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| QRC UT4 Submission on Maintenance  14 March 2014 |

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# Executive Summary

* Aurizon Network has proposed a maintenance budget of $1.086 billion for the Central Queensland Coal Network (**CQCN**) over the four years of UT4.
* Aurizon Network justifies this budget with a maintenance cost submission that (in its public format) is heavily redacted. The QRC’s comments are accordingly limited to those parts of the submission which have not been redacted. The QRC consider that it would be appropriate for it to be provided with an unredacted copy of the report in an alternative forum.
* The QRC has reviewed Aurizon Network’s maintenance submission to determine whether Aurizon Network’s maintenance scope and cost is reasonable. The QRC does not consider Aurizon Network’s maintenance submission to be justified.
* In the QRC’s view, the SKM report is not a sufficient basis upon which the QCA could make an informed decision.
* The SKM report contains material factual errors. For example, in its benchmarking analysis SKM referenced figures relating to the whole of the CQCN as being reflective of the Blackwater system only.
* The SKM report benchmarks Aurizon Network against only one company (being ARTC). SKM does not appear to have an accurate or sufficient understanding of how ARTC operates or the extent to which different network characteristics should influence comparisons.
* The SKM report relies on a comparison between forecast maintenance costs in UT4 and actual maintenance costs in UT3 to determine if Aurizon is becoming more efficient without ensuring that the forecast data is comparable with the actual data.
* The SKM report does not adequately address key issues such as the double counting of maintenance costs.
* The SKM report does not adequately assess the Aurizon Network’s application of a GRV approach to maintenance assets valuation / pricing.

Some of the issues highlighted in this submission can be addressed by a technical consultant undertaking significant further work. The QRC considers that the QCA should commission that significant further work before it makes a decision. It is the QRC’s view that the SKM report does not provide sufficient evidence for the QCA to be in a position to make a decision.

The issues identified in this submission also highlight a number of systemic problems with the monitoring and review of the maintenance budget. To address these issues the QRC has suggested a range of measures which it believes should be implemented as part of the approval process of the UT4 maintenance budget.

It should be noted that there are aspects of Aurizon Network’s submission that the QRC can not comment on. That is because Aurizon Network have redacted the information from its submission or because the QRC (and its advisers) do not have access to the underlying data required to validate Aurizon Network’s claims.

# Summary of SKM Methodology and Conclusions

SKM was engaged by the Queensland Competition Authority (**QCA**) to review Aurizon Network’s forecast maintenance costs for the CQCN.

SKM’s scope of work included:

1. review of forecast maintenance expenditure including:

* assessment of Aurizon Network’s forecast maintenance expenditure and benchmarking against similar below rail operations as well as historical actual maintenance expenditure for the CQCR, including consideration for productivity improvements; and
* identification of any irregularities, such as ‘double counting’ and making recommended adjustments to the forecast maintenance costs as required.

1. assessment of the reasonableness of Aurizon Network’s proposed incremental maintenance reference tariff component (AT1 reference tariff);
2. review of forecast operating expenditure including:

* assessment of Aurizon Network’s operating expenditure forecast for reasonableness based on historical actual operating expenditure for the CQCN; and
* benchmarking of forecast operating expenditure against similar below rail operations.

1. review of forecast asset renewal component of capital expenditure including:

* assessment of Aurizon Network’s forecast renewals expenditure, with particular focus on the relationship between asset renewals and maintenance expenditure; and
* assessment of Aurizon Network’s forecast asset renewals programme on the basis of reasonableness.

This submission focuses on item 1 where SKM found that the forecast maintenance for the CQCN and individual systems was reasonable on basis of:

* declining unit costs compared to the UT3 period;
* the cost composition compared to historical actuals, noting that the cost and maintenance basis includes consideration for costs incurred and the scope of maintenance task achieved in the 2011/12 financial year; and
* the cost per track kilometre compared to tonnage over 8 years between the UT3 and UT4 period, which reflects allocations of maintenance expenditure across individual systems which would be expected based on size, tonnage and system characteristics.

# Comparison of UT3 and UT4 Maintenance Costs

SKM’s report undertakes a comparison of UT3 and UT4 maintenance costs. In doing so, SKM concludes that such costs are declining on a $/GTK basis over time, and therefore that Aurizon Network’s maintenance costs under UT4 are reasonable.

The QRC disagrees with SKM’s comparison of UT3 and UT4 maintenance costs. The QRC considers SKM’s conclusion with respect to declining maintenance costs is flawed based on two premises:

1. first, SKM has failed to ensure the UT3 and UT4 maintenance costs are comparable; and
2. second, SKM has failed to consider implications of economies of scale.

## Potential differences in methodologies

The first issue with SKM’s analysis of UT3 and UT4 maintenance costs is the failure by SKM to consider whether the data it is comparing is actually comparable. For internal comparisons, data should be compiled using the same methodology across years so that changes in the cost of service delivery are not confused with changes in accounting practices. SKM has failed to provide evidence that it has achieved this. For example, SKM presents a graph in its report titled ‘Figure 2 Dollars per train path (total operating expenditure) revised volumes’. That figure depicts rising maintenance costs between FY10 and FY11, followed by a relatively steady rate of decline to the end of FY17. This pattern may not however be indicative of the true relationship between UT3 and UT4 maintenance costs due to the decision to exclude all indirect cost (ROA and corporate overheads) from the UT4 costs. The QRC does not understand the reasoning for excluding such costs, particularly given that these costs amount to over $20 million in FY11. It is possible this discrepancy in the way UT3 and UT4 costs were collected explains the decline in maintenance costs on a $/GTK basis over time.

Table 1 details a number of other potential differences between the methodologies used to compile the UT3 and UT4 maintenance cost estimates used by SKM to assess how the cost of track maintenance has changed over time on a $/GTK basis. Whilst it is not possible to definitively assess how the UT3 maintenance costs were compiled (due to a lack of data), our initial analysis suggests in aggregate, the following factors bias the reported UT3 figures upwards relative to the UT4 data. SKM does not appear to address these issues in its analysis of how Aurizon Network’s performance is changing over time. As a result the QRC considers that further assessment be undertaken.

Table 1 Potential differences between the methodologies used to compile costs by Aurizon Network in the cost estimates used by SKM

|  | Reported UT3 figures | UT4 figures used by SKM | Review task required |
| --- | --- | --- | --- |
| Depreciation of maintenance equipment | Based on book value – included in direct cost build up. No adjustment for proposed new asset purchases | Included in direct cost build proposed methodology based on book value with adjustments for forecast new asset replacements | Audit of how depreciation of new equipment is built into the forecasts |
| Return on assets i.e mechanised maintenance equipment | Based on book value of the assets, unclear if it was included in the reported UT3 maintenance cost figures | Excluded. Aurizon Network’s proposed methodology is to calculate an annual asset charge using the PMT in excel and net off the depreciation that is included in the direct cost build up | Determine if ROA is included in the UT3 cost build up and remove if required for comparison with UT4 maintenance cost forecasts (but include for benchmarking with ARTC) |
| Maintenance cost of mechanised equipment | Actual costs incurred | Maintenance costs adjusted for the modern equivalent methodology | Review UT4 maintenance costs for mechanised track equipment to determine if they are appropriately adjusted for the proposed shift to a MEA methodology |
| Corporate costs | As per the allocation in the Aurizon Network accounting system. At a minimum $5.8m as per 8.132 of the RSMBC report (pg110) | Excluded | Audit historical cost build up to determine corporate overhead costs that were included in the reported UT3 maintenance costs. Remove for comparative purposes |
| Costs funded by flood levies or insurances | As per the Aurizon Network accounting system | Excluded | Audit historical cost build up and exclude from UT3 figures if required |
| Internal margins | As per Aurizon Network accounting policies | Excluded | Audit historical cost build up to determine if included in reported figures, remove if required |
| Contingency | Not applicable | Unknown | Assess how contingency has been accounted for in the cost build up and determine if it is appropriate |
| Accounting policy changes | Not applicable | Unknown | Audit accounting policies for activities such as rerailing / formation works etc. to ensure that they have had no impact on the way maintenance costs are reported |

## Assessing the implications of economies of scale

The second issue with SKM’s analysis of UT3 and UT4 maintenance costs is the failure by SKM to explicitly access any observed change in the $/GTK in the context of the economies of scale in heavy rail expected as tonnes increase.

Whilst comparisons between some UT3 and UT4 maintenance costs may suggest a declining $/GTK over time, reference should be made to the increase in network activity which necessarily brings with it the benefits of economies of scale. SKM’s analysis appears to incorrectly assume that because costs are falling on a $/GTK basis, this indicates Aurizon Network’s increased efficiency over time. SKM failed to assess whether any of that decrease is actually attributable to economies of scale associated with increased throughput over time.

# Benchmarking Aurizon Network’s costs

SKM’s report benchmarks Aurizon Network’s UT4 maintenance costs against the ARTC in an attempt to support its conclusion that those costs are reasonable. The QRC disagrees with that analysis on the basis that:

1. SKM failed to ensure Aurizon Network’s data is comparable to the ARTC’s Hunter Valley Network;
2. SKM failed to sufficiently consider the differences between the CQCN and the ARTC Hunter Valley Network in its benchmarking;
3. there are a number of unexplained discrepancies in SKM’s collection and presentation of data;
4. the reported results of the benchmarking exercise do not support SKM’s conclusion; and
5. the lack of appropriate benchmarks in relation to the CQCN suggests that benchmarking is not the most effective method of analysis.

## Differences in methodologies

In the QRC’s view, SKM’s benchmarking analysis fails to ensure that the information being compared between Aurizon Network and ARTC is comparable on a methodological basis.

SKM’s report purports to benchmark Aurizon Network’s maintenance costs against the maintenance costs of ARTC. That analysis uses maintenance cost data which was provided by Aurizon Network net of corporate overheads and return on assets. SKM’s comparison is inherently deficient as comparisons should be based on the fully loaded cost of the service delivery to customers. There is no justification for excluding costs such as corporate overheads or return on assets from any external analysis.

In the case of the ARTC Hunter Valley Network, as the majority of maintenance costs are outsourced, these costs would include corporate overhead and other indirect costs such as return on asset. By excluding these costs from the benchmarking analysis in respect of Aurizon Network’s figures, SKM has understated the true cost of Aurizon Network’s operations and artificially improved its performance relative to the ARTC benchmark.

## Difference between CQCN and ARTC

In addition to failing to ensure benchmark costs are actually comparable, SKM’s benchmarking analysis also failed to ensure the ARTC’s Hunter Valley Network and the CQCN are comparable by adjusting for the differences between those systems.

In undertaking any external benchmarking exercise, it is important to assess the differences between the network being assessed and the benchmark against which it is being assessed. SKM noted that there are major differences between CQCN and the ARTC’s Hunter Valley Network, however, failed to go any further in its analysis. The QRC considers SKM should have provided guidance as to whether those differences would be expected to affect maintenance costs of the CQCN relative to the ARTC’s Hunter Valley Network in a positive or negative fashion.

## Discrepancies in data

In addition to the differences between the CQCN and the ARTC’s Hunter Valley Network, the QRC is also concerned with a number of discrepancies which are evident in SKM’s data collection which could impact on the reliability of that data.

In undertaking the benchmarking analysis, SKM states that it used the ARTC Hunter Valley forecasts 2011-2020 (inclusive) published in 2009. Despite this, SKM’s charts often reference 2010 data. The 2011-2020 forecasts do not include 2010 data, creating some uncertainty as to the source of SKM’s data.

SKM has also failed to reference the actual maintenance cost figures that are published annually by the ARTC as part of their regulatory process. The QRC considers such data would have alerted SKM of the fact that the Hunter Valley forecasts on which it relied in the benchmarking analysis are not comparable to the actual cost of maintaining the Hunter Valley Network. This is because unlike the CQCN regulatory model, the ARTC’s Hunter Valley forecasts have no relevance to the actual maintenance cost allowance approved by the ACCC.

It also appears SKM has failed to give due consideration to the effect of the three different zones which make up the ARTC Hunter Valley Network on the data which it collected. Zones 1 and 2 are part of the constrained network for which ARTC publishes annual results, however, zone 3 is subject to a different pricing regime and the maintenance and track kilometres data is typically published separately. As noted by RSM Bird Cameron in its report to the QCA, the total track kilometres of all three zones of the ARTC’s Hunter Valley Network is estimated to be 1,336 km in 2013/14. Despite this, SKM has used a figure of 392 km which appears to be associated with zone 1 only (although data on Hunter Valley track kilometres is not readily available). Given that the track kilometres in respect of only zone 1 was used in SKM’s calculations, SKM should have ensured only the maintenance costs of zone 1 were used in their calculations. Whether or not this was done is not evident from SKM’s report. Nevertheless, even if SKM had correctly ensured only zone 1 costs were used, SKM’s report is still silent on why maintenance costs and track kilometres in relation to zones 2 and 3 were chosen to be excluded.

The lack of analytical rigour of SKM’s analysis is further demonstrated by their inadvertent use of maintenance expenditure relating to the entire CQCN for the maintenance costs of the Blackwater system only in ‘Figure 2.14 Normalised maintenance costs – total absolute dollars’ and ‘Figure 2.16 Normalised unit cost of maintenance - $millions / track km compared to MTPA’. This point is noted in the discussion on pages 35 and 37 of SKM’s report and justified on the basis of “normalisation” and “the location of the Blackwater system relative to other systems on the CQCN”. It is, however, unclear how this justifies the discrepancy. The Blackwater system is only part of the CQCN and therefore the total maintenance costs for the system as a whole must by definition be higher than the cost of the Blackwater system – unless the maintenance cost of all other systems put together is zero. This type of discrepancy in SKM’s data collection brings into question the reliability of their analysis and their resulting conclusions with respect to the reasonableness of Aurizon Network’s maintenance costs.

## Unsubstantiated conclusions

Putting aside the flaws inherent in data used by SKM in its benchmarking analysis, the QRC still struggles to understand how SKM reached its conclusion that Aurizon Network is “at least as good and in some systems better than, ARTC’s Hunter Valley Coal Network”[[1]](#footnote-2).

Having benchmarked Aurizon Network’s internal performance through UT3 and UT4 on a $/GTK basis, SKM presents its findings in a graph titled ‘Figure 2.15 Normalised maintenance costs - $/GTK. That figure depicts that the Hunter Valley Coal Network’s maintenance costs are forecast to be approximately 50% below that of each of Aurizon Network’s systems except for Newlands. Another graph titled ‘Figure 2.16 Normalised unit cost of maintenance - $millions / track km compared to MTPA’ illustrates that the cost of maintaining the Blackwater system is approximately double the cost per track kilometre as those on the Hunter Valley system. Whilst the Newlands and Moura systems are each depicted as having a lower cost per track kilometre than the Hunter Valley system, those systems have significantly lower tonnages and together make up only 20% of the total costs of the CQCN. Meanwhile the Blackwater system, with significantly higher costs, makes up around 40% of total maintenance costs for the CQCN.

Figure 2.16 also depicts a positively correlated relationship between the cost per track kilometre and the MTPA in relation to Aurizon Network’s systems. This suggests that as throughput increases, so does the proportionate maintenance rate. On the other hand, the Hunter Valley manages to maintain a network with approximately 40% more throughput at the same rate as Aurizon Network’s maintenance costs with respect to the Goonyella system. Even more concerning, in comparing the Blackwater system to the Hunter Valley, ARTC is able to manage about 40% more throughput at a rate which is 40% cheaper than the maintenance costs on the Blackwater system.

## Factors suggesting benchmarking is inappropriate

Even if all of the above issues with SKM’s benchmarking analysis could be rectified, the QRC is still concerned that benchmarking may not be the most effective way of analysing Aurizon Network’s maintenance costs.

SKM’s benchmarking exercise relies solely on the ARTC’s Hunter Valley Network and fails to gather other appropriate benchmarks. By limiting its analysis to a single organisation, SKM is highlighting the lack of appropriate benchmarks for Aurizon Network’s maintenance costs. This is particularly concerning given the ARTC is also a regulated entity and its maintenance costs are likely to be benchmarked against Aurizon Network’s costs. In the absence of other benchmarks, there is a danger that these comparisons against each other will be self-fulfilling and provide little insight into the actual efficiency of either organisation.

The lack of comparable benchmarks in relation to the CQCN also highlights the deficiency in using benchmarking as a method of analysis in these circumstances. This is the fourth undertaking in relation to which the lack of appropriate benchmarks has been highlighted by both Aurizon Network and the QCA’s consultants. Despite this, the review of maintenance costs remains fundamentally dependent on the use of such benchmarks. The QRC considers that it may be time to revise the approach to assessing the efficiency of maintenance cost forecasts – for example by placing a more rigorous onus on the use of internal benchmarking.

QRC also recommends that the QCA works with the ACCC to ensure that data gathered from ARTC and Aurizon Network is comparable.

# Ballast Contamination

SKM’s report notes it is ‘primarily increased ballast undercutting which is contributing to the increase in total maintenance costs’[[2]](#footnote-3) and that it has attempted to undertake a ‘detailed review of ballast undercutting costs’ in Section 2.2.4 of its report.

In Section 2.2.4 of its report, SKM makes the following comments:

* The ballast undercutting task is reasonable for the UT4 period, since it is likely that there is existing fouling associated with non-delivery of the full forecast ballast undercutting task during the UT3 period.
* Since ballast contamination occurs after increased coal spillage, increased costs should follow in the year after increased tonnage (unless there is already a deficit, as is the case for the CQCN).
* Aurizon Network has become less efficient at ballast undercutting over time on the basis of ballast cleaning costs per GTK.
* It is unlikely that it is increasing costs associated with gaining track access on a more congested network which are contributing to the increased unit costs each year
* When the ballast undercutting costs are divided by the GTK of the previous year costs are falling on a $/GTK basis by 2014/15.
* It would not be appropriate for Aurizon Network to under deliver on the forecast ballast cleaning scope and transfer the allocation to other maintenance activities.
* The scope of the ballast undercutting task for the UT4 period is reasonable, although it is important to note that the increase in costs would not be reasonable without the presence of existing fouling.
* Increased scope for the ballast undercutter (RM900) should not be realised until Aurizon Network can demonstrate the acquisition and upgrade has been realised. The RM900 cost per km should accordingly be set at the rate used in 2013/14.
* The scope (and cost) of turnout undercutting, on track cleaning solutions and ballast undercutting other, should be accepted.

In conclusion SKM found that Aurizon Network’s proposed ballast undercutting scope and costs are reasonable in the context of historical ballast fouling and the impact of new volumes. However, recommendations were made to limit the scope of the ballast undercutting task until Aurizon Network acquires the additional ballast wagons proposed in Aurizon Network’s maintenance submission.

In the QRC’s view, there is a lack of detail in SKM’s analysis of both ballast undercutting costs and underlying ballast contamination. With the exception of the decision to adjust the scope of the RM900 until the new wagons are available, there is little or no link between the information presented and the conclusions made by SKM. SKM’s analysis leaves many questions unanswered, for example:

* If the forecast ballast undercutting has been costed in terms of four activities why aren’t the historical costs similarly split for benchmarking purposes?
* What additional costs are being forecast in 2013/14 to drive the 34% (excluding corporate overheads and ROA) increase in costs from 2012/13 and is there any evidence that these additional costs are actually being incurred?
* What are the ‘off track cleaning solutions’ and how are they costed and what is the rationale for their implementation?
* Given the comment that it is not appropriate for Aurizon Network to transfer the ballast cleaning allocation to other areas, why is there no investigation / comment on the fact that this occurred in UT3?

Ballast cleaning has been a contentious issue for the past three regulatory periods and it is not an activity that can be benchmarked effectively on a unit rate basis (primarily for the reason that the scope is heavily dependent on local factors). It is an activity that’s specific purpose is to address a problem that is building up slowly over time. Reallocation of budget away from ballast undercutting (as occurred in UT3) cannot be justified on the basis of ‘responsiveness’ because while other activities are concerned with keeping the network operating on a day to day basis, ballast cleaning addresses a long term maintenance deficit that, if not addressed, will have significant negative impacts sometime in the future. A significant reallocation of resources away from resurfacing would, for example, be expected to result in a negative impact on network performance in the short term. A reallocation of resources away from ballast cleaning will only have a negative impact in future years.

Aurizon Network significantly under delivered its ballast cleaning scope in UT3 and reallocated around $20m of its approved maintenance budget away from ballast cleaning to other tasks in 2012/13. This reallocation allowed it to fund major cost increases in other areas without Aurizon Network having to provide an explanation as to why these cost increases occurred. Aurizon Network is forecasting a further increase in the cost of ballast undercutting of around $25m in 2013/14 (in $ FY11).

For UT4 the focus should be on the efficiency of the operation and how effective it is in achieving its aim of maintaining the quality of the ballast across the network. In the QRC’s view, the QCA should as a minimum:

* review the actual spend on ballast undercutting in 2013/14 to determine if it is consistent with the forecast spend;
* detail the resources that are forecast to be devoted to the ballast cleaning task in each year of UT4, the cost of these resources and the expected output of these resources; and
* ask Aurizon Network to report on the actual cost of these resources and the scope they deliver on a monthly basis. Any unspent budget should be netted off their allowance in future years.

The QRC recognises that SKM has gone part of the way to addressing some of the issues noted above (that is, by removing some of the proposed ballast cleaning budget until such time as Aurizon Network actually purchases new wagons and demonstrates their efficiency). However, SKM has not:

* provided an assessment of the appropriateness of the proposed scope increase in the context of the technical information available in relation to the extent of the ballast fouling;
* addressed why Aurizon Network has chosen to increase its investment in ballast cleaning in 2013/14 when it significantly underspent its ballast cleaning allocation in the final years of UT3;
* explained why the ballast undercutting costs increase from $47m to $62.8m between 2012/13 and 2013/14, even without including the indirect costs in the 2013/14 figures;
* detailed how the mechanised and non-mechanised components of the ballast undercutting budget is to be planned, spent and monitored; or
* detailed how the efficiency of the operation should be monitored over time, given the lack of available benchmarks.

Given the impact which ballast undercutting costs have on overall maintenance costs, it is not possible to meaningfully assess Aurizon Network’s maintenance budget without further significant analysis occurring in relation to ballast undercutting and ballast contamination.

# Other Issues

## Ongoing Monitoring of Aurizon Network’s Maintenance Spend and Performance

In its response to concerns about the non-delivery of maintenance scope (Section 3.4) SKM makes a number of statements with respect to the ongoing monitoring of the maintenance performance, notably:

* SKM also supports adjustments to the annual allowable revenue in the event that Aurizon Network does not deliver on the proposed maintenance scope, and recommends that the QCA consider the extent to which non-delivery might accelerate asset degradation resulting in an increased maintenance or asset renewal requirement in the future.
* SKM strongly recommends that a thorough review is undertaken to ensure that Aurizon Network’s actual maintenance scope for the UT4 period reflects the maintenance cost categories proposed for the UT4 period.

Whilst the QRC supports these comments, it does not think they go far enough. Aurizon Network’s performance in preparing and delivering a maintenance budget to plan over the past two regulatory periods has not been good.

* In UT2 Aurizon Network produced forecasts which were based on incorrect data and underestimated the cost of maintaining the network by over $100m;
* In UT3 Aurizon Network presented a detailed maintenance budget for UT3 which included major budget increases for asset charges associated with new equipment (specifically, ballast wagons and resurfacing machines). It did not purchase this equipment but still managed to spend to its budget.

From industry’s perspective this suggests that the maintenance forecasts that are prepared for regulatory purposes and the actual management of the maintenance task may not be connected. It is evidence that the planned approach to maintenance detailed in the documents prepared for the maintenance submission to the QCA is not consistent with how the network is actually maintained.

Aurizon Network has previously addressed this issue by suggesting that changes to the maintenance plan within regulatory periods can be justified on the basis of a range of factors including changes in tonnage, rain events, industry requests or simply to allow for improvements in the approach to maintenance to be adopted. These factors are likely to be important and industry would not wish to become involved in the day to day management of the network, but the current system is biased too much towards the provision of management flexibility. Significant changes to the forecast plan can be made with no consultation with industry or the regulator.

As noted above during UT3 Aurizon Network chose not to invest in the ballast wagons or resurfacing machines as planned. Industry was not provided with any insight into the rationale for these major decisions (which presumably would have had board approval before they were included in forecasts and presumably board approval to be changed). The revenue that was included in the cost build up to fund the asset charges for this new equipment appears to have been reallocated (as evidenced by the total spend in 2012/13 being close to budget).

The reduction in the ballast undercutting budget clearly resulted in an under delivery of ballast cleaning in UT3 which will result in a requirement for industry to fund more ballast undercutting in future regulatory periods and potentially more speed restriction and the like. Aurizon Network may have made the correct decision not to purchase the wagons but at present there is no process to ensure this was the case.

The impact of the decision not to purchase the new resurfacing machines is less clear but this is partly because the network KPIs do not provide sufficient information to judge if a maintenance deficit has built up over a regulatory period. Aurizon Network forecasts the scope for various activities but not a target KPI to be achieved if the proposed scope is completed.

In the absence of such detailed KPIs industry is seeking a much greater degree of transparency and level of maintenance reporting than has occurred in previous access undertakings. The QRC suggests that a 5 Year Rolling Plan, Detailed 12 Month Maintenance plan and quarterly reporting of performance to plan be provided to the QCA and industry. Reporting should deal with:

* Development of a Maintenance Plan & Annual Review
* Performance Against Plan
* Resleepering (Actual Delivery vs Plan)
* Resurfacing (Actual Delivery vs Plan)
* Rail Grinding (Actual Delivery vs Plan)
* Track Recording (Actual Delivery vs Plan)
* Rerailing (Actual Delivery vs Plan)
* Track recording (Actual Delivery vs Plan)
* Ballast cleaning (Actual Performance vs Plan)
* Non Destructive Testing (Actual Delivery vs Plan)
* Routine Maintenance vs Plan
* Measures to maintenance staff productivity
* Actual vs forecast cost of key inputs such as ballast and rail
* Scheduled closure performance
* Overall Track Condition Index

In addition anticipated major variations to plan that occur throughout the year should be flagged in advance and Aurizon Network should provide industry and the QCA with the rationale for both the proposed change and the original plan.

At the same time the QCA needs to ensure that the actual costs presented by Aurizon Network are produced in a manner which is directly comparable with the cost build up that they have used to produce the forecasts. Where it can be shown that Aurizon Network has under delivered on scope and underspent its allowance an adjustment should be included in the next year’s revenue cap adjustment.

When this process is implemented both the QCA and industry will gain a much better insight into how effectively Aurizon Network is managing the network and how the cost of key activities is changing over time. The current reporting system has proven to be completely ineffective in achieving these aims.

## Non coal traffic

SKM has failed to address the effect of non coal traffic on maintenance costs under UT4 subsequent to the separation of Aurizon Network from Queensland Rail.

In previous undertakings it was assumed that the non-coal traffic that utilised the commercial coal network contributed to network maintenance by paying for the marginal cost of their impact, as measured by the AT1 tariff. The GTK of non coal traffic on each system over the period of the undertaking was forecast and the revenue from non coal traffic (calculated as AT1 \* forecast GTK on each system) was netted of the maintenance budget.

Now that Aurizon Network has separated from Queensland Rail, it is unclear if this approach has been adjusted under UT4. This issue was previously raised in industry submissions but is left unaddressed in SKM’s report.

The QRC considers that to address the effect of non coal traffic on maintenance costs, the following questions should be considered:

* What is the forecast for non coal traffic on the CQCN for the UT4 period?
* How is Aurizon Network proposing to charge non coal traffic?
* How will revenue from non coal traffic be accounted for?

## Pricing of Internally Procured Services

SKM’s report undertakes a limited review of the pricing of internally procured services and concludes that in many circumstances cost inefficiencies may exist.

For example, Aurizon Network currently uses Aurizon above rail for hook and pull operations. A significant component of the cost of some maintenance activities, such as ballast, is spent on these internal transport costs. Accordingly, this is one of many areas where SKM’s report concluded ‘there is considerable opportunity for internal sourcing to result in cost inefficiencies if prices do not reflect prices which would not occur in a competitive market’[[3]](#footnote-4).

Despite the recognition of this issue, SKM’s report provides only a limited review, concluding that the QCA should undertake a cost/benefit analysis of Aurizon Network’s internal sourcing. The QRC supports this recommendation, however considers that prior to such review, the materiality of the problem should be scaled by asking Aurizon Network the following questions:

* What proportion of maintenance costs are procured from other Aurizon business units and what margin is applied to these services?
* How does Aurizon Network ensure that it receives quality service from internal suppliers? For example, if a work train fails to arrive and a maintenance crew is unable to deliver their shift, what penalties (if any) apply?
* Where these costs are material, what processes does Aurizon Network have in place to ensure they are priced competitively?

## Change to gross replacement value approach to determining asset charges

Under UT4, Aurizon Network has made a shift from calculating the return on assets utilised in the maintenance process (primarily track equipment) from the depreciated book value approach to the gross replacement value (**GRV**) approach.

SKM considers this topic in a section entitled ‘Depreciated optimised replacement cost (**DORC**)’ which is within ‘Section 2.2.8’ of SKM’s ‘High level and detailed review of forecast maintenance costs’. In ‘Table 3-1 Summary of Findings’ of that section, SKM provides as follows:

*SKM found that adjustments to the RAB in the context of a DORC evaluation may be required since the proposed maintenance strategy (in particular, the level of ballast undercutting and the transition to a planned preventative maintenance regime) would reasonably be expected to leave the CQCR in a better state than during the UT3 period.*

The QRC considers that the reference to the Regulated Asset Base (**RAB**) in this statement is confusing and perhaps misunderstood. Aurizon Network’s proposed change in relation to its asset valuation approach applies to the asset required to maintain the network rather than the RAB itself. SKM’s comment and its discussion of this topic indicates that SKM has failed to address the engineering and costing implications of Aurizon Network’s proposed shift to the GRV methodology.

The QRC considers that the following implications should have been considered by SKM:

* the appropriateness of the modern equivalent assets (**MEA**) used by Aurizon Network in its GRV calculations;
* Aurizon Network’s approach to valuing (and their valuation of) their choice of MEAs;
* how effectively Aurizon Network has adjusted it MEA’s for technological improvements which have been made since the existing assets were purchased;
* how effectively Aurizon Network has adjusted its on-track vehicle maintenance costs to ensure consistency with the revised asset pricing methodology;
* how effectively Aurizon Network has accounted for any differences in the productivity and reliability of the on track maintenance equipment;
* the implications of the change in asset pricing methodology on comparisons between the cost of maintaining the network in UT3 and UT4; and
* the net impact of the change in methodology.

As it stands, the SKM review does not address any of these factors and although some of them are highlighted in the RSM Bird Cameron report the analysis is not complete. As a result, it is not possible to comment on whether or not the proposed shift to a GRV asset valuation approach has been correctly implemented by Aurizon Network. SKM’s analysis, or lack thereof, highlights the complexity of the proposed asset pricing approach supporting industry’s recommendation that the written down value of the asset should be used along with its commensurate operating costs.

## Double Counting of Costs

SKM identified that a key deliverable of its report was the “Identification of any irregularities, such as double counting and adjusting forecast maintenance cost as required.” To complete this task, SKM reviewed the process that Aurizon Network used to develop its forecasts and concluded it was appropriate subject to the following caveat:

*it is difficult to determine if inappropriate allocations have been made to the maintenance task, since this would generally be undertaken as part of a review of expensed costs or through a detailed audit of costs on a line by line basis.*

Whilst it may have been beyond the scope of SKM’s brief to undertake a line by line audit of these costs, simply accepting Aurizon Network’s description of its approach to developing forecasts does not constitute a review. At a minimum it is expected that SKM’s review should have requested Aurizon Network to explain:

* how the costs which are to be claimed through Aurizon Network’s proposed corporate overhead allowance were excluded from the cost build up;
* how the maintenance costs of the mechanised maintenance fleet were adjusted for the MEA/GRV asset valuation approach; and
* how revenues accruing to, for example, the rail grinding operation from work carried out outside the CQCN (i.e. for Queensland Rail) were accounted for in the forecasts.

The QRC considers that Aurizon Network has attempted to mimic the pricing of a standalone maintenance provider in its efforts to cost the maintenance of the CQCN. In reality, although the maintenance of the coal network clearly dominates the activities of the maintenance team at Aurizon Network, the business has considerable scope for incremental earnings. In particular, assets which are fully funded by the proposed pricing approach could also be used to undertake additional work for a variety of potential clients including private sidings, Queensland Rail, capital works or unplanned flood or derailment works that are to be funded by insurance payments. To the extent that the pricing of these additional services includes an asset charge, Aurizon Network is effectively ‘double dipping’. On the other hand, if the pricing of these services does not include a full asset charge, Aurizon Network is in effect cross subsidising these activities.

## Resurfacing

Resurfacing has historically been an area of chronic under delivery. During UT3, Aurizon Network under delivered on scope and failed to purchase new machines which were included in the maintenance costing. During UT4 Aurizon Network is again forecasting that it will purchase new machines expected to result in a significant increase in output per shift (from 1.2km to 2.0km). SKM states that this productivity is achievable “in the context of Aurizon Network’s acquisition of five new mainline resurfacing machines”[[4]](#footnote-5).

The QRC is however concerned with Aurizon Network’s precedent of under delivery in this respect. Accordingly, the QRC recommends that because Aurizon Network has a history of failing to purchase new equipment that it includes in its regulatory maintenance cost forecasts, any resultant incremental revenue impacts should be removed from the forecast cost build up. This will allow for a more accurate forecast by facilitating the adjustment of costs at the time the equipment is actually purchased.

## Imposition of a X-Factor

Aurizon Network suggests that the efficiency factor (the X-Factor) applied in the previous maintenance cost index for the UT3 period is no longer appropriate. SKM finds that this is reasonable, on the basis that productivity assumptions have been built into Aurizon Network’s cost basis at a product / individual maintenance task level.

SKM includes a table (Table 2.14) which lists productivity improvements expected for:

* RM900 Ballast undercutting;
* Mainline resurfacing;
* Mainline grinding;
* Turnout grinding;
* Rerailing; and
* Non mechanised maintenance labour productivity.

The QRC rejects this conclusion and considers that an X-factor should be included in the maintenance cost forecasts on the basis that:

1. The productivity improvements for resurfacing, ballast undercutting and rail grinding are presented in terms of unit rates without detailing the cost. In the case of ballast undercutting at least, the small improvement in productivity appears to have come at a very significant increase in cost.
2. The forecasts were prepared based on FY11 data. This was at the tail end of the mining boom and since then the mining sector in central Queensland has continued to be hit hard by the slowing in the demand for coal. As a result, the mining sector has instituted a wide range of cost cutting measures. Resources in the region such as accommodation, hire equipment, specialist labour services and skilled labour are not only cheaper than they were previously but they are also more readily available. It would be expected that Aurizon Network would be able to take advantage of these changes with the result that the cost of delivering maintenance services will fall over UT4

For a regulated entity to establish that it has built sufficient productivity improvements into its forecasts in order to justify a zero X-Factor, that entity needs to show how they will be able to deliver the same or improved service for a lower cost. To do this, that entity should be capable of detailing specific strategies being implemented, how those strategies aim to improve cost or productivity over time and how the effectiveness of those strategies will be measured. Ideally, that entity should also be able to point to how similar strategies have been introduced in the past to demonstrate that those strategies form part of an ongoing process. The information provided in SKM’s Table 2.14 does not achieve this aim.

## Review of incremental maintenance tariff component

The AT1 tariff component reflects the portion of Aurizon Network’s forecast maintenance cost that varies with usage (i.e. the incremental maintenance cost at the base tonnage). SKM was requested to determine the reasonableness of the proposed AT1 tariff component across each Central Queensland Coal Network system in UT4, based on:

* an assessment of Aurizon Network’s proposed data, methodology and supporting information;
* benchmarking of Aurizon Network’s forecast incremental maintenance costs against appropriate industry comparators (on a $/’000 GTK basis); and
* any other factor which they considered to be relevant.

SKM makes the following key conclusions in relation to its analysis of the AT1 reference tariffs within Section 4 of Attachment B in its report:

* Aurizon Network’s maintenance cost curve is likely to have significantly altered since the QCA’s 2001 decision and should be updated accordingly. SKM provides a range of qualitative factors in support of this claim. These factors include (but are not limited to) privatisation of the Central Queensland Coal Network, real escalation of maintenance costs, more detailed bottom up cost estimation since 2001 and changes in technology utilised by Aurizon Network since 2001.
* SKM conducted an assessment to derive proposed AT1 reference tariffs per year for each system based on the following scenarios:

1. forecast maintenance expenditure and forecast GTK are assumed as equal to the forecast provided by Aurizon Network;
2. the scope of ballast undercutting is limited based on SKM’s recommendation, subject to Aurizon Network’s demonstrated acquisition of additional spoil wagons and upgrades to existing wagons; and
3. actual tonnages are 10% lower (on average) than Aurizon Network’s forecast and maintenance costs on account of SKM’s adjusted estimates.

Based on the above, SKM note that the approved AT1 reference tariffs will be subject to the QCA’s recommendation of the appropriate scenario (out of the 3 scenarios outlined above) to determine the annual revenue requirement. However, SKM recommends that the approved AT1 reference tariffs are established based on SKM’s approach of escalating the cost curves with MCI and deriving the resulting incremental cost at the base tonnage each year. In this regard, it is unclear whether SKM are recommending that it would be appropriate for the QCA to recommend one of the three scenarios, or whether it believes the QCA will need to update the 2001 study first in order to determine appropriate AT1 tariffs in the context of UT4.

The lack of clarity surrounding SKM’s conclusion, combined with the uncertainty over the role of AT1 in determining the revenue cap in UT4 (given Aurizon Network’s proposal to change the way the system allowable revenues are calculated), makes it difficult to comment specifically. However, the QRC notes:

* SKM’s analysis relies heavily on Aurizon Network’s maintenance cost forecasts which the QRC considers are likely to be revised following review;
* the benchmarking completed in this section is again limited to a single comparator being the Hunter Valley Coal Network and SKM do not provide appropriate evidence to suggest that the Hunter Valley Coal Network is an optimally efficient company; and
* the role of the AT1 tariff has changed significantly with the move to annual tonnage forecast resets.

### **The QRC’s Recommendation**

As illustrated above, the AT1 tariff adds some complexity to the tariff modelling process and the annual revenue cap adjustments. The SKM analysis does not provide confidence that the AT1 tariff is accurately calibrated to adjust the annual maintenance cost allowance for changes in tonnage, nor that there is sufficient data available to achieve this in the future.

The QRC recommends that the QCA consider any changes to (and even the possible removal of) the AT1 tariff in the context of other proposed changes to monitoring and modification of the maintenance cost allowance on an annual basis.

## Technical advice on the trade-off between asset renewals and maintenance

SKM notes in Section 2.1, Attachment E of its report, that it was requested by the QCA to:

* provide expert opinion on the validity of discussion about the trade-off between renewals and maintenance expenditure;
* advise on whether Aurizon Network’s forecast asset renewal expenditure is justified, having regard to Aurizon Network’s proposed forecast maintenance expenditure; and
* assess the reasonableness of Aurizon Network’s forecast asset renewals.

In its conclusion in Section 4 of Attachment E, SKM highlights the following key findings:

* SKM finds that Aurizon Network’s forecast asset renewals expenditure is reasonable in the context of the value of the RAB and in comparison to forecast maintenance expenditure.
* SKM’s review of Aurizon Network’s Asset Maintenance and Renewal Policy and Stage Gate process indicates that expenditure will be appropriately allocated to highest and best use and will be found prudent with regards to scope, standard and cost.

SKM reinforces these conclusions with a high level analysis of the relationship between the value of the asset base and network GTKs and asset renewals. SKM also reviews Aurizon Network’s asset renewals decision making process and Aurizon Network’s ‘typical renewals expenditure’.

In reviewing the SKM report, the QRC is concerned as to the thoroughness of SKM’s analysis. For example:

* SKM did not review a detailed breakdown of historical asset renewal expenditure by asset class. Asset renewals increased significantly from 2010/11 to 2011/12 and continue to remain high (refer to Table 2, Section 2.4.2). It would be expected that an analysis of this expenditure might have provided a useful cross check of the top down approach. For example, the theoretical renewals expenditure includes $20m on telecoms assets (17% of the total), but the telecoms assets make up a very small proportion of the RAB.
* SKM explain that additional renewals will not necessarily result in any reduction in maintenance costs. In fact, in the only example provided it points out that the immediate maintenance savings are low compared to capital investment and that no analysis has been conducted of the potential longer term/ongoing savings. The QRC notes that although this may typically be the case, it would be expected Aurizon Network could point to projects which were planned specifically to address an ongoing maintenance issue.
* SKM noted in Section 2.1.3 of its report that “a detailed breakdown of the actual scope of renewals expenditure is unknown at this stage”. This comment is contradictory to SKM’s later comment in Section 2.3 of its report which points out that “the renewals strategy for the UT4 period has been informed by significant improvements (which are continually evolving) in the ability to recognise when an asset has reached the end of life as well as a greater understanding of failure modes and drivers of asset failure”.
* The QRC would like to understand how SKM has concluded that expenditure will be appropriately allocated to highest and best use and will be found prudent with regard to scope standard and cost given the extent of their previous comments on the potential limitations of the Stage Gate process.[[5]](#footnote-6) These comments include the following:
* “SKM finds that the Stage Gate process is adequate in ensuring that capital projects are prudent in regards to scope, standard and cost. **However, it is not apparent how the projects are identified in terms of allocating the expenditure to highest and best use[[6]](#footnote-7)**.”
* “Overall however SKM finds that the Stage Gate process will assist in allocating funds to the highest and best use based on a review of financial trade-offs, ***but will not provide a means for ensuring that forecast maintenance costs are efficient,*** since specific renewals projects are determined after the asset life has expired. This is particularly important given that Aurizon Network are required to adjust the value of the RAB if capital projects are not delivered, while the maintenance task allowance is only adjusted in response to volume variations and is not subject to evidence of delivery of the forecast maintenance task[[7]](#footnote-8).”

### **The QRC’s Recommendation**

Overall, the QRC considers SKM’s report has provided a useful summary of Aurizon Network’s asset renewal processes but little insight into the how and when maintenance costs (and efficiency) are taken into account in the asset renewal decision making process. Prior to finalisation, the QRC suggests that the QCA:

* Asks Aurizon Network for more examples of current renewal projects which are designed to provide a capital related solution to a maintenance problem.
* Assesses Aurizon Network’s indicative renewals expenditure in the context of the actual spend by asset class. Where there are significant differences, request Aurizon Network to explain why it expects expenditure in that asset class to increase significantly in the future.
* Ask Aurizon Network to provide a timetable for the introduction of the more planned approach to asset renewals that SKM has noted on a number of occasions (for example, refer to Section 4 of SKM’s report).
* Replace the indicative allowance for 2013/14 with a specific estimate of projects that are actually being completed. A more specific estimate for 2014/15 should also be developed.

## Review Aurizon Network’s ability to deliver its asset renewals work program

SKM was requested by the QCA to assess system-wide and system-specific forecast asset renewals for reasonableness. It produced a report on this work which focussed on this in the context of the following key factors (as noted in Section 2.1 of Attachment F of the SKM report):

* the proposed maintenance work program;
* the proposed major growth projects (Section 8.3 of Chapter 8 of Volume 3 of UT4 explanatory materials);
* Aurizon Network’s human resources, in particular track staff;
* Aurizon Network’s plant resources (e.g: access to tampering machines); and
* the track closure times that would be necessary to achieve the proposed asset renewals and maintenance work programs as well as deliver the major projects.

As a result, SKM concluded as follows (refer to Section 4, Attachment F):

*SKM finds that the planned activities can reasonably occur, given available resources, during the planned track closures as detailed in the asset renewals work program.*

SKM based this assessment of reasonableness on reviews of Aurizon Network’s weekly planning summary. SKM consider Aurizon Network’s 15 to 23 days of planned downtime to be sufficient. Despite this, a figure titled ‘Figure 4 Aurizon Network’s historical day/year availability after planned and unplanned downtimes’ illustrates historic planned downtime over the last five years as 24 days, with 42 days of unplanned downtime. It is unclear whether SKM considered the extent of work performed during these historic periods against the extent of work to be performed during these 15 to 23 days.

### **The QRC’s Recommendation**

The QRC notes that there were major expansion projects affecting all systems during UT3 and these projects increased the number of closures on the network. Accordingly, the QCA should confirm that Aurizon Network is intending to complete its asset renewals program in a reduced number of planned closure days during UT4.

1. Section 2.2.8, SKM High level and detailed review of forecast maintenance cost’. [↑](#footnote-ref-2)
2. SKM, High level and detailed review of forecast maintenance costs, p17 [↑](#footnote-ref-3)
3. SKM, High level and detailed review of forecast maintenance costs, Section 3.7 [↑](#footnote-ref-4)
4. SKM, High level and detailed review of forecast maintenance costs’ pg 40. [↑](#footnote-ref-5)
5. It is difficult for QRC to comment further as Appendix D which details the Stage Gate process has been entirely redacted. [↑](#footnote-ref-6)
6. SKM, Attachment E, Technical advice on the tradeoff between asset renewals and maintenance expenditure, pg 12. [↑](#footnote-ref-7)
7. SKM, Attachment E, Technical advice on the tradeoff between asset renewals and maintenance expenditure, pg 13. [↑](#footnote-ref-8)