a new length of rail, generally 6-8 metres in length. These defects are identified through visual or ultrasonic inspections.

Pricing Zones 1 and 2 costs remain comparable to the prior year whilst Pricing Zone 3 increased $0.6m. The introduction of 30TAL heavy haulage has increased the level of coal tonnage across Pricing Zone 3. The additional tonnage has had an adverse impact on the track formation and consequently resulted in additional track defects requiring attention to maintain track reliability.

2.9 Cutting and Embankment Maintenance

Cutting and embankment maintenance encompasses stabilisation, reconstruction or revegetation, including retaining wall repairs to prevent or address erosion. Pricing Zone 1 increased $0.8m due to significant works undertaken from Whittingham to Branxton. Pricing Zone 3 increased $0.8m due to work undertaken at Breeza, Ardglen and Murrurundi.

3. LOSS ON DISPOSALS

Section 6 of the 2016 Compliance Submission sets out the process for determining the loss on disposal for assets being removed from the regulated asset base (RAB). Table 4 below summarises the loss on disposal amounts by zone relating to Major Project works and Corridor Capital projects.

Table 4: 2016 Disposals $

Major Projects	Asset RAB Value per DORC	Disposal Proceeds	Net Loss on Disposal
Pricing Zone 1	159,968	3,349	156,619
Pricing Zone 2	-	-	-
Pricing Zone 3	-	-	-
Total	**159,968**	**3,349**	**156,619**

Corridor Capital	Asset RAB Value per DORC	Disposal Proceeds	Net Loss on Disposal
Pricing Zone 1	1,659,046	182,004	1,477,043
Pricing Zone 2	978,291	89,722	888,569
Pricing Zone 3	6,619,164	551,481	6,067,683
Total	**9,256,501**	**823,206**	**8,433,294**

All Zones	Asset RAB Value per DORC	Disposal Proceeds	Net Loss on Disposal
Pricing Zone 1	1,819,015	185,353	1,633,662
Pricing Zone 2	978,291	89,722	888,569
Pricing Zone 3	6,619,164	551,481	6,067,683
Total	**9,416,469**	**826,556**	**8,589,913**

Disposal proceeds and asset recovery rates vary across years and pricing zones due to several factors including:

- The location and nature of the RAB asset being disposed and the RAB carrying value attached to the applicable line Segment;
- The nature of the capital projects/activities and scope being undertaken in each year;
- The nature of the asset or material being disposed of (e.g. rerailing and turnout projects have scrap rail, whilst concrete culverts have unsaleable and non-reusable scrap materials); and
- The market value for the scrap material.

For the 2016 calendar year, the overall asset recovery rate decreased by 2.4% on prior year. The recovery rate in Pricing Zone 2 and 3 remained consistent with 2015 and the overall decrease was primarily due to the sale of land in Pricing Zone 1 contributing to the disposal proceeds in 2015, with nil land sales in 2016 across all zones. In relation to projects/activities undertaken that produce saleable scrap, the asset recovery rate in 2016 decreased by 0.7% despite an increase in the tonnes disposed (approximately 5,267 in 2016 compared with 4,956 in 2015). This was due to the arm’s length market scrap steel price per tonne falling from an average of $193.30 in 2015 to $156.94 in 2016.

4. EXPENSED PROJECT COSTS

Expensed projects reflect the development cost of projects (as approved by the RCG) that have since been determined will no longer be required. There were no projects expensed during 2016.

5. NON-MAINTENANCE OPERATING ACTIVITIES

Non-maintenance operating activities are categorised as Network Control, Business Unit Management or Corporate Overheads. These categories are considered in further detail in the sections below.

Table 5: Non-Maintenance Operating Costs $'000

	2015 (a)	2016 (b)	Variance $	Variance % (b)/(a)-1
Network Control	13,168	12,490	(678)	-5%
Business Unit Management	23,754	25,830	2,076	9%
Corporate Overheads	16,368	18,012	1,644	10%
Total	53,290	56,332	3,042	6%

6. NETWORK CONTROL

Network control includes costs associated with ARTC's Network Control Centre North (located at Broadmeadow). The control centre controls the train movements for the entire Hunter Valley business unit including the coal network and non-coal segments that adjoin the coal network. The network is controlled by a series of 'Network Control Boards' (NC Boards) which manage defined areas. Twelve of the thirteen NC Boards are required to be operationally staffed 24 hours per day, 365 days a year.

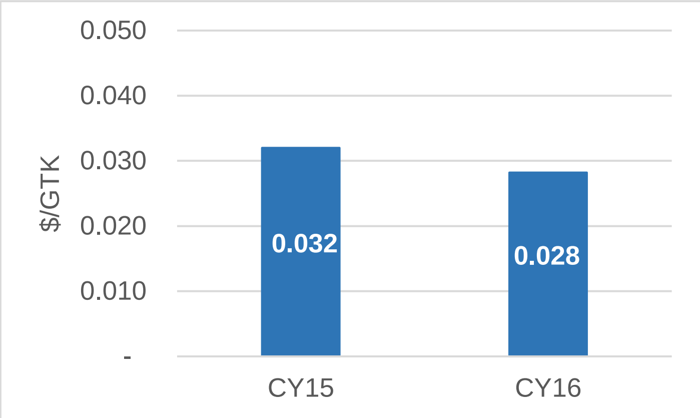
Network control expenses include labour and materials associated with the delivery of the following functions:

- train control and signalling both on the main line and within the coal terminals;
- train planning and programming;
- operations and operational customer interface;
- incident management; and
- communication costs.

The decrease in network control costs of $0.7m resulted from the combined effects of an internal realignment $0.3m and lower labour costs $0.4m as a result of staff turnover and timing of replacements. During 2016 IR action associated with EBA negotiations delayed wage increases for several months. The internal realignment saw some roles (5 personnel) move from Network Control to the Customer Service and Operations team (part of Business Unit Management) to more closely align tasks performed. There will be a corresponding increase in Business Unit Management costs of $0.3 million.

Using Network Control costs per GTK as a benchmark, Deloitte's 2015 Opex Review[1] found ARTC's allocation of network control costs to be comparable at $0.032/GTK to other rail networks' costs of $0.029/GTK. This measure has reduced for ARTC from 2015 to $0.028/GTK in 2016 with the combination of lower costs and increased GTK.

Figure 4: Comparison of Network Control costs per GTK



7. BUSINESS UNIT MANAGEMENT

Business unit management costs comprise Hunter Valley direct costs and encompasses five functions:

- Hunter Valley Customer Service and Operations;
- Hunter Valley Asset Delivery, including the Provisioning Centres;
- Hunter Valley Asset Development; and
- Hunter Valley Management and Support.

As noted in 2015, in late 2014 ARTC undertook a restructure that created two business units, Interstate and Hunter Valley. The restructure resulted in commercial, regulatory compliance and other functions (e.g. some elements of finance and human resources) being moved from corporate to these business units, placing these costs directly in the areas where they were being incurred. 2016 saw the embedding of these functions within the Hunter Valley business unit for a full calendar year compared to the transition in roles across 2015.

The costs for Business Unit Management for 2016 for the Hunter Valley network were $25.8m compared to the 2015 value of $23.8m, an increase of $2.0m. The net increase in labour of $0.5m reflects the effect of the restructure for a full calendar year including the transfer of personnel from Network Control. During 2016 IR action associated with EBA negotiations delayed wage increases for several months. Additionally, the increase reflects a rise in costs to enable the implementation of ARTC's improved safety and fatigue management systems $0.7m and the introduction of reliability data tools $0.8m to capture data to improve asset reliability.

[1] Report available as a download from the ACCC website at https://www.accc.gov.au/system/files/ARTC%20Submission%20to%20ACCC%20Opex%20Review%20-%20Appendix%20B%20-%20Deloitte.pdf

8. CORPORATE OVERHEADS

Corporate overheads include labour and materials associated with the following functions:

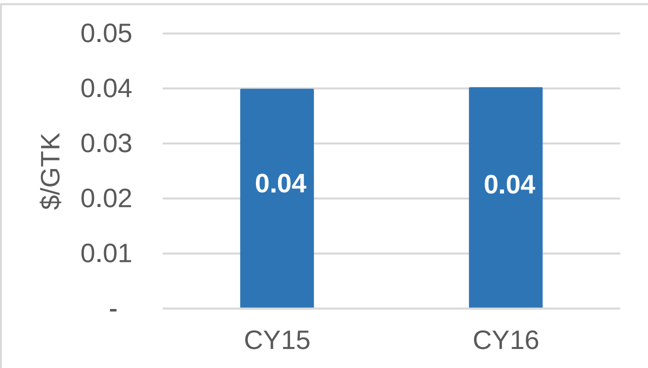
- Executive;
- Finance;
- People;
- Corporate Services and Safety;
- Strategy; and
- Interstate Customer and Commercial (HV Share).

Corporate Overheads increased by $1.6m compared to 2015 due to a combination of effects. Major drivers of the cost increase included:

- Hunter Valley insurance costs $0.7m;
- Plant Charges of $0.8m due to a timing difference between financial and calendar year plant recoveries;
- ONSR regulated safety accreditation costs $0.1m; and
- labour costs due to the embedding of the organisational transformation project, with many functions recording full year costs under the revised organisational structure for the first time $0.1m.

Using corporate overhead costs per GTK as a benchmark, Deloitte's 2015 Opex Review found ARTC's allocation of corporate overheads to be lower at $0.04/GTK compared to other rail networks' costs of $0.06/GTK. This measure has remained consistent for ARTC from 2015 to 2016.

Figure 5: Comparison of Corporate Overhead costs per GTK



9. INCREMENTAL COSTS

Incremental costs have been calculated on the basis set out by WIK Consult[2] as approved by the ACCC in its 2013-2015 Final Determinations. Table 6 sets out the incremental charges attracted by various groups of traffic within the Hunter Valley network.

Table 6: 2016 Incremental Costs $'000

	Maintenance	Capital Charges	Total
Constrained Group of Mines	35,294	86,879	**122,172**
Pricing Zone 3 Traffics	30,343	22,568	**52,911**
Other Unconstrained Coal	436	-	**436**
Non-Coal Traffics	3,921	-	**3,921**
Total	**69,994**	**109,447**	**179,441**

9.1 Pricing Zone 3 Incremental Costs in Pricing Zone 1

In the interests of transparency, Table 7 sets out the Pricing Zone 3 incremental costs in Pricing Zones 1 and 3. Note that under the ACCC approved methodology, incremental capital charges are not applied in Pricing Zones 2 or 3.

Table 7: Pricing Zone 3 Incremental Costs $'000

	Maintenance	Capital Charges	Total
Pricing Zone 1	6,084	22,568	**28,652**
Pricing Zone 3	24,259	-	**24,259**
Total	**30,343**	**22,568**	**52,911**

10. NON-COAL ALLOCATION

Under the HVAU, all traffic including non-coal traffics are required to contribute revenue sufficient to meet the Floor Limit. The Floor Limit as applies to non-coal traffics is the incremental maintenance cost attributable to them on the basis of GTK or Train Km, as applicable to each maintenance activity.

For 2016 the non-coal incremental maintenance cost attributed to non-coal traffics was $3.9m. This amount is deducted from the costs that are allocated between coal traffics in the Hunter Valley Network, as shown in Table 2.

[2] Report available as a download from the ACCC website at https://www.accc.gov.au/system/files/WIK-Consult%20T%C3%9CV%20-%20Consultant%20report%20for%202015%20Annual%20Compliance%20%28PUBLIC%29.pdf