Submission to the Queensland Competition Authority

Western System Reference Tariff

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1 Executive Summary

- Aurizon welcomes the development of a sustainable and predictable reference tariff for coal carrying train services in the Western System (the **WSRT**).

- The restrictions on efficient operations in the Western System due to wagon payloads, train lengths and transit times have been well documented in multiple regulatory decisions and acknowledged in the QCA's independent engineering advice. These costs, together with the absence of a strategic asset management plan for the Western System, have made it difficult for supply chain participants to make long term investment in more productive assets.

- It is therefore important that, in approving the AU1, the QCA ensures that the undertaking does not preclude the parties' ability to negotiate an access tariff in the Western System. Given the commercial and operational challenges facing the Western System, commercial negotiation of an alternative price outcome may result in a better balance of interests than can be obtained from conventional cost based approaches.

- In this respect, Aurizon notes that QR agreed (on 19 June 2014) to discuss with stakeholders options for a commercially negotiated tariff. Aurizon is committed to contributing to that dialogue.

- Broadly, Aurizon supports the QCA in adopting an historic cost approach for the WSRT:

    - There have been several attempts over many years to set a sustainable and predictable methodology for a WSRT. The time taken to set a regulated tariff imposes costs, not only directly, but in terms of the impact on commercial decisions from regulatory uncertainty.

    - Against that background, the simplicity, transparency and accountability of the proposed historic cost approach is extremely attractive.

    - Importantly, the historic cost approach will provide an incentive for QR to pursue investments that promote an increase in utilisation and the efficiency of the rail network, while simultaneously satisfying the requirement that QR obtains a return on its past investments.

    - If the QCA's DORC approach was to be preferred, internal alignment of assumptions is required. The QCA's assumptions with respect to volumes and maintenance expenditure would need to align with the minimum technical efficiency which would be expected of a modern railway. Once DORC inputs are aligned and consistent, Aurizon expects that the tariff outcome under the QCA's DORC model would be comparable to the historic cost approach – suggesting that the simpler historic cost approach is to be preferred to the hypothetical DORC approach.

- Aurizon supports the continuation of a price cap form of regulation with downside revenue protection through take-or-pay. A price-cap provides the necessary incentive for QR to promote throughput. However, QR's ability to earn revenue in excess of expected revenue must be derived from actual increases in throughput. However, the current take or pay arrangements allow QR to earn income from the both the sale (take-or-pay) and the use of the same train path (access revenue). In effect, this means that QR can use take-or-pay to give it additional upside, rather than simply as a protection against loss. Accordingly, Aurizon believes it is vital to reform take-or-pay to remove the prospect of windfall gains.

Key Recommendations

- The Depreciated Optimised Replacement Cost (DORC) approach is not generally appropriate where the actual infrastructure standard, service quality and path productivity are vastly inferior to those of modern constructed railways.
- Application of the DORC based approach would require all inputs to the access tariff to be commensurate with the applied modern engineering equivalent. This would require the following adjustments to be made:
    - Tunnels have no opportunity cost, alternate use or intrinsic value. They do not require replacement and ongoing preservation is funded in the maintenance allowance. These asset should be recognised at depreciated actual cost as applies to easements;
    - The tariffs should be derived from gross tonne kilometre forecasts which would normally be associated with the minimum 20 tonne axle load attainable from the modern engineering equivalent (and the standard being installed on renewal); and
    - The maintenance costs should be commensurate with those expected of a modern engineered railway which is 55% life expired (QR's actual maintenance costs should not be used).
- The historic approach provides QR with an appropriate return on its past and future investments commensurate with the commercial and regulatory risks. In addition, this approach:
    - results in a similar revenue and tariff outcome as would be the case under a DORC based tariff, once the appropriate adjustments are made above;
    - provides QR with an opportunity to earn a return above the cost of capital through improvements in utilisation and productivity; and
    - represents a transparent, simple and accountable model to deriving the Western System reference tariff over time.
- A price cap approach provides an incentive for Queensland Rail to increase the capacity and productivity of the system. However, reforms are needed to take-or-pay to ensure increased revenue is only obtained from increased service levels and throughput.
- Queensland Rail's financial incentives to improve the productivity of existing capacity could be strengthened by the return to a flat $/000 gtk rate, subject to maintaining the same metropolitan revenue outcome as the proposed two part tariff model.
- Expansion of the reporting requirements will improve transparency and provide stronger incentives to improve efficiency and performance of the Western System. These additional reporting requirements should include:
    - various transit time performance measures to assess the cumulative impact of speed restrictions and system losses;
    - possession hours in the Metropolitan and Western Systems to identify opportunities coordinate possessions and reduce possession impacts on capacity; and
    - available weekly train paths against contracted train paths to identify lost opportunities for higher throughput and impact of possessions on train service entitlements.

2 Procedural Issues

Access to the Western System is currently provided pursuant to the 2008 QR Network Access Undertaking. This undertaking was substantially modified in June 2010 to address two significant events:

- to effect the separation of QR National (and the CQCN) from Queensland Rail (**QR**); and,
- to implement a pricing decision for the Western System for the period of 1 July 2009 to 30 June 2013.

Subsequent to those modifications, QR's regulatory framework has been subject to numerous reform proposals:

- the lodgement of a Draft Access Undertaking (DAU1) on 29 March 2012 (excluding a proposed Western System Reference Tariff (WSRT) for the proposed term of the undertaking);
- withdrawal and replacement of DAU1 and lodgement of a revised Draft Access Undertaking (DAU2) on 22 February 2013 (exclusive of a WSRT);
- withdrawal and replacement of DAU2 and lodgement of an expanded Draft Access Undertaking (DAU3) on 28 February which is inclusive of the proposed WSRT); and
- the provision of supplementary information and analysis supporting the WSRT on 18 September 2013.

Over this period, the 2008 QR Network Access Undertaking has been subject to 5 draft amending access undertakings to extend the terminating date. The undertaking currently expires on the earlier of 31 December 2014 or the approval of DAU3.

The QCA released a consultation paper on the proposed WSRT on 6 June 2014 **(the Consultation Paper)** and initially sought comments by 4 July 2014 (later extended to 18 July 2014). The Consultation Paper was accompanied by an expert report on the cost inputs to the WSRT prepared by B&H Strategic Services **(the Consultant Report)**. Aurizon participated in the QCA workshop on 19 June 2014, and supports the QCA in seeking to openly discuss the complexities associated with the WSRT.

Regrettably, the timetable outlined above has meant that a WSRT for FY2014 was not determined prior to the end of the financial year. Aurizon understands that this is largely attributable to both the timing and the adequacy of the information provided by QR. In this respect, Aurizon would repeat its previous concerns on the transparency and timeliness of the information provided by QR throughout this process.

2.1 Resolution through commercial negotiation remains a viable option

The historic cost option presented by the QCA in the Consultation Paper (with some adjustment) may represent the minimum revenue outcome necessary to ensure the service provider obtains a return on its investment commensurate commercial and regulatory risk. Aurizon therefore believes that there is a low likelihood that the QCA can or will make a Final Decision that is lower than this option.

This does not prevent stakeholders from commercially negotiating a price which may be higher or lower than the benchmark tariff rate approved or recommended by the QCA. Commercial negotiation of an alternative price outcome may result in a better balance of interests than can be obtained from conventional cost based approaches. In this respect, Aurizon note that QR agreed (on 19 June 2014) to discuss with stakeholders options for a commercially negotiated tariff. Aurizon is committed to contributing to that dialogue.

It is therefore important that, in approving the AU1, the QCA ensures that the undertaking does not preclude the parties' ability to reach a negotiated settlement.

The prospect that parties may negotiate a commercial tariff will not prevent the timely approval of a WSRT. Given the protracted nature of this process, it is important that a certain and final outcome be reached in the short-term. An approved WSRT may be an important aid to negotiations, and thus Aurizon supports the QCA in rapidly finalising this process.

2.2 Expected tariff commencement dates should be preserved

The proposed WSRT was submitted two days prior to the expiry date of its predecessor. Since then, QR has repeatedly committed that the commencement date for the WSRT will remain 1 July 2013. This commitment was given as recently as May 2014[1]:

> *As outlined in a previous submission, Queensland Rail intends to continue with its proposal that the transitional reference tariffs, being the current reference tariffs escalated by CPI, remain and continue to apply up until the approval of AU1. The adjustment charge provisions in AU1 will allow the reference tariff to be backdated to 1 July 2013 upon the approval of AU1.*

Implementing this commitment will require consideration of any take or pay charged by QR for FY2014. As take or pay is intrinsically linked to the risk-reward profile that underpins the development of a reference tariff, it is necessary to ensure that any variations to the proposed take or pay provisions also have retrospective effect to 1 July 2013. Any consequential overpayment of take-or-pay based on the transitional arrangements in current access agreements should be rebated via the adjustment charge.

[1] Queensland Rail (2014) Draft Amending Access Undertaking: Extension of Terminating Date, 5 May.

3 Western System Tariff Objectives

The characteristics of the Western System represents a number of challenges for regulatory price setting. These have been widely documented in previous decisions and submissions. The current process represents the third attempt to establish a reference tariff that will promote efficient investment and utilisation of rail infrastructure between the Surat Basin and the Port of Brisbane.

It is imperative that the final WSRT duly addresses technical and commercial constraints of operating in the Western System. In this regard, the approved tariff should be congruent with the supply chain economics while also being both reasonably predictable and commercially sustainable.

On balance, Aurizon considers that the proposed historic cost approach – when coupled with a price cap and increased consultation requirements for capital expenditure – will ensure that future investment is effectively targeted towards providing a more sustainable and efficient supply chain. It will also fulfil the statutory requirement that Queensland Rail achieves revenue adequacy.

3.1 Western System economics are sub-optimal

Thermal coal producers in the Surat Basin compete in the global market for seaborne coal. Their competitors in this market often have the benefit of supply-chains with more favourable economics. The following table provides some comparative statistics between coal supply chains. As shown, the Western System has low economies of density and scale relative to, say, the CQCN or the HVCN, and thus has a higher cost of transport.

In addition, due to below-rail infrastructure constraints (i.e. lower axle loads and shorter train lengths), above rail operations are less productive in the Western System than in competitor systems. Predominant train operations in the CQCN and Hunter Valley are operating with train payloads between 8,500 tonnes to 10,000 tonnes per train service and higher average train speeds. This represents a 4 to 5 fold productivity difference per train service relative to the prevailing operations in the Western System.

Table 1 Comparison of Rail Transportation Costs and Indicative Train Productivity

Supply Chain	TAL	Wagon Payload	Wagons	Transport Cost
Western System	15.75	47 tonnes	41	AUD 9.53 /nt + Above Rail
CQCN	26	86	80 - 120	AUD 2.87 – AUD 6.80 /nt + Above Rail
HVCN (Constrained Zone)	30	98 tonnes	96	Average ~ AUD 2.04 /nt + Above Rail
Transnet[2]	26	84	100 - 200	USD 10.48 /nt (combined above and below rail)
Canada[3]	32	92 tonnes (open hopper)	120 - 150	USD 13.30 – USD 14.85 /nt (combined above and below rail)

[2] Transnet Annual Report 2013 (Revenue/Tonnes) and conversion to USD

[3] Canadian National and Canadian Pacific 2013 Quarterly Production Statistics. [Revenue/Carloads] divided by 2012 US Class 1 [Tonnes/Carloads].

Given these differentials it is imperative that the costs of providing access in the Western System either:

- Provide the least cost form of access within the existing infrastructure constraints, or
- Promote sustainable investment which allows for increases in both the quantum and productivity of train services.

When evaluating the reasonableness of the below rail access charge, consideration must be given to the relativity of total rail transportation cost differences. In other words, even where the below rail access charge is comparable to the CQCN or the HVCN, the total rail transport cost will be expected to be a higher proportion of the commodity price due to the lower productivity of above-rail services.

3.2 Tariffs should be predictable and sustainable

A clear objective of this process is a predictable and sustainable below-rail pricing structure. Of particular importance to stakeholders is understanding how the tariff will respond to changes in market conditions that may occur over the next ten years. Obtaining this certainty is a pre-condition to the users of the Western System making any decisions to expand or invest.

The economics of the Western System also make long-term competitiveness a major issue. In approving the WSRT, the QCA should assess how the tariff might change in subsequent regulatory periods – particularly, if the WACC or capital expenditure should increase. Aurizon has particular reservations as to whether the WSRT proposed by Queensland Rail is sustainable if, as suggested in the Consultant Report, further investment will be required on an ongoing basis to maintain the reliability of the current service levels.

To illustrate this, the following ratios have been derived from data relevant to the DORC approach provided by the QCA on 16 June:

- Capital expenditure exceeds regulatory depreciation by a **multiple of 1.63** leading to a sustained increase in the RAB and revenue over time;
- The ratio of the closing to opening RAB value is a **multiple of 1.19** which exceeds the cumulative CPI over the same period of **1.104** leading to a sustained real increase in revenue;
- Contract volumes are stable over the regulatory term with constraints on contracting for additional coal services;
- The combination of real revenue increases and constant volumes will produce substantial real price increases over time.

It is evident from these metrics that, if the proposed rates of capital expenditure continue without an increase in volumes, tariffs will increase in subsequent regulatory periods, potentially undermining the competitiveness of coal production in the Surat Basin.

Given the above, in assessing Queensland Rail's proposed WSRT, the QCA should undertake sensitivity analysis of both the historic cost and DORC approaches to assess the potential price paths which might prevail in subsequent regulatory periods. Before accepting a methodology, the QCA should satisfy itself that it will not result in progressive reductions in the competitiveness of Western System coal.

4 The historic cost approach is preferred

The Consultation Paper has given good consideration to the value of QR's asset base in the Western System, and provides two alternate approaches:[4]

- A **DORC based approach** which allocates pre and post 1995 capital components of a RAB across different traffic types having regard to the relevant constraints associated with increasing the number of coal carrying train services; or

- A **historic cost based approach** which allocates 100% of the capital expenditure incurred since 1995 to the operation of coal carrying train services.

Aurizon's submission to the QCA in October 2013 **(October Submission)** raised a number of concerns regarding the application of a DORC based approach in the Western System, given the significant disparity between the current rail infrastructure standard and that typically associated with the 'minimum' viable modern engineering equivalent applied in a DORC valuation.

The October Submission also noted that, given the major adjustments that would need to be made to QR's DORC value to reflect a modern engineered railway, simply using depreciated actual costs would likely be a preferable methodology.[5] The principle advantage of using actual costs is that no adjustment would need to be made to the forecast maintenance expenditure, as the efficient maintenance costs would be assessed against the existing infrastructure standard. Under DORC, by contrast, QR's maintenance budget would need to be regularly optimised 'as if' QR was maintaining a modern railway.

Aligning the forecast maintenance expenditure used to calculate a tariff with the cost of the maintenance which is actually undertaken is preferable for numerous reasons. Most notably, it is simpler, transparent and maintains an accountability between the adequacy of the maintenance tasks and the desired, and presumably costed, asset performance and reliability. In contrast, under the DORC approach, actual maintenance expenditure is obscured in preference to the hypothetical benchmark maintenance costs associated with a modern engineered asset.

In Aurizon's view, the DORC approach adopted by the QCA needs to be adjusted for the issues discussed below. The Consultant Report has accounted for the differences between the modern engineering standard and the actual assets by adjusting asset lives. While this is correct, it is not the only adjustment necessary.

Once adjustments are made to the DORC, tariffs calculated used the DORC approximate the tariff outcomes from application of the historic cost approach. This suggests that the historic cost approach – which is both simpler and has desirable economic properties – should be used.

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[4] The Consultation Paper presents the concepts of historic cost and replacement cost as discrete options. In practice, and as acknowledged by the QCA's reference to the valuation of easements for electricity distribution and transmission networks, it is feasible to apply a hybrid of the two approaches.

[5] See Table 5 on page 21 of Aurizon's Submission dated 31 October 2013.

4.1 Aligning assumptions in the QCA's DORC option

Aurizon considers that in order for the DORC approach to be consistent with the modern engineering equivalent three adjustments need to be made to the building block inputs. These adjustments include:

- Recognising tunnels at actual cost;
- Optimising train payload assumptions to the minimum feasible technical standards; and
- Optimising maintenance costs to the modern engineering equivalents.

Detailed workings and the assumptions relied for these adjustments is provided in Attachment A.

Aurizon also considers that irrespective of the valuation approach the regulatory framework should be modified to not constrain the service provider's ability or impair the incentives to pursue efficiencies over the regulatory term.

4.1.1 Valuing tunnels at actual cost

Aurizon submits that the DORC value in the Consultation Paper needs to be adjusted to value tunnels at actual cost. The Consultation Paper notes a key role of DORC is to:

> *Provide[d] the best indication of the opportunity cost to the owner and to the economy of the resources devoted to providing access*[6]

Aurizon concurs with this principle. However, given the age of the tunnels in the Western System, and the fact that they will never need to be replaced or put to alternative use, Aurizon does not believe that the tunnels impose any opportunity cost on the owner of the facility or the economy.

As noted in the October Submission, the tunnels have essentially the same economic characteristics as the rail corridor itself, in that they ultimately has no other purpose other than to allow for the operation of train services. Therefore, Aurizon considers that it is appropriate to value tunnels using the depreciated actual cost approach that has been applied in the valuation of easements in the electricity distribution and transmission networks.

One reason for including assets in the cost base at replacement costs is to ensure that prices are reflective of the costs of any future asset renewals. This assists in avoiding future price shocks associated with renewal of those assets and consequential increase in the costs base. However, there is no foreseeable requirement to replace the tunnels (once excavated, a maintained tunnel stays excavated indefinitely). The preservation of the assets is managed with the maintenance costs allowance.

Aurizon does not believe that s 168A of the QCA Act imposes a requirement to value tunnels at replacement cost.

Assuming the tunnel assets are fully depreciated, then their valuation at actual cost has the following impact on QR's revenue requirement (summarised in Table 2).

[6] Consultation Paper, p.14

Table 2 Tunnel Adjustment to DORC Revenues

	2013-14	2014-15	2015-16	2016-17
Allocated RAB Value $	57,109,400	57,264,589	57,391,843	57,489,670
Revenue Change	**-4,084,521**	**-4,128,230**	**-4,171,570**	**-4,214,498**

4.1.2 Adjusting volume for the minimum technical standard

The volume assumption underpinning tariffs needs to be consistent with the payload assumptions used to determine the DORC valuation. An input to the DORC methodology is assumptions about train payloads – in particular, the DORC assumes a modern performance standard. The modern engineering equivalent employed in the DORC valuation has a higher performance standard than applicable to the current operational standard of 15.75 tonne axle load. Thus, the volumes used to calculate tariffs must assume a higher operational standard than a 15.75 tonne axle load.

A conservative approach is to benchmark the minimum service standard in the Central Queensland Coal Network (20TAL) and the provision of iron ore services on the narrow gauge Brookfield network (21 TAL).

Assuming a benchmark service standard of 20TAL, the volumes applicable to the determination of the reference tariff ($ per 000 gtk equivalent) should be the uplifted gross tonne kilometres in Table 3. Using these optimised volumes will have the effect of reducing the $ per gtk price.

Table 3 Volume Adjustment for Minimum Efficient Technical Standards

	2013-14	2014-15	2015-16	2016-17
15.75 TAL gtk (000s)	2,714,126	2,714,126	2,714,126	2,714,126
20 TAL gtk (000s)	3,099,591	3,099,591	3,099,591	3,099,591

A similar optimisation exercise could conceptually be applied to train length. However, unlike the wagon payload adjustment which requires no alteration to the network configuration, optimisation for train length would also require the inclusion of hypothetical assets required to operate trains to that length. At this point the exercise begins to more closely approximate benchmark railways and a similar outcome can be achieved by simply benchmarking other tariff rates.

4.1.3 Maintenance costs should be consistent with the modern engineering equivalent

The Consultation Paper applies the same maintenance cost estimate under both the historic cost approach and the DORC approach. These maintenance costs reflect Queensland Rail's actual, expected maintenance expenditure, which in turn reflects the degraded state of the Western System (i.e. a large remaining population of timber and steel sleepers, timber bridges and substandard formation).

Aurizon submits that this aspect of the Consultation Paper needs to be amended in order to ensure the integrity of the DORC approach. If QR obtains the benefit of the higher asset valuation implied by DORC, then it cannot at the same time expect to obtain a maintenance allowance that reflects non-optimised asset condition. This is a 'heads I win, tails you lose' proposition – users would pay a capital component that reflected a modern engineered railroad, yet at the same time pay a maintenance charge that reflected a degraded network.

Aurizon therefore believes therefore QR's proposed actual maintenance costs can only be recovered from users if the historic cost approach is adopted. It is implausible that a railway built to modern engineering equivalents which is 55% life expired would incur maintenance costs as material as those proposed by Queensland Rail.

In order to illustrate the order of magnitude difference between QR's actual maintenance costs and what they would be on a modern engineering equivalent railroad, Aurizon has estimated benchmark maintenance costs based on Aurizon Network's proposed maintenance costs for the 20 TAL Moura system. This is a suitable benchmark for this purpose as the Moura system is consistent with a 20 TAL standard used in the DORC, possesses similar track kilometres, and is geographically proximate. The indicative benchmark maintenance costs are obtained by dividing the Moura maintenance costs by the total gtk for that system. A conservative uplift factor of 20% is applied to account for the increased costs associated with maintenance in difficult terrain such as the Toowoomba range, relative to the more accessible terrain in the Moura region.

The following table shows the results of this analysis. The benchmark maintenance allowance also includes the proposed mechanised re-sleepering requirements in FY16 and FY17.

Table 4 Benchmark Maintenance Cost Adjustments

	2013-14	2014-15	2015-16	2016-17
QR's Proposed Maintenance Costs	19,066,001	18,003,748	26,892,679	23,147,574
Benchmark Maintenance Costs (based on Moura)	12,703,314	12,703,314	27,200,314	22,087,314
Revenue Adjustment	**-6,362,687**	**-5,300,434**	**307,635**	**-1,060,260**

4.2 The adjusted DORC and the historic cost approach are equivalent

The previous sections have identified a number of adjustments which are necessary to ensure internal consistency between the applied MEE in the DORC valuation and the inputs into the building block revenue and tariff. These adjustments are summarised in Table 5.

Table 5 Cumulative Adjustments to DORC based WSRT

	2013-14	2014-15	2015-16	2016-17
QCA DORC ARR	45,661,666	45,899,637	54,610,558	52,606,748
Tunnels Valuation Adjustment	-4,084,521	-4,128,230	-4,171,570	-4,214,498
Benchmark Maintenance Cost Adjustment	-6,362,687	-5,300,434	307,635	-1,060,260
Adjusted DORC Revenue	**35,214,457**	**36,470,973**	**51,288,988**	**48,789,015**
Adjusted Smooth ARR	40,998,895	42,023,867	43,074,464	44,151,326
Volume (000 gtk)	3,099,591	3,099,591	3,099,591	3,099,591
Tariff ($/000 gtk equivalent)	**13.23**	**13.56**	**13.90**	**14.24**

It is evident from these adjustments that the DORC approach results in reference tariff broadly equivalent to the $13.59 per 000 gtk obtained by the QCA's historic cost approach.

Given the complexities and issues associated with deriving hypothetical maintenance cost benchmarks, there appears to be no advantages in applying a DORC based approach. In addition, Aurizon has previously noted that the use of historic costs would avoid longer term misalignment between the RAB value and the DORC value that might be expected if the valuation was repeated at a later point in time following further material capital expenditure.

4.3 Amend the capital carryover provisions to incentivise cost reduction

The proposed DAU3 includes capital carryover provisions which provide for a reconciliation of the amount of revenue QR would have received had the original regulatory determination accurately predicted both the timing and quantum of the capital expenditure.

The policy objective of capital carryover provisions is to remove incentives to underspend during the regulatory period and minimise any disincentives to undertake additional efficient and prudent capital investment.

In the Western System, the proposed capital expenditure is effectively limited to improving asset reliability and does not expand capacity. Given the significant quantity of these amounts as a proportion of the opening RAB value, Aurizon considers that the capital carryover account may reduce QR's incentive to seek efficiencies through deferring capital expenditure, if the subsequent higher maintenance costs provide a lower revenue and cost. Queensland Rail may also be incentivised to ensure it fully expends its capital expenditure allowance to avoid a large revenue adjustment in the next regulatory period.

In order to address these incentives, Aurizon recommends that the capital carryover account provisions be amended to allow the recognition of specific maintenance costs as offsetting any under-investment over the regulatory period. These amounts will need to be conditional on Queensland Rail incurring maintenance expenditure above the maintenance allowance and evidence of consultation and endorsement by access holders that the increased maintenance is offsetting capital expenditure.

Aurizon considers this flexibility would provide opportunities for the long term asset strategy to be developed to minimise the risk that investment does not deliver its expected benefits (i.e. will continue to be utilised by coal services beyond 2024). This can be contrasted with the central Queensland coal region where the medium to longer term demand is known with sufficient confidence to inform long term asset strategies and life cycle cost minimisation.

The framework should also include a Review Event which voluntarily allows Queensland Rail to submit a variation to reduce the reference tariff if it considers that it would materially underspend against the proposed capital expenditure amounts.

4.4 Accounting for Metropolitan capacity losses

The QCA has also sought comment from stakeholders on:

> ***Do you agree with the QCA's estimate that the effect of the metropolitan blackout is a reduction of 22% of possible western system train paths? If not, please provide supporting evidence with reference to the analysis in Appendix 3 of B&H's report.***

Aurizon considers that the analysis in the Consultant Report is sufficiently logical but may still understate the capacity impacts on total available Western System capacity.

Ideally the reference tariff would be determined on the assumption that all trains paths are consumed by a coal carrying train service without reference to the metropolitan system (i.e. what is the maximum sustainable loaded train paths which could operate without the constraint).

The fundamental principle underpinning the allocations is the network utilisation provisions in section 3.1.2 of the DAU. These provisions effectively assume that in determining the ceiling limit services are deemed to have been subject the highest reference tariff where Queensland Rail choose to allocate capacity to a lower paying services.

Determining the reference tariff having regard to the volumes which could be achieved by operating all train services as a coal carrying trains service which can operate across the constrained section of the system is consistent with the intent of this principle.

Implementing this approach would likely cause additional complexity with other elements of the framework, such as how to address future incremental costs unrelated to coal services. Nevertheless this approach should provide a benchmark for assessing the reasonableness of the conclusions in the Consultant Report.

Finally, application of the historic cost approach would avoid the need to make potentially imprecise adjustments to the asset base to account for the interface with the metro system.

5 The impact of volumes on Tariff Setting and Utilisation Risk

Rail operations are widely recognised as being comprised of a high proportion of fixed costs. As a consequence, utilisation has a significant impact on achieving the economies of scale and density necessary to improve competitiveness and promote investment in growth and innovation.

The Western System lacks the scale necessary to undertake significant modifications to infrastructure standards to realise these efficiencies. The low volumes also present complexities in balancing the interests of supply chain participants in providing an appropriate return on investment and the efficient allocation of utilisation risk. This is particularly relevant where the cost base associated with supporting those volumes increases without a commensurate increase in throughput.

This section responds to matters applicable to the QCA's question:

> ***Do you agree with the QCA's proposed approach to use contracted train paths in determining the volume estimate? If not, why not, and please provide supporting evidence.***

In responding to this question Aurizon has sought to evaluate the reasonableness of the QCA proposed approach in the efficient and reasonable allocation of risk and incentives. However, the question of volumes cannot be considered independently of the two approaches to asset valuation and the mitigating impacts of take-or-pay.

Importantly, the service provider should have a reasonable opportunity to increase its revenue outcomes by increasing the actual volumes railed above the forecast while avoiding the retention of take or pay amounts which are not directly attributable to an observable economic loss.

Aurizon's position is therefore that the QCA's use of contracted train paths is acceptable, provided that appropriate adjustments are made to the take or pay mechanism to prevent QR from collecting revenue that is not associated with increasing utilisation of the rail infrastructure. Under the current framework, QR is able to obtain a windfall benefit from both the sale (take or pay) and the (access charge) of the same train path.

5.1 Contract volumes are appropriate for tariff setting

There is a range of potential alternatives for determining the volumes to be used in the tariff setting process. The options include:

- **The use of forecast volumes**. This occurs primarily in the Central Queensland Coal Network and is applied in conjunction with a revenue cap and take-or-pay capping. The primary effect of this approach is that utilisation risk is socialised, with take or pay liability being reduced by increasing access charges to users who are able to profitably operate in periods of low demand (forecasts are below contract);

- **The use of contract volumes**. This approach provides strong incentives for the service provider to increase the available capacity as increased revenue can only be achieved through additional volumes; or

- **The use of coal train capacity**. This approach sets prices on the basis of the achievable capacity. When used in conjunction with a price cap form of regulation it provides an incentive on the service provider to increase the capacity available for coal carrying train services.

In practice, the use of contract volumes in a capacity constrained system should yield the same estimate as coal system capacity, albeit with some variance due to the weightings for mine origins.

A key difference with the Western System relative to other coal systems, such as the CQCN, is that the available capacity for coal is less than the total available capacity and the service provider has the opportunity to provide additional train paths for coal services at little or no cost.

As it is desirable for the service provider to be incentivised in providing additional capacity, a revenue cap form of regulation is not preferred. Retaining the price cap approach means that the use of forecast volumes is not suitable, as the service provider maintains material take-or-pay protection on the downside and theoretically could earn more than the target revenue in the price cap by collecting take or pay at the higher price.

In evaluating the reasonableness of the volumes to be used in setting the tariff it is instructive to consider the revenue impacts and changes in incentives under both of the QCA's proposed asset valuation approaches.

5.1.1 Revenue outcomes using the historic cost approach

The QCA has proposed that under the historic cost approach to asset valuation, 100% of costs will be recoverable from coal carrying train services. The following table shows the potential revenue outcomes under different volume outcomes. For the purpose of this assessment forecast volumes are assumed to be 85% of contract volumes and take-or-pay is uncapped.

Table 6 Revenue Assessment of Throughput Variance using the Historic Cost Approach

Volume Approach	Revenues for Railings at 80% of Contract	Revenues for Railings at 110% of Contract
Forecast Volumes (Revenue Cap)	As target revenue is based on 85% of contract then revenue from access charges is equivalent to 94% of target revenue. Take or pay is payable at the rate of 80% of the higher tariff on 20% of the contracted volume. Total revenue exceeds target revenue by 13% which is reduced from subsequent year revenue	Access revenue is collected on the higher tariff rate. Access revenue exceeds target revenue by 29% which is reduced from subsequent year revenue.
Forecast Volume (Price Cap)	Same revenue outcome as the revenue cap but service provider retains excess revenue	Same revenue outcome as the revenue cap but service provider retains excess revenue
Contract Volumes (Price Cap)	Target revenue is only achieved where contract volumes are railed (or volumes are railed from more distant mines). Access revenue is 80% of target revenue. Take or pay is 16% of target revenue Total revenue is 96% of target revenue	Access Revenue and therefore total revenue is 110% of target revenue

A number of key observations can be made from this table:

- In the absence of take-or-pay capping, there is no downside revenue risk when pricing at forecast volumes;
- Under the revenue cap, subsequent year revenues are always declining which does not represent an efficient price or revenue path;
- The price cap approach with forecast volumes results in the service provider persistently exceeding the target revenue and is therefore inconsistent with the concept that target revenue is the expected revenue position; and
- While the revenue position under the price cap is below target revenue it is assumed that the 20% of the access charge not included in the take-or-pay liability is commensurate with the variable costs.

An additional circumstance which might arise is that contract volumes are reduced. In this circumstance, the target revenue would be either:

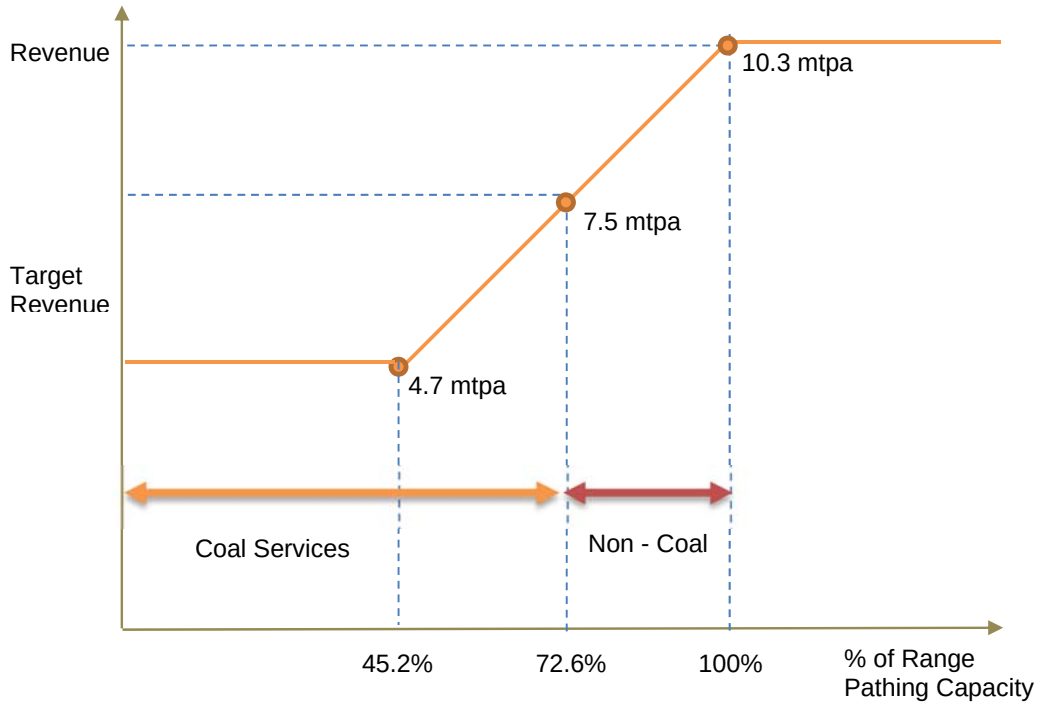
- foregone by the service provider where prices are based on capacity volumes; or
- transferred via higher prices to remaining contract volumes.

Aurizon considers that Queensland Rail has sufficient incentives to contract for additional coal traffic such that the probability of contract volumes falling below coal capacity is very low and is likely to be reasonably proportional to Queensland Rail's ability to make non-coal paths available for coal services such that the revenue profile on a risk adjusted basis should be reasonably symmetrical but biased towards the upside. This is demonstrated in Figure 1.

In the event that Queensland Rail is unable to attract additional contract volumes at the reference tariff, then this is sufficient evidence that the reference tariff is not an efficient price. Nevertheless, the pricing framework should require revision where the contracted volumes fall below the symmetrical floor level of 45.2% of available train paths.

In conclusion the analysis supports the setting of the Western System reference tariff on the basis of coal capacity volumes which presently align to contracted coal volumes.

Figure 1 Revenue Symmetry for Changes in Volumes



5.1.2 Revenue outcomes using the DORC cost approach

Many of the revenue impacts identified in relation to the historic cost approach are also pertinent to the use of the DORC approach. The key difference relates to the use of allocators to apportion the pre and post 1995 asset values between coal and non-coal services.

The principal objective of the price cap model under the DORC approach is to replicate the revised target revenue which would have prevailed had the tariffs been determined on the basis of that utilisation profile. That is, by providing additional paths to coal carrying train services, Queensland Rail has the opportunity to earn additional revenue commensurate with what it would have expected to earn had those volumes been factored into the original tariff determination.

This assumption will only hold where the additional volume collected from railing in excess of the forecast volumes is equivalent to the change in costs associated with an increased allocation of the RAB assets and incremental maintenance. Aurizon does not possess the detailed models necessary to validate this assumption and requests that, should the QCA propose the DORC based approach, it also provide working examples of the revenue and cost relativities from changes in contract volumes.

Due to the allocative approach to the asset valuation, a revenue cap model is not conceptually viable without accounting for the theoretical change in the target revenue associated with the increased volumes.

5.2 Take-or-pay is to manage downside volume risk, not provide financial upside

In Aurizon's view, take-or-pay in the Western System should be limited to its objective – namely, achieving the objective of revenue adequacy in the event actual volumes using the network do not return to QR its revenue allowance. Take-or-pay should not make a contribution towards surplus revenue unrelated to any economic loss. This section summarises QR's proposed take or pay arrangements and why those arrangements need to be modified to meet the objectives of take or pay.

5.2.1 Take or Pay achieves multiple objectives

Take-or-pay arrangements are intended to achieve multiple objectives, including:

- **Take or pay underwrites investment**. By obtaining a long term usage commitment from access seekers, the service provider is able to procure financing for infrastructure investment on reasonable terms;

- **Take or pay reflects the opportunity cost of capacity**. The access seeker obtains the contractual rights for exclusive use of that capacity. This prevents the service provider from allocating that capacity to another access seeker. By incurring take or pay, the access seeker incurs a liability commensurate with the revenue foregone from not selling the path to another user; and

- **Take or pay promotes efficient use of capacity**. By incurring a financial liability for non-use of capacity, the access seeker usually has strong incentives to relinquish or transfer underutilised access rights. This promotes efficient use of the network. However, systems such as the Western System with few coal producers, underutilised capacity means that coal producers typically have no need to accept a transfer of capacity from other producers in order to increase production. The low likelihood of identifying a willing counter party to a short term transfer means that take-or-pay does not, in these systems, incentivise network utilisation in the same was as in the CQCN or HVCN.

These objectives are typically satisfied where the service provider collects only the take or pay revenue necessary to achieve the target revenue. In circumstances where take or pay is uncapped, the service provider may have incentives to not contractually transfer or resume train paths if it is confident they will be used in the day of operations (i.e. capacity is already committed in the master train plan and there is not likely alternate non-coal demand).

5.2.2 Volume risks should be reasonably symmetrical

As shown in Table 5, under a price cap mode of regulation like in the Western System, uncapped take or pay can result in the service provider earning excess revenue when volumes fall substantially short of contract levels. This can also be the case where contract volumes are railed and the volumes originate in different origin proportions than assumed in the tariff determination.

The potential for over-recovery without take or pay capping is evident in the following indicative example which is based on the QCA's historic cost approach.

Table 7 Revenue Scenarios for Railings in Excess of Contract Volumes[7]

		Mine A	Mine B	Mine C
Asset Valuation	Historic Cost Approach			
Target Revenue	**$51.3 million**			
Indicative Contract Volumes (millions)	7.5	4.0	2.0	1.5
Tariff Rate $/nt	$6.80			
Actual Volumes	8.5	5.0	1.0	2.5
Access Revenue ($millions)	**$57.8**	**$34**	**$6.8**	**$17.0**
Take or Pay Revenue ($ millions)	$5.4	$0	$5.4	$0
Total Revenue	**$63.24**			

In this example, the system has railed above contracted volume levels and access revenue exceeds target revenue. In these circumstances, the service provider earns additional profits associated with the supporting volume throughput increases. However, Mine B has under railed against contract for which both Mine A and Mine C have obtained the benefit of utilising that capacity. Take or pay is triggered for the Mine B train services and the service provider has collected additional revenue materially in excess of the target revenue.

5.2.3 Take or Pay should be proportional to the economic loss

The previous example has shown the service provider can collect take or pay revenue even where the system has performed significantly above the expected service levels which underpinned the tariff determination. However, the service provider may still collect additional revenue above the target revenue even where the volumes are below the contract levels.

In the following example, the service provider's revenues exceed the target revenue by $4.5 million even though the system has railed 0.5 million tonnes below the contract levels. The service provider would recover take or pay revenue of $8.2 million which is substantially in excess of that required to offset the economic loss of $3.4 million associated with the difference between the access revenue and the target revenue.

[7] Revenues and total volume is consistent with QCA published summary of the Historic Cost Approach. Volumes are indicative and tariff rate per net tonne and revenues are dependent on mine location. Table does not represent actual contractual information and has been prepared for illustrative purposes only.

Table 8 Revenue Scenarios for Railing Below Contract Volumes[8]

		Mine A	Mine B	Mine C
Asset Valuation	Historic Cost Approach			
Target Revenue	**$51.3 million**			
Indicative Contract Volumes (millions)	7.5	4.0	2.0	1.5
Tariff Rate $/nt	$6.80			
Actual Volumes	7.0	5.0	0.5	1.5
Access Revenue ($millions)	**$47.6**	**$34**	**$3.4**	**$10.2**
Take or Pay Revenue ($ millions)	$8.2	$0	$8.2	$0
Total Revenue	**$55.8**			

Aurizon does not consider the QCA intended for take or pay in the Western System to increase profitability above the target revenue. This is evident in the following extracts from the QCA's 2009 draft decision[9]:

> *QR Network's product is essentially train paths, and it major costs are the capital investment and maintenance required to create and sustain the infrastructure that provides those paths. However, it has chosen for the western system a volume based tariff which charges users a price per gtk. This tariff structure means that QR Network will benefit from volumes above those forecast in the 2009DAU. Similarly, QR Network may experience a revenue shortfall for volumes below forecast, although this impact will be ameliorated by the take or pay arrangements in access agreements. It is reasonable for QR Network to receive some benefit for increased volumes, as some of its costs increase in proportion to the tonnage carried on the network.*

Importantly, the QCA concludes that increased revenue should be associated with increased volumes in recognition that additional costs would be incurred. This is consistent with the presumption that take or pay is only intended to compensate or avoid economic losses. QR incurs no economic loss from underutilisation if the combination of take or pay and access revenue exceeds the target revenue.

5.2.4 Take-or-Pay capping is needed to avoid windfall gains

This section has shown that Queensland Rail can obtain windfall financial gains from the collection of take or pay amounts where the origin combinations for actual railings differ from the contract volumes. Aurizon considers that these gains amount to a penalty and are not necessary to offset or mitigate any genuine economic loss.

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[8] Revenues and total volume is consistent with QCA published summary of the Historic Cost Approach. Volumes are indicative and tariff rate per net tonne and revenues are dependent on mine location. Table does not represent actual contractual information and has been prepared for illustrative purposes only.

[9] Queensland Competition Authority (2009) Draft Decision on QR Network Draft Access Undertaking, December, p. 93.

Aurizon therefore recommends that changes to the take or pay component of the tariff is necessary to restrict the operation of take or pay to its primary objective of revenue adequacy. In this regard, take or pay should be capped such that revenue in excess of target revenue should not be comprised of take or pay amounts.

Implementing this recommendation would require the undertaking to include an annual target revenue adjusted by CPI annually. Take or pay for an origin and destination combination should therefore be reduced by the proportions necessary to reduce total revenue to the target revenue limit.

Aurizon remains supportive of QR earning revenue above target revenue where this is attributable to actual throughput.

6 Evaluating the tariff approach

The Consultation Paper discusses a range of topics relating to derivation of the WSRT. This includes details on:

- the tariff structure;
- the inclusion of incremental costs for the Columboola tariff in the WSRT; and
- the appropriate form of regulation.

The recognition of assets within the Metropolitan system appears to provide a more transparent mechanism to allow a rebate to be paid on assets which are used by multiple users but funded through a contribution by an individual user. As the rail operator, Aurizon considers end-users are better placed to assess the merits of the QCA's approach on this issue.

6.1 The two part tariff is not achieving its objectives

The rationale for the introduction of the two part tariff in 2006, was that the service provider would be incentivised to make additional train paths available to coal carrying train services. There is little evidence that this has occurred. This suggests that there are either constraints in responding to the price incentives or the financial benefits were not of sufficient magnitude to promote the desired outcomes.

Presently, the predominant productivity constraint in the Western System is the inability to operate trains to a higher payload capacity. Under the current approach that includes a train path charge, the financial incentive for the service provider to increase wagon payloads is blunted.

The incentive for the service provider to allow the operation of higher payload trains is likely to be greater under a flat $ per gtk rate than under a train path charge, as the revenue from railing additional volume within the given pathing constraints would be higher to the service provider. The flat gtk rate is also likely to provide the additional revenue which could fund the higher maintenance costs of operating to a 20 TAL. The main concern would be whether the service provider's short term incentives would be to incur the maintenance deficits by obtaining the increased revenue and recovering the higher maintenance costs in the subsequent regulatory period.

The price cap form of regulation is also likely to provide stronger incentives than the train path charge to make additional train paths available. That is, pricing on the basis of a flat gtk rate provides the same incentive to provide additional train paths to coal services as the two-part tariff.

The train path charge and gtk rate are obtained through the arbitrary 50:50 allocation of the target revenue. There is no underlying economic rationale for this approach and there is no analysis which demonstrates:

- the path charge is proportional to the fixed costs associated with the proportion of assets used by all services; or
- the path charge is commensurate with the forward looking costs of providing incremental train paths.

In the event that the QCA seeks to preserve the distance taper implicit in the current fixed and variable tariff allocation then this can be realised through differential $ per 000 gtk rates as is currently reflected in the pricing of services from Ebenezer.

Similarly, in order to avoid excess revenue for Metropolitan System the rate would be need to be adjusted so that the total expected revenue for use of both the Western and Metropolitan Systems is equivalent to the expected revenue from the two part tariff.

Aurizon recommends that the QCA review the objectives and incentives which underpin the train path charge and whether the reversion to differential $ per gtk rate is a more effective approach of achieving those objectives.

6.2 Incorporating Columboola into the Reference Tariff

The Queensland Rail proposed WSRT and the Consultation Paper include the services operating between Jondaryan and Columboola and the associated rail infrastructure within the cost base for the Western System coal carrying train services. Aurizon does not consider the inclusion of these services should occur on the basis of DORC valuation as:

- the services were not contemplated for inclusion in the WSRT when the mine was developed (as it was initially intended that these services would go to WICET via the proposed Surat Basin Railroad); and
- the system is less efficient following allocation of scarce capacity to those services.

In relation to the first point, the Consultant's Report notes that:

> *'The expenditure on the Columboola to Fisherman Islands section has been kept to a minimum because there is clear expectation that the coal will travel to Wiggins Island rather Brisbane Port in the future. Figure 6 indicates the work breakdown for the project'.*

This is consistent with the decision to not include the costs associated with Jondaryan to Columboola route in the WSRT in the 2009 QR Network Access Undertaking. Given the capacity constraints to the Port of Brisbane and the probable production capacity of the mine the southern missing link remains a potential bypass risk.

The inclusion of the Columboola services also adversely impacts the productivity of the system. The practical effect of Queensland Rail's decision in choosing to allocate scarce capacity to this project was to dilute the already poor economies of density as shown by the following estimates of ntk to route kilometres:

- without Cameby Downs – 6.2 million ntk per route kilometre;
- with Cameby Downs – 5.0 million ntk per route kilometre.

The efficiency of the Western System is reduced by 24% compared to the performance if the 7.5 million net tonne volume forecast is produced by mines east of Jondaryan and the costs associated with Cameby Down project are excluded from WSRT.

In a capacity constrained system with competing demand it is desirable for the price of a service which uses sole use infrastructure to be based on:

- the uniform price for common user infrastructure; and

- the incremental costs (marginal costs) of the sole user infrastructure.

This approach is consistent with the methodology used by the QCA in determining the cluster price for Stanwell in 2001. The QCA determined what the price would be if all coal carrying train services in the Blackwater system terminated at Stanwell. The costs associated with the line sections between Stanwell and Gladstone were then allocated and reflected in the tariffs for non-Stanwell services.

Aurizon considers this issue of less relevance under the historic cost approach as the capital costs associated with the Jondaryan to Columboola line section are currently negligible. However, should the QCA retain a DORC based approach without the adjustments identified in Section 3, the inclusion of Cameby Downs in the WSRT and the associated infrastructure costs will not promote efficient utilisation and investment in rail infrastructure where that capacity is able to be productively utilised by access seekers within the current geographical boundaries of the Western System.

If the QCA includes the DORC value of rail infrastructure between Jondaryan and Columboola in the Western System then is desirable that the QCA clearly and transparently identify the contribution to common costs these services make to the Western System (net of the any additional capital and maintenance cost solely attributable to those services).

6.3 Form of regulation

The QCA has indicated its preference to accept Queensland Rail's proposed price cap arrangements. Aurizon supports the use of a price cap form of regulation for the Western System subject the addressing the proposed take or pay reforms discussion in section 5.

7 Efficiency incentives are enhanced through improved reporting

The Consultant Report on the maintenance and capital expenditure forecasts has suggested and identified opportunities where efficiencies could be realised if alternate procurement and planning practices were adopted, and an increased analytical rigour used in aligning expenditure to a long term corridor strategy.

Public reporting requirements can be effective in increasing the transparency and accountability of the service provider's performance. The proposed reporting requirements included in DAU3 are minimalist and unlikely to provide insight into the operational and commercial performance of the Western System.

Aurizon therefore considers reporting arrangements can be augmented. The reporting requirements are particularly relevant to those aspects of service delivery which are common service standards to all users of the corridor. For example, the target speed restrictions are not able to be negotiated on an individual contract basis, as all train services using that infrastructure will be subject to the same speed restrictions.

Asset performance has a significant impact on a rail operator's costs. It is therefore essential that the rail operator is able to predict its own costs when determining the price to offer its own customers. In a multi-user environment it has not yet proven possible to negotiate a higher or lower asset performance standard and individually commensurate maintenance costs. Therefore, the service standard which is being procured through the proposed maintenance allowance, or at least the asset performance targets which have been used to derive the maintenance scope, should be reasonably described as part of the tariff setting process and monitored to ensure the costed service standard are being satisfied. Aurizon therefore agrees with the recommendation in the Consultant Report that the maintenance costs and outcomes should be included in an annual report.

The following table outlines Aurizon's suggested reporting requirements which should be included in the approved access undertaking.

Table 9 Proposed Amendments to Reporting Requirements

Reporting Metric	Reporting Objective
Variation to Proposed Reporting	
The number and percentage of train services which do not reach their destination in the Allotted Time Threshold. Amendment. The Allotted Time Threshold should be reduced to 15 minutes	In contrast to the CQCN the Western System is operating to timetabled services which interfaces with the metropolitan passenger network where on time arrival is of greater importance to system throughput. The ARTC Interstate Access Undertaking applies a tolerance of 15 minutes for reporting on-time arrivals.
Capital expenditure report should also include details on whether consultation has occurred with stakeholders and no alternate supply chain investment was identified as providing a more efficient solution.	Assists the QCA in assessing whether the capital expenditure has been prudently incurred and supports a more collaborative planning process (without being overly prescriptive)

Inclusion of Relevant Aurizon Network Metrics	
Operational performance metrics • train paths • gross tonne kilometres • train kilometres • net tonne kilometres (Western System Only)	Aurizon recognises that not all systems will include billing details on ntk and therefore it may not be feasible for Queensland Rail to report across all regions. These represent basic productivity reporting metrics
Annual Maintenance Cost Report should be similar to the requirements the QCA places on Aurizon Network.	Allow identification as to whether asset standards are being met and whether efficiencies are being pursued. Informs the assessment of AU2.
Average Transit Times between Fisherman's Island entry signal (at 17.428 km) and Jondaryan (at 42.066 km) including: • nominal transit time (excludes speed restriction) • scheduled transit times (includes speed restrictions) • actual transit times • average speeds	Transit times provide an evaluation of supply chain performance. It is not the intention of these metrics to attribute delays between scheduled and actual transit times in order to avoid dispute on the reported metric. The purpose of limiting the reporting to a nominated line section is to remove loading and unloading timing and to avoid transit time distortions due to different haul lengths.
Additional Report Metrics	
Possession Hours in • (A) the metropolitan network which make paths unavailable for train services to operate from Rosewood to Fisherman's Island; • (B) in the Western system which make paths unavailable for train services to operate between Jondaryan and Rosewood; and • Possession hours for (B) which do not occur concurrently with (A)	The purpose of this metric is to assess and promote alignment of possessions and therefore capacity between the metropolitan and the Western System.
Available Capacity The quarterly performance report should also include a weekly summary of: • The number of train paths made available in the Weekly Train Plan for the operation of coal carrying train services between Toowoomba to Fisherman's Island; and • The number of weekly contracted coal carrying train services using rail infrastructure from Toowoomba to Fisherman's Island.	This metric will allow assessment as to whether Queensland Rail's possession planning regime is improving path availability. It will also allow assessment as to whether available capacity in the Master Train Plan is aligned to Train Service Entitlements.

8 Attachment A DORC Adjustments

This attachment provides the detailed workings and assumptions use to derive the revenue and volume adjustments proposed in section 5 of the submission.

8.1 Assumptions

Parameter	Value
Pre-1995 Asset Allocator	56.60%
Tunnels Valuation at 1 July 2013 ($m)	100.9
Tunnels Tax Book Value	0
Tunnel Life Remaining (years)	46
Post tax nominal WACC	6.93%
Gearing	55%
Cost of Debt	6.12%
Imputation Adjusted Tax Rate	15%
Locational Benchmark Maintenance Adjustment Factor	20%
20TAL Payload Adjustment Factor	127%

8.2 Adjustment 1 Tunnels Valuation

RAB Roll-forward	2013-14	2014-15	2015-16	2016-17
Remaining Life	46	45	44	43
Opening Value	57,109,400	57,264,589	57,391,843	57,489,670
Inflation	1,427,735	1,431,615	1,434,796	1,437,242
Depreciation	1,272,546	1,304,360	1,336,969	1,370,393
Closing Value	57,264,589	57,391,843	57,489,670	57,556,519

Revenue	2013-14	2014-15	2015-16	2016-17
Return on Capital	3,957,681	3,968,436	3,977,255	3,984,034
Less Inflation	-1,427,735	-1,431,615	-1,434,796	-1,437,242
Regulatory Depreciation	1,272,546	1,304,360	1,336,969	1,370,393
Post-tax Revenue	**3,802,493**	**3,841,181**	**3,879,428**	**3,917,186**
Interest Expense	1,922,302	1,927,526	1,931,809	1,935,102
Tax Depreciation Expense	0	0	0	0

Free Cash Flow	1,880,190	1,913,655	1,947,618	1,982,083
Tax Expense	**282,029**	**287,048**	**292,143**	**297,313**
Pre Tax Revenue	**4,084,521**	**4,128,230**	**4,171,570**	**4,214,498**

8.3 Adjustment 2 Volume Adjustment

	2013-14	2014-15	2015-16	2016-17
15.75 TAL 000 gtk	2,714,126	2,714,126	2,714,126	2,714,126
15.75 TAL 000 ntk	1,428,488	1,428,488	1,428,488	1,428,488
Tare gtk	1,285,639	1,285,639	1,285,639	1,285,639
20 TAL 000 ntk	1,813,953	1,813,953	1,813,953	1,813,953
20 TAL 000 gtk	**3,099,591**	**3,099,591**	**3,099,591**	**3,099,591**

8.4 Adjustment 3 Benchmark Maintenance Costs

	2013-14	2014-15	2015-16	2016-17
UT4 Proposed Moura Maintenance Costs ($000)	13,412	14,677	13,363	14,489
Moura 000 gtk	3,438,649	3,832,505	3,653,129	3,965,176
$/000 gtk	3.90	3.83	3.66	3.65
Applied Benchmark Rate	**3.90**	**3.90**	**3.90**	**3.90**
Adjustment Factor	**1.20**	**1.20**	**1.20**	**1.20**
Adjusted Benchmark Rate	**4.68**	**4.68**	**4.68**	**4.68**
Benchmark Maintenance Cost $/000 gtk	12,703,314	12,703,314	12,703,314	12,703,314
Mechanised Resleepering	0	0	14,497,000	9,384,000
Proposed Maintenance Costs	19,066,001	18,003,748	26,892,679	23,147,574
Maintenance Cost Reduction	-6,362,687	-5,300,434	307,635	-1,060,260

9 Attachment B Other Matters

9.1 Expensing of Capital Improvements

The proposed maintenance costs include provision for $14 million and $10 million in mechanised resleepering in FY16 and FY17 respectively.

The supporting and supplementary documentation which outlines the need for this investment does not provide the basis as to why it is expensed in the building blocks as opposed to capitalised into the regulatory asset base. As a general principle, asset replacement or refurbishment activities would be capitalised where:

- The standard of the infrastructure is being improved or upgraded; or
- The scale of the activities is disproportionate to the rate of depreciation of that asset class.

The majority of the mechanised resleepering is programmed to occur between Toowoomba and Columboola which involves the replacement of 54,372 sleepers[10]. The following table provides an indicative estimate of the sleeper replacement rate based on the section totals published on page 88 the Consultant Report.

Table 10 Mechanised Resleepering Rates

	Total	Replacement	Replacement Rate %
Rosewood to Toowoomba	238,600	15,000	6.2
Toowoomba to Columboola	321,333	54,372	16.9%
Toowoomba to Columboola (excl. concrete sleepers)	**282,869**	**54,372**	**19.0%**

As concrete sleepers have a materially different asset life cycle and depreciation rate from timber sleepers they should be excluded from consideration of the sleeper replacement rate. The proposed sleeper replacement rate between Toowoomba and Columboola is approximately 19.0% and materially greater than the replacement rate for Toowoomba to Rosewood.

Conceptually, expensing asset replacement expenditure is more closely aligned to pay-as-you-go pricing frameworks. However, this is not what has been applied with respect to the WSRT and it is anticipated that the benefits of this expenditure will accrue to users of the assets, coal and non-coal well beyond the term of this regulatory period. The reasons for fully allocating the costs of these upgrades to current users over one regulatory period has not been outlined or substantiated[11].

[10] Queensland Rail (2013) Western Moreton Tariff Submission Review, report prepared by Worley Parsons, p.71-72

[11] Queensland Rail submission " AU1 West Moreton Reference Tariff Reset Maintenance Submission" dated 14 June 2013 includes no description of the nature or the materiality of these activities.

On the basis of the high rate of sleeper replacement Aurizon recommends that mechanised resleepering activities between Toowoomba and Columboola should be capitalised and removed from the proposed maintenance cost estimate.

9.2 Correction of Ballast Quantities

The October Submission noted that the 400 mm ballast depth used on the Optimised Replacement Cost valuation exceeded the standards typically associated with the applied axle loads and utilisation rates. This point is acknowledged in the Consultant report on page 76 as shown in the following statement:

> *QR appears to be replacing or upgrading ballast at a rate commensurate with the expected new life of the ballast to maintain its functionality. While it appears that the ORC is 31% (500/1600) greater than it should be, the replacement strategy is consistent with a view that the ballast is 50% life expired.*

While the consultant acknowledges this point there does not appear to be any revision to the DORC valuation. This appears to occur because QR is replacing ballast at that higher depth to provide the necessary track stability due to the lack of a structurally stable formation. However, in considering the value of the formation the Consultant Report notes that it is appropriate to maintain a value for the top 600 because the excess ballast is performing that function.

This approach effectively values the function of the top 600 twice by both retaining the excess ballast quantity and the depreciated value for the top 600.

On this basis Aurizon recommends that the DORC value be reduced by either applying the correct ballast depth or removing the costs associated with the non-existent engineered top 600.

9.3 Derivation of Capacity and Capital Allocations

The Consultation Report includes the Queensland Rail response to an information request. This response includes detailed workings on the calculation of capacity in the Western System. These workings indicate that the available capacity of 112 paths exceeds the contracted capacity 106 paths as shown in the following extract from page 5 of the information request.

> *While capacity calculations result in 112 return paths per week, 106 paths were contracted (77 coal, 27 non-coal freight and 2 passenger). Government have not indicated a willingness to contract additional coal services and in relation to non-coal freight, above rail operators have not shown a willingness to contract additional services.*

Aurizon also notes that the capacity reduction factor of 65% is highly conservative relative to the reliability and performance of a modern railway. For example, increasing the capacity reduction factor to 70%, would increase the number of available train paths to 120.

As the system has additional available capacity which is unavailable for coal carrying train services, Aurizon recommends that the DORC based RAB allocations to coal services should be calculated on the available capacity of (112 paths) and not the contracted capacity (106 paths). This reduces the allocator from 72.6% to 68.8%.

9.4 Loss capitalisation is effective only where there are reasonable prospects of increasing demand

The Consultation Paper notes that loss capitalisation can be effective in managing financial risks associated with periods of low asset utilisation. The QCA has noted the application of loss capitalisation by ARTC in pricing zone 3 in the Hunter Valley Coal Network.

The Western System shares some similarities with the Gunnedah Basin, in that it initially operated at low volumes and the service provider had established a DORC based valuation which cannot be directly linked to economic investment or acquisition by a shareholder.

A key difference between Gunnedah and the Western System is that ARTC has reasonable prospects of increasing demand from developed or developing deposits in the near term and is able to alleviate any capacity constraints elsewhere in the system. Therefore, ARTC has adopted a loss capitalisation methodology with the reasonable expectation of recovering those losses as the relevant zonal volumes increase.

In contrast, prolonged periods of loss capitalisation on the Western System are likely to further inflate the RAB value with little prospect of recovery. It would also have the potential to crowd out reliability and service quality investment as the service provider will prefer to recover capitalised losses than to undertake further, risky productivity or capacity enhancing investment.

Aurizon does not recommend the application of loss capitalisation to the Western System.

9.5 Depreciation of Metropolitan System Investments

The QCA's supplementary information included summary modelling outputs of the asset values, costs and revenues. The following table reproduces the asset roll-forward for the Metropolitan Network and calculates the applied remaining asset life in each year[12].

Table 11 Metropolitan Network Asset Roll-forward

RAB Roll-forward	2013-14	2014-15	2015-16	2016-17
Opening Value	11,779,217	11,470,013	11,168,925	10,875,741
Inflation	294,480	286,750	279,223	271,894
Depreciation	603,685	587,838	572,407	557,382
Closing Value	11,470,013	11,168,925	10,875,741	10,590,253
Remaining Life	**20**	**20**	**20**	**20**

The analysis indicates that the deprecation is based on assumption of persistent 20 years remaining economic life. This differs from the Western System assets and the Consultation Paper provides no guidance for this approach.

Aurizon recommends that the QCA clarify the approach and assumptions underpinning the return of assets for the Metropolitan and Western Systems.

[12] Remaining Life = [Opening Value + Inflation]/Depreciation