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QR NATIONAL

23 November 2012

Mr John Hall
Chief Executive Officer
Queensland Competition Authority
GPO Box 2257
Brisbane QLD 4001

Dear John,

Please find attached QR Network's response to the QCA's Request for Further Comment on the Electric Traction Draft Amending Access Undertaking (DAAU) dated 8 October 2012.

Identifying a sustainable electric traction pricing regime for the Queensland coal network is fundamental to continued investor confidence in the regulatory framework. QR Network therefore welcomes the QCA's proposed workshops on the electric traction pricing issue, and the appointment of an independent facilitator to lead that process.

QR Network believes that an alternative consultation process may expedite industry efforts to identify a solution to this issue, as it is not practical to canvas all matters that may be relevant to alternative DAAUs on electric traction in written submissions. QR Network therefore remains of the view that exploring alternative tariff structures may be best done through structured dialogue and engagement between the QCA and industry.

With that in mind, QR Network has taken the opportunity provided by the QCA's Request for Further Comment, to provide further materials on high-level solutions to the AT5 problem. The intent of these materials is to provide guidance and structure to stakeholders as the workshops progress. Of course, QR Network welcomes discussion on alternative proposals that are not canvassed in the attached and is prepared to provide more detailed regulatory proposals, including, if appropriate, tariff estimates, when necessary.

QR Network has also answered the specific queries that the QCA raised in its letter of 8 October. The responses to these questions in the attached should be read in conjunction with the materials previously submitted by QR Network. Further, QR Network reiterates its offer to the QCA for the TCO model to be reviewed and tested, including by independent peer review.

Yours sincerely,

[redacted]

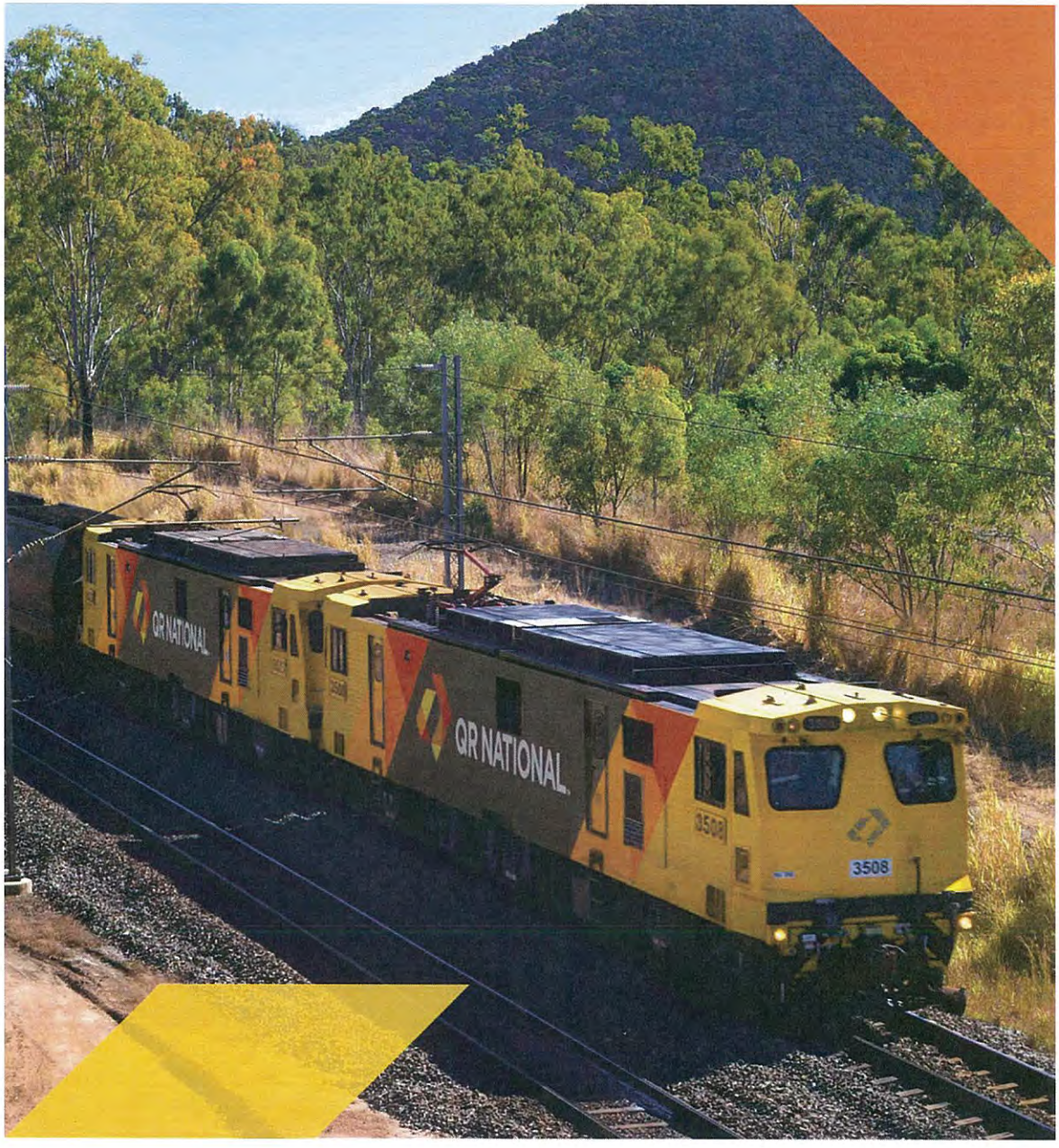
Michael Carter
Chief Executive Officer
QR Network Pty Ltd

QR NATIONAL™

23 November 2012

QR National Network

Submission to QCA: Request for Further Comment on Draft Decision



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Executive Summary

QR National Network (QRNN) submitted a Draft Amending Access Undertaking (DAAU) in December 2011 which sought to address the regulatory pricing problem that exists in relation to QRNN's electric traction assets, particularly in the Blackwater system. This problem arises because the current regulatory pricing approach for electric assets encourages access seekers to bypass sunk infrastructure. This is a fundamentally important issue for the QCA to resolve, both for QRNN, in terms of having certainty regarding the recovery of its investment, and for electric traction users that are faced with escalating access charges as a result of the current pricing approach. The resolution of this issue is also essential for the future efficient development of coal supply chains in Queensland.

Given the importance of this matter and the complexity of the issues involved, QRNN welcomes the concept of a QCA-sponsored series of industry workshops involving all stakeholders and conducted by an independent facilitator. We believe this process will allow for constructive engagement by all stakeholders and will provide the best opportunity to achieve an acceptable resolution to this issue.

QRNN remains strongly of the view that a high utilisation of electric traction in Blackwater is the most efficient outcome for the system. Increased utilisation is necessary for optimal use of existing capacity, as well as achieving the most efficient rail solution for the system. To this end, the DAAU sought to achieve this outcome by proposing price signals that encouraged the adoption of electric traction. QRNN considers that there has been no material subsequently submitted by stakeholders to the QCA that causes us to question the validity of the Total Cost of Ownership (TCO) analysis. Given this, QRNN continues to hold the view that the best outcome for the system will be an approach which promotes the utilisation of electric traction in Blackwater.

QRNN believes that no evidence has been put to the QCA showing that such an approach will reduce in any way the competitiveness of upstream and downstream markets – in particular, the above rail market is clearly strongly competitive across the entirety of the central Queensland coal region, including in both electric and diesel systems. However, to the extent that such arrangements impose short term costs on some supply chain participants who are using diesel traction, QRNN considers that transitional arrangements may be appropriate, and has signalled on numerous occasions its willingness to negotiate as to the quantum and nature of any such arrangements.

Nevertheless, QRNN recognises that some parties have concerns regarding active promotion of the take up of electric traction in Blackwater. Alternative approaches must therefore be developed which achieve the key objectives of revenue adequacy and eliminating asset stranding risk. This submission considers a number of alternative pricing approaches which have been raised in submissions. These options include:

- Modifications to the AT2 tariff component and the capacity multiplier to ensure they reflect more current valuations of the incremental cost of capacity, including the costs of electrifying new track sections. However, changes to AT2 and the capacity multiplier to be more cost reflective will not, on their own, address the issue of cost recovery for electric infrastructure. This must be addressed through the AT5 component which is the mechanism to recover the cost of electrification assets;
- Reductions to AT5 to promote the take up of electric traction. Again, given the possibility of bypass, this approach may still not allow QRNN to achieve revenue adequacy. We consider this approach is not acceptable without certainty about the timing of recovery of any deferred revenue;
- Reduction of AT5 combined with a lump sum cost recovery mechanism. Under this approach, a modest AT5 is set to encourage the take up of electric traction, with any under-recovery of revenue recouped through an annuity payable by all Blackwater mines, regardless of the type of traction they use. The aim of this mechanism would be to achieve full cost recovery without imposing direct costs on diesel services.

This submission seeks to identify the wide range of issues that need to be considered in developing an alternative pricing approach. The submission also addresses the QCA's request for further comment on specific matters. QRNN welcomes the opportunity to engage with stakeholders further in constructively addressing the issue of the pricing and utilisation of electric traction.

1. Introduction

QR National Network (QRNN) welcomes this opportunity to respond to the submissions on the QCA's *Draft Decision on Electric Traction Services Draft Access Undertaking (July 2012)* as well as the QCA's request for further comment on a range of matters.

QRNN submitted a Draft Amending Access Undertaking (DAAU) in December 2011 which proposed a range of measures designed to address problems with the existing pricing framework for electrification assets. There is widespread recognition that the existing approach is a disincentive for customers to adopt electric traction in Blackwater, despite significant investment in these assets being made and despite the fact that maximising electric utilisation will optimise supply chain efficiency. In July 2012 the QCA issued a Draft Decision to reject the DAAU. QRNN provided a submission in response to the Draft Decision in September 2012.

Given the complexity of the issues raised, QRNN supports the QCA's proposed approach of further engagement with stakeholders and investigation of this matter prior to issuing a final decision. In particular, QRNN supports the concept of the QCA sponsoring an electric traction workshop process, facilitated by an independent party, to provide a forum for further discussions and with the aim of reaching a solution. QRNN welcomes this timely development as we remain strongly of the view that resolving this matter is a priority.

QRNN's overall objectives with regard to the December 2011 Draft Amending Access Undertaking for Sustainable Electric Traction Pricing (DAAU) was to ensure that the regulatory pricing framework promotes efficient use of and investment in rail infrastructure. An important aspect of this is that the costs of investments made by QRNN in accordance with the regulatory framework, and endorsed by customers and the QCA, are able to be recovered and, further, that this cost recovery is achieved in the most efficient way. We believe these principles are fundamental to an efficient rail access regime that promotes the overall objective of access as well as the future efficient expansion of coal supply chains in Queensland.

This submission responds to the QCA's specific requests for further comment on certain issues as well as responding to matters raised by other stakeholders. In particular, we have sought to canvass potential solutions to this problem by discussing the options that are available, the likely effectiveness of those options, and some of the implementation issues that will arise. It is hoped that this high-level discussion will facilitate more detailed analysis through the course of the proposed working group process. The submission then goes onto responding to the specific questions raised by the QCA in its Request for Further Comment.

2. Potential solutions

It has been acknowledged by the QCA, and many stakeholders, that the current pricing methodology for the electric network is distorting incentives and is not consistent with the pricing principles as set out in the QCA Act. In particular:

- the electric traction network is characterised by high fixed and sunk costs, with the marginal cost of use being low;
- the approach of applying an average cost tariff to actual electric services results in the tariff increasing as utilisation declines – which creates a disincentive to use electric traction.

While an average cost pricing methodology has been a feature of AT5 since UT1, its impact has been amplified by QRNN's recent major investment in Blackwater feeder stations, explicitly supported by users under the regulatory framework, to increase the capacity of the electric network, together with entry in the Blackwater system by an operator utilising diesel locomotives. In the face of users now contemplating bypassing the electric network by operating diesel trains, this approach to pricing is undermining the efficiency of the supply chain as well as QRNN's ability to recover its allowable revenue.

QRNN is seeking a way forward on this issue that addresses, to the greatest extent possible, the concerns of all parties. We therefore strongly support the proposed independent electric traction workshop process which aims to find a resolution to this issue. For QRNN, the key objectives we are seeking to achieve through the DAAU and in the electric traction workshops are:

- promotion of the most efficient supply chain outcomes – most critically, we believe that all stakeholders (operators, end customers and the QCA together with QRNN) must reach a conclusion on whether they believe that the efficiency of the supply chain is best promoted by encouraging use of electric traction, or by promoting traction choice as an element of above rail competition; and
- ensuring confidence in the integrity of the regulatory mechanisms in place to address investment risk – this means that QRNN can have confidence in the adequacy of its revenue to recover the approved efficient costs of investment in the Blackwater electrification assets.

To this end, our September 2012 submission set out the broad options to address these issues:

- *Incentivising the use of electric traction* – this involves the creation of strong price and other signals to adopt electric traction and is essentially the approach adopted in the DAAU;
- *Market choice based on efficient price signals* – this entails providing efficient market signals for operators and end customers to choose between electric and diesel traction. To the extent that this efficient usage charge does not enable QRNN to recover all of its allowable revenue for the electric network, this shortfall should be recovered from all users in the way that will create the least market distortions. This type of approach was supported by Sapere in an expert report attached to the QRNN September 2012 submission; and
- *Commercial strategies to reduce stranding risk* – the use of alternative mechanisms that exist in the Access Undertaking to manage this risk in order to avoid asset stranding to the extent possible. Such mechanisms include: price discrimination between electric and diesel services on the basis that electric services have a lower capacity to contribute to common costs; and/or preferential capacity allocation to electric services on the basis that it is more commercially advantageous to QRNN.

2.1 Incentives for use of electric traction

The TCO analysis has demonstrated that the overall supply chain cost will be minimised by maximising the use of electric traction, for both the Blackwater and Goonyella systems. On this basis, QRNN believes that the benefits to the supply chain will be maximised if the regulatory arrangements clearly signal to operators the benefit of using electric traction on electrified train paths.

As a result, the DAAU sought to create strong incentives for the adoption of electric traction in both the Blackwater and Goonyella systems, as this is the approach that QRNN considered would address the flaws in the existing pricing structure in a way that would create the lowest total rail system cost. This was achieved through the use of pricing signals – QRNN did not seek to remove operators' or end users' ability to operate diesel services on electrified paths. Indeed QRNN recognised that a certain level of diesel utilisation was likely to occur from an overall fleet management perspective. However, the DAAU created a strong price incentive to use electric locomotives on electrified paths by charging all services for a share of the costs of the fixed electric infrastructure (with the exception of an allowance of up to 10% of diesel services, reflecting expected fleet management requirements).

There are alternative solutions that can be developed that similarly provide strong incentives for using electric traction – prior to the release of the Draft Decision, QRNN was developing with the Traction Working Group a "mutual commitment" proposal, that provided for users to commit to a level of electric utilisation on the basis that QRNN committed to keep the electric tariff within certain boundaries.

The element that each of these approaches have in common is that all services are expected to contribute to the costs of the fixed electric infrastructure, regardless of their choice of traction type. This is particularly the case where expansions for all train services on an existing electrified system impose costs to preserve the operational integrity for existing electric train services. As services will bear a proportional share of the electrification costs

irrespective of whether they operate with electric or diesel traction, operators and end users will be strongly incentivised to use electric traction.

QRNN continues to be of the view that an approach that creates a strong positive incentive to operate electric services on electrified routes is in the best interests of the supply chain, as it will encourage operating decisions that lead to the lowest overall system costs for all users.

However, the QCA and a number of stakeholders have raised concerns that this approach inappropriately constrains traction choice. In the event that the QCA maintains this view, QRNN is prepared to explore other options for addressing the existing flaws in the electric tariff structure.

2.2 Market choice based on price signals

Recent stakeholder submissions in response to the Draft Decision identified a number of options that focus on ways to allow market choice based on efficient price signals. The fundamental premise of these options is to rely on price signals to coordinate the market and realise the scale economies that may be achieved with an efficient traction choice outcome. Recognising that the current price signals will not achieve this outcome, the solutions raised by other stakeholders are to essentially make minor adjustments to the current level of prices, with the expectation that this will be sufficient to achieve the desired behaviours.

The options raised include:

- Changes to AT2 incremental capacity charge and the AT2 multiplier (congestion charge) to make it more cost reflective and to therefore better reflect the impact of diesel services on track capacity; and
- Reduction in AT5 tariff to a level below the market based cap established by the cost of the substitute diesel service.

These broad options are discussed further below.

Review of AT2 and capacity multiplier

The basis for raising the option of a review of the AT2 and capacity multiplier is a view that the current approaches do not fully reflect the costs of the capacity impact that diesel trains have on the systems. QRNN agrees that the AT2 tariffs should be reviewed and adjusted as required to provide a more efficient price signal. QRNN considers that AT2 and the capacity multiplier need to be modified to be more reflective of the opportunity cost of incremental capacity in the coal systems, and the true consequences for capacity utilisation arising from trains departing from the standard section running times.

The TCO analysis has shown that there are a number of differential cost drivers between an electric and diesel service. The adjustment to AT2 and the capacity multiplier will not fully breach that full cost differential. Therefore, these pricing reforms alone will not necessarily address the issue of cost recovery for electric infrastructure. A modified AT2 and capacity multiplier, which is more reflective of the incremental cost of capacity, will provide a more effective signal about the cost consequences of operating different types of trains on the network. However, under the current pricing methodology, an increase in AT2 or the capacity multiplier will be offset by reductions in AT3 and AT4 - it does not address the issue of cost recovery of the electric overhead.

QRNN acknowledges that a review of the AT2 and capacity multiplier is likely to increase the costs associated with running diesel services. This is because the performance characteristics of diesel locomotives means that the trains will either not meet the standard section run times, or they will need to operate with fewer wagons in order to achieve the required level of overall train performance. This will increase the "market based cap" for AT5, and will potentially reduce the risk that QRNN cannot achieve full cost recovery of its electric infrastructure.

However, under the current pricing methodology, AT2 does not contribute to recovering the cost of electric overhead infrastructure. This will still need to be achieved by changes to AT5. Therefore, while a review of AT2 and

the capacity multiplier is desirable from the perspective of providing an efficient signal regarding use of capacity, it is unlikely to form a substantive element of the solution to the electric pricing issue.

Notwithstanding this, QRNN supports a review of AT2 and the capacity multiplier in the context of QRNN's next access undertaking. Issues that should be considered in such a review are set out below.

Appropriateness of the reference tariff structure and AT2

The tariff structure for the reference tariff was originally developed for QR's 2001 Access Undertaking. The objective was to create a tariff that provided efficient price signals to users about their use of the rail infrastructure. This was achieved by first identifying the components of QR's costs that were incremental to the use of the network. In this context, the AT1 tariff component was created to reflect the incremental cost of maintenance, and the AT2 tariff component reflected the incremental cost of capacity. To the extent that these two tariff components were not expected to fully recover QR's allowable revenue, the remaining costs were recovered through the AT3 and AT4 tariff components.

The purpose of the AT2 tariff component was to give operators an effective price signal regarding their use of capacity. The forward looking incremental cost of creating new train paths was determined, and operators were charged this amount for every "reference" train path used. In this way, if operators designed a train service that used a greater amount of rail network capacity than the reference train, then its charge would reflect the cost of bringing forward the necessary capacity enhancements.

QRNN continues to support this objective – operators, or end users, will only make efficient decisions about how they use the rail network capacity if they bear the full cost impact of those decisions. However, the effectiveness of the AT2 tariff component in achieving this objective depends upon:

- the reasonableness of the estimated cost of creating incremental capacity;
- the reasonableness of the estimate of how much capacity an actual train service will use compared to the reference train service; and
- the incentives that are therefore created for broader efficiency improvements.

These are therefore the critical issues to be considered for AT2.

Value of AT2

In order to value the AT2 tariff component in 2001, a medium term forward looking investment path was identified. The cost of these investments, and the amount of capacity that they would generate, were assessed in order to create a $/path capacity cost estimate. However, since that time, the AT2 tariff component has not been reassessed based on this first principles approach – rather, it has been rolled forward with CPI (with some adjustments made to the AT2 tariff component for some systems in order to increase consistency). Over this period, the value of the AT2 tariff component has become disconnected with expected cost of increasing capacity, as both the nature of the forward looking investment path, and the cost of these investments, have changed markedly since 2001.

In 2001, the reference tariffs were also established on a cluster approach which provided for the determination of AT2 to reflect the capacity impacts on branchlines. The transition to system based pricing necessitates a narrower definition of the capacity consumption impacts to consider the incremental costs on the mainline which is common to all access holders paying the system AT2.

For the Blackwater system in particular, in 2001, the system was primarily a single line/passing loop system, with some limited sections of duplication. The expected investment path at that time reflected a program of progressive track duplication, in order to increase mainline track capacity. Over the last ten years, this track duplication program has progressed and the Wiggins Island Rail Project (WIRP) upgrade, which is currently underway, will complete the full duplication of the Blackwater mainline. The expected investment program for future capacity increases on the Blackwater system will therefore focus on very different issues.

Similarly, at the time that the AT2 tariff component was established, the cost of constructing new rail infrastructure was typically estimated at about $1.5m/km. The cost of building new rail infrastructure has increased significantly since that time, with new rail infrastructure now typically costing around $6m/km.

Therefore, it would seem appropriate to reassess the value of the AT2 tariff component based on a current assessment of the cost of incremental capacity. However, we would like to highlight a number of practical issues that will be raised in such an assessment, as gaining stakeholder consensus on how these issues should be resolved will be important in conducting a review of AT2:

- *Investment horizon:* The investment path for creating additional rail network capacity is "lumpy" in nature, and significant step function investments can be required to increase capacity. Therefore, the investment horizon over which the capacity enhancements are considered will be an important factor in determining the ultimate value of AT2. The forward looking investment path for the Goonyella system provides a classic example of this issue – QRNN has identified that triplification of substantial parts of the Goonyella system mainline will be required to provide significant capacity increases. In the meantime, however, increases in capacity prior to this point will primarily be achieved relatively cheaply through signalling enhancements.

  If the selected investment horizon is, for example, the next 30 mtpa of capacity (assuming this doesn't require triplification of the Goonyella mainline), then the AT2 value will be low, and will encourage operators to place a low value on capacity. However, if the selected investment horizon is the next 60 mtpa of capacity (assuming this does require triplification), then the AT2 value will be very high, potentially eliminating the need for the AT3 and AT4 tariff components (as the combination of AT1 and AT2 revenue would be sufficient to recover all of QRNN's Goonyella system costs). Alternatively, this may also require some cap on AT2 in order to retain an AT3 component and preserve the distance taper.

  In this situation, it is important that AT2 is not set at a low level, given the very large investment that will be brought forward if operators use capacity inefficiently. However, given that triplification is still some way off, stakeholders may not be comfortable with QRNN increasing AT2 to the point where AT3 and AT4 are eliminated.

- *Identification of planned investments:* QRNN's stage-gating investment process[1] means that future investments are initially only scoped at a concept level, and the rigour associated with the scoping and costing of projects is systematically increased as the confidence around the demand for the project increases. Therefore, while QRNN is able to identify the general investment path required to enhance capacity in each system, most of the future investments have been scoped only at a concept level. This means that in assessing the future investment path, for all but the initial few investments, the scope of investments, amount of capacity created and cost can only be identified with a low level of precision.

  In order to increase the robustness of the estimates, it may be useful to use a combination of recent investments – where the scope, capacity impact and cost are known, with the estimated future investment path. This would have the following benefits:
  - it would increase the rigour of the assessment, by having robust information on a larger proportion of investments;
  - the capacity signal would reflect the costs of recently installed capacity as well as the expected future capacity increases; and
  - the inclusion of recently completed capacity projects along with foreseeable capital expenditure may also avoid volatility in AT2 associated with variable returns to scale associated with discrete expansions (that is the average cost per path may materially differ from one expansion to the next)

- *Electrification costs incurred in capacity expansions:* For the purpose of this assessment, it is important that the cost of providing new paths takes account of the full costs that will be incurred to create the increased capacity. While the additional capacity cost is intended to reflect the cost of an incremental path, regardless of traction type, the cost estimate of capacity enhancements will need to include costs incurred on both the track and electric systems to create these additional paths. For example, on an electrified system, regardless of whether the incremental train services are electric or diesel, new mainline track needs to be electrified in order to achieve the capacity increases anticipated.

[1] QR National's project approvals framework has 'approval gates' that projects must pass through prior to proceeding to the next stage (eg. concept, pre-feasibility, feasibility).

Past valuations of AT2 have adopted this approach – the forecast costs of the track duplications used in the original AT2 valuation included the costs of electrifying the new track sections. However, the costs of installing the overhead may not be the only electric costs incurred for increases in system capacity. It is important that the incremental capacity charge takes account of all costs (including any electric infrastructure costs) associated with expanding the path capacity of the system.

Given the discussion above, it is important to recognise that the determination of the AT2 tariff component is not a precise calculation. There is significant uncertainty around the scope of investments, the capacity that they will create and their cost. Further, the choice of the investment horizon can have a significant impact on the resulting estimate of incremental capacity cost. As a result, it is necessary to use this information to form a judgement on a reasonable level for AT2, given its purpose in signalling to operators and end users about efficient use of rail network capacity.

Having said this, QRNN does believe that a reassessment of the AT2 tariff components to reflect the current incremental cost of capacity should result in a significant increase in the level of the Blackwater AT2, potentially increasing from the current $1,970.11 per path to around $4,000-$5,000 per path[2]. QRNN will provide a specific AT2 cost proposal, as well detailed supporting analysis, at the time that it submits a draft access undertaking addressing this issue. In the meantime, we welcome feedback from stakeholders on these valuation issues.

Relationship of AT2 with other tariff components

As previously noted, the current reference tariff setting methodology is to, first, identify the causative components of the tariff (AT1 and AT2) and to then use AT3 and AT4 to allocate any remaining revenue requirement. As such, an increase in AT2 (as foreshadowed above) will not increase QRNN's overall level of allowable revenue, but rather will directly be offset by a reduction in AT3 and/or AT4. AT5 is currently set to recover all electric costs.

However, as discussed above, creating new capacity (whether for electric or diesel services), will typically require expenditure on both the track and electric systems. The AT2 tariff component will therefore reflect all of these costs. However, the current tariff setting methodology ignores these costs drivers in the establishment of AT5. It is incongruous that, while the AT2 charge recognises that some electric investment is necessary regardless of traction type, the AT5 charge then limits the recovery of this investment to only electric services.

One change that will assist in addressing this issue is to offset AT2 revenue against both the track and electric components of the tariff. The amount of revenue that is offset against the AT5 tariff component should reflect the extent that the valuation of AT2 is driven by costs that will be incurred on the electric system. That is, if approximately 25% of the incremental cost of capacity relates to electric costs, then 25% of the AT2 revenue should be offset against the costs required to be recovered in the electric tariff (rather than being offset against AT3/4 as is currently the case).

Capacity multiplier

An important aspect of the debate around diesel trains on the system is the capacity implications associated with their different performance characteristics. The capacity multiplier is a factor applied to AT2 where a train departs from the standard section run times of the system. The capacity multiplier is not specific to diesel trains – it will similarly apply to all trains that depart from the standard section run times for the system – however, in the context of the current mix of trains on the central Queensland coal region, it is typically applied to diesel trains operating in the electrified systems, as this is where different train performance characteristics occur.

Because the amount of the capacity multiplier varies depending on the performance characteristics of the particular train, it is not appropriate for the Access Undertaking to specify an actual amount for the multiplier. Rather, the Access Undertaking can identify the methodology that will be used to calculate the multiplier based on the specific performance characteristics of the proposed train. The methodology currently specified in the Access Undertaking is to base the multiplier on the ratio of:

[2] Based on amortisation over 35 years of the Blackwater duplications at the approved WACC and the incremental contracted coal carrying train paths and calculated using the approach outlined on page 10 of Working Paper 3 – Incremental Cost of Capacity. Available at http://www.qca.org.au/www/rail/working%20papers.zip

- The maximum number of reference trains that can use the system at full utilisation; and
- The maximum number of the proposed train services that can use the system at full utilisation.

QRNN notes that this approach does not necessarily reflect the precise impact of the different train services. This approach reflects a simplification of the impacts of the different train types, which was adopted by the QCA in its 2001 arbitration guideline on the matter, in order to provide a transparent and readily calculated multiplier. As noted, above AT2 is imprecise and seeking to precisely identify the path multiplier for a given train service to be applied to that AT2 would not appear to yield greater utility or materially improve the efficiency.

In practice, there are two factors that influence the consumption of capacity by a proposed train that differs from the reference train. These are:

- The direct impact: The choice of train type is directly related to the ability of the train to traverse the network at speed equivalent to the reference train. Speed in terms of section run times, and the time taken to start and stop directly impacts the number of train paths that can be achieved; and
- The indirect impact: Where there are multiple train types of differing performance operating on the network, the interaction of these trains will cause loss of capacity. The effect of this interaction is proportional to:
  - The relative numbers of each type of train;
  - The number of train services required for each train type; and
  - Their origins and destinations.

The approach used in the Access Undertaking only considers the direct impact on capacity of each train type. This means that the additional capacity costs associated with the interaction of trains with different section run times are not charged to the train that is departing from the standard run times. As QRNN has identified in previous submissions, where a system is limited to the one traction type, the cycle time of that system will reflect the fundamental operational efficiency of that traction type. However, as the rate of hybrid operations increases, the tendency is for the operating principles to cater to the average mainline running time of the slower traction type. QRNN's simulation analysis of electric and diesel trains on the Blackwater system shows that the electric consist can continue to achieve its faster running times where the penetration of the slower diesel consists is less than 20%. However, beyond this, the performance of the faster train quickly degenerates to be equivalent to the slower consist.

The QCA chose to exclude these indirect costs from the capacity multiplier, both because of the complexity of assessing the impact, and because of a concern that this may reduce the ability of new operators to enter the market. As such, the QCA adopted the approach that the system as a whole should bear these conflict costs. Taking into account these inherent interface losses would also require the variable path multiplier which reflected the dynamic capacity implications of various hybrid ratios.

While QRNN recognises that including indirect costs in the capacity multiplier would be complex, QRNN is concerned that, by excluding these indirect costs, the most significant capacity impact of the different train type is in fact being ignored. As a result, QRNN's ability to rely on the multiplier to provide a signal to users on the full capacity related costs of operating diesel train services is significantly diminished.

The arbitration guideline is based on mainline running. As such it does not take into account one of the key cycle time differentials between the two traction modes: provisioning. The exclusion of rail infrastructure costs associated with provisioning activities within the common user charges means the pricing structure does not include any price signal for the cost implications of provisioning time differences. QRNN notes there has been a shift to above rail ownership of provisioning facilities (Nebo and Jilalan). However without a time based charge for provisioning activities on QRNN managed infrastructure, there is no effective price signal to reflect the track investment necessary to support differential provisioning times.

Conclusions

While QRNN welcomes a review of AT2 and the capacity multiplier to provide a more cost reflective tariff, it is essential to recognise that the approach that will be adopted for these issues necessarily will reflect a simplification of the real impact of non-standard trains. Any attempt to create an AT2 tariff component and a multiplier that accurately reflects the costs imposed by a different train type will be complex and will result in a highly uncertain cost impact, as the costs associated with the different train types will vary depending on a multitude of factors.

However, while simplification of these matters is necessary to create a transparent and predictable cost impact for operators of different train types, the corollary of this is that such simplifications reduce the extent to which QRNN can rely on these tariff components to accurately signal the full cost impact.

It is also critical to recognise that, even if the AT2 tariff component and multiplier could perfectly signal the capacity cost of different train types, this will not necessarily address the issue of cost recovery for electric infrastructure. The AT5 tariff component is the mechanism to recover the cost of electrification assets such as overhead power lines. In essence, while a revised AT2 and multiplier may better reflect the cost impact of diesel trains on track capacity, it does not help achieve cost recovery of electrification assets in the event that operators choose diesel. Therefore, the reform of AT2 and multiplier, while worthwhile in terms of an efficient capacity consumption price signal, is not sufficient to address the fundamental revenue adequacy issue for electrification assets.

Reduction of AT5

The Queensland Resources Council (QRC) has proposed a solution which involves, in the first instance, QRNN voluntarily reducing AT5 to a level that is supported by demand. Such a price reduction would presumably be achieved via deferred depreciation or loss capitalisation. If this is inadequate to address the issue, QRC proposes that the QCA should actively consider optimisation.

A reduction in the AT5 tariff to a level that is more competitive with diesel can be expected to promote take up of electric train services. However, it is uncertain how effective a discounted AT5 tariff will be in incentivising increased utilisation of electric traction, in the absence of other changes in the Access Undertaking to address the risks around future levels of AT5. Further, on its own, this change will not resolve the problem. Given the possibility of bypassing the electric infrastructure and opting for diesel remains, the possibility of under-recovery of electrification costs remains. That is, to the extent that utilisation does not immediately and completely respond to this price signal, such a price reduction mechanism will result in an under-recovery of revenue. While this can be treated as a deferral of revenue (eg through deferral of depreciation or "capitalisation" of the unrecovered revenue), from QRNN's perspective, this is only appropriate where there is a strong expectation that the revenue will be recovered in the future with certainty about the timing of that recovery.

A number of stakeholders have cited as precedent QRNN's actions (then part of Queensland Rail) in 2006, where it deferred depreciation on its electric overhead assets in order to reduce the level of AT5 to ensure its competitiveness with diesel services. However, the risks associated with QRNN's deferral of revenue in 2006 are vastly different to those that would apply now:

- in 2006, the Blackwater electric assets were close to being fully depreciated in the RAB. While the assets have substantial physical lives remaining, they will be completely written down in the RAB by 2015. This means that, at the end of UT2, there was only five further years of asset recovery remaining through the reference tariffs;
- in 2006, a major reason for the decline in electric utilisation was the then sole operator's rollingstock upgrade program, where electric locomotives were being withdrawn from the system in order to be fully refurbished and returned at a later date. Therefore, QRNN had a strong expectation that utilisation would increase in the future as electric locomotives were returned to service; and
- in 2006, given the rapidly reducing asset value and reasonable expectation of future increase in electric utilisation, QRNN anticipated that continuation of steady state pricing would be sufficient to allow recovery of all costs within a reasonable period.

In the present case, the new electric assets have only just been commissioned. Therefore, the value of these assets is much higher and they have their entire lives remaining. The risks associated with deferring depreciation is therefore much higher in this case:

- the amount of revenue at risk is much higher than was the case in 2006;
- the required outcome is completely different – in order for the benefits of the investment to be realised, it is essential for utilisation of the electric network to increase so that electric services are operated on most feasible electric paths. This will not be achieved through a continuation of planned rollingstock allocation processes by the existing operator (as was the case in 2006). Rather, it requires that in the highly competitive process of tendering for contestable tonnages in the Blackwater system, end customers and operators choose to utilise electric locomotives for their services;

- if QRNN were to substantially reduce AT5 by deferring revenue now, QRNN expects that it would need to rely on subsequent increases in price to achieve full cost recovery. While future growth in electric volumes may be used to recover the deferred revenue, given the extent of potential revenue deferral, QRNN is not confident that this can be recovered through future volume growth alone;
- this approach also raises issues of inter-generational equity in the sense that it provides a benefit to current users (who are the ones who endorsed the investment in additional electric capacity and are receiving a benefit from this investment) at the expense of future users who will need to pay for the recovery of this investment; and
- as a result, there is now a much higher risk that the deferred income will never be recoverable within the existing pricing framework – that is, that the deferred revenue will be reflected as a stranded investment.

Perhaps most importantly, QRNN was part of a government owned business in 2006 and its shareholder was prepared to accept the risk of deferred depreciation. However, as a publicly listed company, QRNN is no longer in a position to take this risk on a regulated asset, particularly given the matters identified above that highlight the significance of this risk. QRNN's shareholders have not been compensated for asset stranding risk, and thus cannot reasonably be expected to now take such a risk without any certainty about the timing or likelihood of cost recovery. Prospective user-funders of below-rail capacity expansions can similarly not be expected to take such a risk. For it to be proposed that funders of below-rail infrastructure take patronage risk where returns are limited to the regulated WACC would, of course, be a substantial disincentive to any further investment in the network.

The circumstance where regulators have deferred asset recovery to future regulatory periods has predominantly occurred in the public owned bulk water sector businesses. As water is deemed an essential service and dams provide other public benefits such as flood mitigation and parks and recreation, it is prudent for the state to assume the risk of future demand and the consequential impacts on asset recovery. The circumstances of a privately owned railway differ materially from the provision of a community service obligation and QRNN does not consider these precedents are applicable to the current electric pricing issue.

The QRC's approach to dealing with this risk around future recovery is to suggest that, in these circumstances, the QCA optimise the electric assets. As discussed in more detail later in this submission, QRNN does not consider that optimisation of the electrification assets due to a decision by customers to bypass the electric system is permitted under clause 1.4, and nor should this be considered an easy or costless solution to this problem. Moreover, it is an option that has been explicitly ruled out by the QCA in its Draft Decision. In any case, QRNN is not prepared to accept this issue being "resolved" simply through QRNN writing off its investment in these assets, and is concerned that the major investment implications of asset write-offs in regulated Queensland infrastructure (including, user-funded infrastructure) is not being adequately taken into account by stakeholders.

As a result, QRNN is unwilling to reduce the level of the AT5 tariff component and defer revenue, when the likelihood of recovering that revenue in the future is highly uncertain.

Reduction of AT5 combined with lump sum cost recovery mechanism (Sapere)

A key issue for QRNN in considering a reduction of AT5 through deferring revenue by some mechanism is to ensure that this investment will be recovered within a reasonable timeframe. As such, while QRNN may be willing to consider different depreciation profiles or deferral of revenue (as was the case in 2006), it must be confident that it can recover the deferred revenue within a reasonable timeframe. In other words, any deferral mechanism must also establish clarity up front about how long revenue recovery may be deferred and what is the pricing structure that will achieve this. Without this, the revenue adequacy problem remains.

This leads to another option of a reduction in AT5 combined with a cost recovery mechanism to ensure revenue adequacy is achieved.

QRNN's September 2012 submission included an expert report by Sapere which proposed an alternative pricing approach for electric infrastructure which seeks to achieve the objectives of revenue adequacy and efficiency while at the same time addressing the objections raised against the original DAAU. We refer stakeholders to the Sapere report for a more detailed evaluation of this option.

The proposed Sapere approach is to combine a modest AT5 to be applied to the Blackwater system with the remaining part of QRNN's recent Blackwater electrification investment to be recovered from Blackwater mines through a lump sum electric traction availability charge that would be payable whether or not that mine uses electric locomotives. This charge could be characterised as an electric traction availability charge to reflect the true nature of the benefit received by the mines. This contribution could be converted to an annuity.

This pricing approach would allow for efficient price signalling by having in place a price for electric traction that would be sufficiently competitive with diesel so as to promote take up of electrics (and hence utilisation of sunk investment), while at the same time ensuring that full cost recovery is achieved.

Sapere identified that a number of issues need to be determined to implement this approach, including:

- establishing the appropriate level of AT5 – there are a range of options for benchmarking AT5. These include:
  1. the AT5 that prevailed before the post-2009 investment;
  2. the current Goonyella AT5
  3. the AT5 that would be calculated post-2009 if the maximum feasible utilisation of electric traction occurred;
  4. AT5 set to make train operators completely indifferent between choice of diesel or electric traction if no locomotive investments are yet sunk; or
  5. AT5 set at long-run marginal cost of the Blackwater electric infrastructure system.

  While there are pros and cons for each option, Sapere consider that option 3 may be the best choice in terms of meeting the objectives of being cost reflective, avoiding previous QCA objections and being practically feasible to calculate.
- the basis for calculating the lump sum charge (electric traction availability charge) – this could be a pure lump sum or an adjustable lump sum;
- how to allocate the lump sum among mines – Sapere identified a number of options for this, including on the basis of mine output for a reference year, the mine's number of eligible votes in the pre-approval process, haul distance or reflecting ntk for the reference year based on a mine's output and haul distance.

QRNN notes that any tariff arrangement developed based on this approach will be complex, particularly if the lump sum charge is adjusted over time to reflect actual electric usage. However, to the extent that the QCA considers that creating effective traction choice is a critical component of the solution, then this approach will be the most efficient (i.e. least distortionary) approach to ensuring that the fixed costs of the electrification infrastructure are recovered.

In the event that a cost recovery mechanism such as this were adopted so that QRNN had confidence that it would fully recover the costs of its electric investments, QRNN would be prepared to consider deferral of revenue for a period of time (as occurred in 2006) to provide an opportunity to assess the effectiveness of the reduced AT5 in providing a signal for operators and customers to utilise electric traction.

QRNN proposes that these matters be discussed and developed further as part of the electric traction workshop forum. As part of such discussions, QRNN will be happy to provide tariff estimates for different proposals, in order to assist stakeholders in understanding the full implications of alternative proposals.

2.3 Commercial strategies to reduce stranding risk

As discussed above, QRNN's preferred approach to address this issue is to establish positive incentives which will promote the use of electric traction on the network. This reflects our view that maximising the utilisation of electric traction will benefit the supply chain by creating the lowest total rail system cost. This was essentially the approach adopted in the DAAU. If this approach is not supported by the QCA, an alternative mechanism to achieve cost recovery and to address QRNN's asset stranding risk is to rely on price signals, in conjunction with a mechanism to ensure revenue adequacy (as outlined in section 2.2 above).

However, should stakeholders not support either of these approaches, QRNN notes that the current Access Undertaking includes mechanisms that allow us to manage this risk in order to avoid asset stranding. These mechanisms include: price discrimination between electric and diesel services on the basis that electric services have a lower capacity to contribute to common costs; and/or preferential capacity allocation to electric services on

the basis that this is more commercially advantageous to QRNN. While these mechanisms do provide another alternative approach, QRNN considers that this is not the ideal way to address this issue.

3. Response to QCA questions

3.1 Traction choice

The QCA has sought further comments on its position in the Draft Decision that QRNN should charge a price that reflects the efficient costs of providing access to electric infrastructure, allowing the relative efficiency of traction choice to be determined in the competitive above-rail market.[3]

QRNN considers that it is highly unlikely that the current pricing methodology for electric infrastructure will send efficient price signals given the highly interconnected nature of supply chains and the market failures evident in the above and below rail markets. Current price signals are therefore unlikely to promote efficient traction choice outcomes. Even if the AT5 charge is adjusted to no longer reflect an average price (a reform which QRNN supports), the fact that bypass remains an option means that the consequences of these market failures may still manifest, even under a more efficient pricing structure. This would be reflected in an inability by QRNN to recover the cost of its electric assets. Therefore, as discussed above, while QRNN supports reform to the structure of AT5 to promote efficient traction choice, this must be in conjunction with complementary measures which enable full cost recovery to be achieved.

As noted by NERA,[4] the economic characteristics of the supply chain which preclude efficient outcomes being achieved under the current AT5 include:

- *Economies of scale* – such that the efficiency of either traction technology is likely to be significantly enhanced if it has widespread adoption;
- *Incentives for strategic conduct* – by mine and train operators in order to secure financial advantage over rivals;
- *Bypass risk* – which would see the AT5 rise as electric traction usage falls;
- *Externalities* – whereby the conduct of one party imposes costs or benefits on others; and
- *Coordination failure* – between different functions in a vertically integrated supply chain, particularly in circumstances where decisions made in relation to one functional element have cost or efficiency implications for another.

In fact, the various market failures noted above in conjunction with the average pricing mechanism of AT5 (which has the effect that as demand falls, the price increases, thereby discouraging electric utilisation, the opposite of the desired effect) means that the regulated price is not truly cost reflective and does not promote efficient traction choice. This reliance on an 'efficient' price to deliver optimal market outcomes does not have adequate regard to certain critical features of a regulated rail network that make reliance on a price signalling mechanism problematic. These include strong economies of scale and density, a high degree of interdependency between above and below rail operations, the possibility of investment hold-up, network externalities and incentives for strategic conduct. There is also significant complexity in arriving at an 'efficient price', with considerable scope for error. These factors combine to create a fundamental coordination problem, with the result that price signals cannot be relied upon to deliver an efficient traction choice outcome.

Other stakeholders also acknowledged the concerns with this approach. In particular, North Queensland Bulk Ports noted that market-based pricing can result in stranding as fixed costs are applied across an ever-decreasing number of users, ultimately resulting in abandonment of that form of infrastructure.[5] Emission Capital Management also recognised that, beyond a threshold level of usage, electric traction will no longer be viable irrespective of the long term economics of the technology.[6] This illustrates the point that current pricing arrangements will not promote efficient traction outcomes for the Blackwater coal supply chain.

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[3] QCA Draft Decision, QR Network Electric Traction Services Draft Amending Access Undertaking, July 2010, p. 12

[4] NERA Economic Consulting, Economic Aspects of the QCA's Draft Decision on QRNN's DAAU, 25 September 2012. Attachment to QRNN submission to the QCA, September 2012, p.14

[5] North Queensland Bulk Ports Corporation, submission to QCA, 20 September 2012

[6] Emission Capital Management Ltd, submission to QCA, 25 September 2012

As noted in our September submission, under the pricing structure currently used for electric assets, QRNN can only achieve its revenue adequacy objective by a higher price for electric services, which in turn creates the strong incentive for users to bypass electric traction and opt for diesel. 'Letting the market decide' as suggested by the QCA will not send efficient price signals under current pricing arrangements and will ultimately tend towards a diesel solution. This is because the current price mechanisms are likely to encourage users to choose diesel traction more often than is efficient.[7] Over time, the systems will tend to shift further towards becoming diesel systems.

Section 2 of this submission discusses a number of alternative pricing arrangements designed to achieve full cost recovery in the most efficient way. Nevertheless, notwithstanding that an alternative pricing approach can be found which achieves this objective, this will not address the overall productivity issues associated with an increasing use of diesels creating an overall higher system cost – that is, it doesn't create an incentive for lowest cost operations, but rather it means that both electrics and diesels will pay more. In this regard, QRNN remains of the view that, from a TCO perspective, high utilisation of electric traction will deliver the most efficient supply chain. This was the rationale for the DAAU proposals which were designed to send price signals to promote the take up of electric traction. Given this, in our view, a commitment to electric traction remains the preferred outcome. However, we acknowledge that, if not supported by the QCA, a mechanism such as that described above (ie. efficient cost recovery of existing investments) is required.

3.2 Benefits of electrification

The QCA has noted that a significant amount of new material has been submitted in response to the Draft Decision regarding the benefits of electrification. Much of the additional material is supportive of the superior efficiency of electric traction compared to diesel on operational, commercial and environmental grounds. Key points to emerge in submissions in this regard include:

- Electric traction has the advantage of being higher performance and more environmentally friendly, involving less pollution, lower maintenance costs and lower energy costs (CSR, p. 2);
- Electric locomotives, having a higher power to weight ratio, can deliver 2.5 times the tractive power output of an equivalent diesel locomotive with less track damage. Electric units with higher speed, better acceleration, provide faster timetables and greater slot utilisation, increasing system capacity (Aurecon, p. 3);
- Lower operational cost (due to fuel saving and rollingstock maintenance expenses), with use of regenerative braking in electric trains further reducing energy demands, potentially providing savings of 5-20% (Aurecon, p. 3);
- Total energy efficiency of an electric locomotive is on average much higher than a diesel locomotive (29.0% and 19.5% respectively) (Siemens, section 3.5);
- Overall lifetime maintenance cost is from 30% to nearly 70% cheaper for an electric than for a diesel locomotive (Siemens, section 3.9);
- Electric locomotives are exceptionally flexible regarding their primary energy source (Siemens, section 3.7);
- Given differences in carbon emissions, gas emissions and noise, electric traction is more environmentally friendly (Arup, p. 28, Siemens, CRM, Aurecon, p. 24);
- Fuel supply risk gives electric traction an advantage over diesel. In the event of a continued disruption to diesel supply, an electrified supply chain would have a significant competitive advantage and is likely to be able to obtain market share from other suppliers (Aurecon, p. 32);
- Electrification of railways is well established throughout the world, including in China, Russia, Western Europe and South Africa (Aurecon, CSR, CRM). In South Africa, there is no intention to move away from electrification where demand exceeds 10mtpa (Arup, p. 21).

QRNN also welcomes the comments from a range of stakeholders that traction choice is fundamentally a question of overall system optimisation, taking into account all aspects of the railway system. This has been acknowledged in the submissions of Siemens, CRM and Toshiba. This supports QRNN's position that the TCO approach is the most appropriate basis on which the efficiency of traction choice should be assessed.

[7] NERA Economic Consulting, p. 16

QRNN remains strongly of the view that electric traction is superior to diesel traction in terms of providing the most efficient combined above and below rail service (ie. minimises TCO). Our September submission sought to address criticisms of QRNN's TCO analysis. While, as with any model, the TCO can be criticised on the grounds that its results are sensitive to changes in underlying assumptions, it is important to note that QRNN has performed extensive sensitivity testing in the model. This shows that, even across the range of likely outcomes for each element, the result that electric traction will be lower cost than diesel still holds true. This analysis is supported by independent studies undertaken in other countries (included as part of our September submission).[8]

Nevertheless, we understand that other parties will continue to question elements of this analysis and underlying assumptions. In this regard, we note that the QCA has asked stakeholders to comment on whether the new material is sufficient to support or contradict the proposition that electric is superior to diesel. Given the complexity of the issues and range of opinions expressed, QRNN is of the view that, should the QCA consider that a definitive answer to the question of superiority of electric versus diesel is required, then this issue is best addressed as part of the electric traction workshop process or an independent audit of the TCO model. This issue is unlikely to be satisfactorily resolved via an exchange of submissions in a regulatory process. Moreover, it is important that the merits of these claims and counterclaims are properly tested so that stakeholders can have confidence in any conclusions reached.

QRNN therefore reiterates its offer to industry and the QCA to conduct a review and validation of the TCO model, in particular, to provide an opportunity to run the model with their own preferred inputs. QRNN would undertake to run this model at the request of any stakeholder and provide the results to either/both the QCA and the electric traction workshop.

QRNN's response to specific issues raised by the QCA in its request for further comments is below:

Single-mine spurs

The QCA sought further comment on the implications of electrification for single-mine spurs where volumes may not be sufficient to justify the cost of installing electric infrastructure. In this context, the QCA noted that much of the new material submitted on this matter addresses the issue of mainline running.

QRNN considers that the assessment of the benefits of electrification should be done on a whole-of-system basis and, historically, this has been the case. This is also the approach supported by a number of stakeholders in submissions (noted above) which emphasised that traction choice is a question of overall system optimisation, taking into account all aspects of the railway system. As appears to be implied by the QCA and some stakeholders, the mainline and spur lines should not be considered separately in such an assessment. While it may be argued that the benefits of electrification are mostly generated in mainline running, the benefits (across the whole of a journey) must necessarily be assessed against the costs (across the whole of a journey) to determine whether there is a net benefit of electrification.

As noted in our September submission, the DAAU only applied to 'feasible electric services'. It was not the intention to give QRNN an automatic right to electrify additional parts of the network that would not be considered economically feasible to electrify. For any new investment on the mainline or a proposed spur, these investments would only occur and be included in the RAB if the investments were assessed as prudent. This may occur if there was a successful customer vote (where there are multiple mines) in accordance with the Access Undertaking process or where the QCA otherwise endorsed the prudency in scope of the investment. The DAAU would therefore not act to promote the electrification of spurs where there is no economic benefit in doing so.

Nevertheless, QRNN recognises that, in the case of long spurs, the cost of electrifying a spur may be higher than the benefits generated from the additional volume. The circumstances where this may occur were addressed in our September submission. In the event that a spur is not electrified (whether a single or multiple mine spur), customers would retain the option of running diesel trains. The capacity impact of running a diesel service on the system will be captured via AT2 and the capacity multiplier. Depending on the future pricing structure of AT5, customers on non-electrified spur lines on the Blackwater system operating diesel services may still be required to

[8] See: Britain's Transport Infrastructure: Rail Electrification, British Department of Transport (United Kingdom), July 2009; Draft Network Utilisation Strategy: Electrification Strategy, Network Rail (United Kingdom), May 2009; Chinese Ministry of Railways, Meeting Minutes, 6 September 2012; The Feasibility Study on the Development of Dedicated Freight Corridors for Delhi-Mumbai and Ludhiana-Sonnagar in India (Volume 3), Japan International Cooperation Agency, October 2007.

contribute to the cost of Blackwater electrification and to signal the incremental cost of expanding the electric system for additional diesel trains in order to ensure the service standard to existing electric users is maintained. This was discussed in section 2.

Option value

The QCA has requested further comment on the option value of having diesel and electric trains operate on a mixed network. QRNN believes there are two elements to the option value of an electrified Blackwater system. These are: (1) the network benefits to Goonyella of the Blackwater system being used for any 'buffer' diesel fleet; and (2) as a result of electrification of the Blackwater system, customers in Blackwater that presently use diesel services retain the option of using electric infrastructure in future.

Option value of diesel buffer fleet - QRNN has argued that that there are network benefits of Blackwater being an electrified system. That is, Goonyella users receive an external benefit from the electrification of Blackwater for which they currently do not pay. The key point in relation to this issue is that it is unlikely that the 100% electrification achieved in Goonyella would be sustainable, either historically or in the future, if the Blackwater system were not also electrified. This reflects a benefit to Goonyella users.

In order to maintain an efficient level of utilisation of electric locomotives, less than 100% of feasible electric train services will actually operate as electric train services across the entire electric network. Some level of underutilisation reflects an efficient use of the electric network, and is expected to occur for whatever size and capacity of electric network that is available. However, it is important to recognise that this underutilisation will not necessarily present evenly throughout the electric network. There will be a range of reasons why an operator would focus its use of diesels in a particular area. Such fleet allocation decisions will reflect the outcome that is most productively efficient for that operator.

Accordingly, one of the key benefits of the electric network for operators is that they have the flexibility to deploy their rollingstock fleet in the most commercially beneficial way. The access framework does not tie the use of specific locomotives, or types of locomotives, to particular train service entitlements or geographic areas. Therefore, once an operator has determined the appropriate mix of electric and diesel locomotives to include in their fleet, they can then choose to deploy this fleet in the most productively efficient way for their business.

The key point is that the electrification of Blackwater has historically allowed Goonyella users to benefit from being able to manage their fleet flexibly across both systems. Blackwater diesel trains in effect operate as a 'buffer' fleet which enables Goonyella to operate as a fully electric system, with consequent efficiency benefits for Goonyella users. Electrification of Blackwater has therefore provided an 'option value' to Goonyella users.

Option value of changing to electric later – another benefit received by current and future Blackwater diesel users as a result of electrification of Blackwater is the option of being able to shift to electric traction at a later date in response to changing market circumstances, for example, due to changing fuel prices or a change in the allocation of rollingstock across systems as a part of overall fleet management.

Customers/operators retain the option of bypassing the electric infrastructure by opting to run diesel trains. This possibility of bypass, in conjunction with the effects of the average pricing mechanism for AT5, means that the burden of cost recovery for the investment in electric infrastructure falls on a declining number of electric users. Despite this ability to bypass electric assets and avoid contributing to electric infrastructure cost recovery, diesel users, both current and future, retain the option of running electric train services in future in the event that economic circumstances change (eg diesel fuel prices increase or there are changes in fleet allocation decisions). Without a requirement to make a contribution to the investment in the overhead power system those parties are able to truncate their own expected return profile by only adopting electric in a state where the investment proves to be far superior to diesel. The effect of this decision is to transfer the investment risk disproportionately across other users of the network.

This possibility of changing traction choice in future was acknowledged by Pacific National in its 16 April 2012 submission when it noted that both electric and diesel technology have benefits and to lock in one type to the exclusion of others unnecessarily limits flexibility. Further, Pacific National noted that a robust model should allow

for train operators to change the mix of diesel and electric traction in response to outcomes determined within the model. [9]

This demonstrates that there is an 'option value' for these operators and customers of using electric infrastructure in future that is not priced under the current access framework.

Shorter headways and the relative costs of expansion for electric vs diesel trains

As stated in our September submission, electric traction does not itself affect headway separation. It is correct that the electric network will place restrictions on the number of loaded electric trains in a feeder section. Prior to the construction of the additional feeder stations in Blackwater, this meant that there were operational constraints on the scheduling of electric trains. However, this was not achieved through manipulation of the headway separation but rather was achieved through a constraint on the number of electric consists that QR National was permitted to operate in the system. In any event, with the new feeder stations constructed, electric capacity is no longer a constraint and there is now sufficient power supply capacity for the forecast 156 mtpa in the Blackwater system (with only some in situ upgrading of the older feeder stations).

In fact, headway separation in Blackwater is heavily influenced by ruling grades, and this is where the performance differentials of electric and diesel trains are most apparent. As a result, if diesel trains were not operating in this system, more efficient utilisation of existing capacity may be achieved. For example, if only electric trains operated in Blackwater, QRNN estimates that 19 minutes may be saved for each trip in terms of sectional run times from the two steepest sections alone, namely Westwood-Windah and Tunnel-Edungalba (these sections are the sections where the differential between electric and diesel performance is greatest as these are the steepest sections). As technology and operational information further develops, it may in fact be easier to find low cost opportunities to further reduce Blackwater system headways. For example, testing of the new feeder station capacity in Blackwater may identify options for further capacity savings.

It is also important to note that, as the system capacity expands, costs are also imposed on the electric network regardless of whether the additional trains operated are electric or diesel. For example,

- expanding mainline capacity for any train type requires new duplications/passing loops to be electrified in order to maintain operational integrity, otherwise the full benefits of the capacity enhancements will not be achieved;
- the past expansions of mainline capacity for any train types would have triggered the need to upgrade feeder station capacity, in order to manage the risk of overloading individual sections. As Blackwater mainline capacity was expanded, in the absence of feeder station upgrades, the effective electric capacity diminished in order to manage the risk of overloading. As shown in QRNN's December 2011 submission, the coal network electric utilisation rate for Blackwater declined from over 80% in 2001/02 to over 40% in 2007/08.[10]

This highlights the fact that all customers, regardless of traction choice, should pay the true incremental cost of capacity, which will include electric costs.

Superior performance as reflected in actual run times

In terms of aspects of QRNN's TCO model, in particular, assumptions about actual run times, QRNN emphasises that the TCO is a simulation intended to test what is the most efficient system, allowing comparison of the key variable of traction choice.

As QRNN noted in our December 2011 submission, where a system is limited to the one traction type, the cycle time of that system will reflect the fundamental operational efficiency of that traction type. However, as the rate of hybrid operations increases, the tendency is for the operating principles to cater to the average mainline running time of the slower traction type. This means that the mainline running time advantage of electric train consists is unlikely to actually be achievable in practice.

QRNN's simulation analysis shows that the electric consist can continue to achieve its faster running times where the penetration of the slower diesel consists is less than 20%. However, beyond this, the performance of the faster train quickly degenerates to be equivalent to the slower consist. For example, in the Blackwater system, the current layout of Callemondah means that electric trains need to queue behind diesel trains as they refuel, denying the

[9] Asciano submission, 16 April 2012, p.19 and p. 23

[10] QR Network, Submission to QCA: Electric Access Draft Amending Access Undertaking, December 2011, p. 16

electric trains the advantage of reduced provisioning time. Given that, until recently, the Blackwater system has been operating with approximately 50% diesel consists, the comments by stakeholders that they cannot observe higher performance from the electric trains is not surprising to QRNN. This outcome reflects the inefficiency associated with a hybrid system.

Longer cycle times

A contentious issue in terms of assumptions about cycle time differences between electric and diesel made in the TCO analysis is the differences in provisioning time. In particular, some stakeholders questioned whether diesel provisioning should be included in the TCO analysis as it was argued that this occurs off-network. QRNN notes the following points in response:

- this is incorrect, as diesel provisioning currently occurs on QRNN track in Callemondah;
- notwithstanding, this shows a misunderstanding of the TCO analysis, the purpose of which is to assess the total cost of the rail system under either traction mode to assess which has the potential to provide the lowest total cost. Because of the different above/below rail cost tradeoffs between diesel and electrics, it is necessary for the TCO to include above rail costs in the analysis.

In terms of the feedback from stakeholders on the actual provisioning allowance, we note that our assumption in regard to refuelling time[11] is consistent with the expectations of Rio Tinto (who agreed that a diesel hauled train will nominally require and additional 60-120 minutes for provisioning compared to electric). We also note that Asciano did not take issue with this assumed provisioning time.

QRNN acknowledges that it is likely to be possible to achieve shorter refuelling times. However, to do so will require additional investment in provisioning facilities to achieve consistently fast refuelling (this investment would also need to be reflected in the TCO analysis).

In any case, the results of sensitivity testing show that, even if diesel cycle times are reduced to be equal to electric, the TCO outcome still favours electric traction.

3.3 Objects clause

The objective of the third party access regime under the QCA Act is:[12]

> .... to promote the economically efficient operation of, use of and investment in, significant infrastructure by which services are provided, with the effect of promoting effective competition in upstream and downstream markets.

QRNN would like to restate its strong view that the correct interpretation of the objective of the access regime is to promote efficiency from the point of view of an end user, having regard to the interrelated nature of supply chain costs. We believe this is central to the consideration of regulatory arrangements applying to the declared below rail infrastructure.

As noted in our September submission, we believe that the QCA has adopted an inappropriately narrow interpretation of the objective of the access regime in its Draft Decision. The QCA has interpreted this objective as seeking to optimise the efficiency of the declared below-rail infrastructure in isolation from other elements of the supply chain. Further, the QCA has equated efficiency of below rail with what is 'least cost'.[13] This approach does not take into account the highly inter-related nature of costs in a supply chain and, therefore, the fact that decisions taken by one element of the supply chain can have an impact on others. In particular, it does not recognise that what is 'least cost' from a below rail perspective may in fact result in higher supply chain costs overall, with the result that end users are worse off and Queensland coal supply chains are less competitive. As noted by NERA:[14]

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[11] QRNN assumed that, on average, diesel trains in the Blackwater system will require an additional 1.3 hours for provisioning.

[12] QCA Act, s. 69E

[13] QCA Draft Decision, p. 27

[14] NERA Economic Consulting, Economic Aspects of the QCA's Decision on QRNN's DAAU, p. 7

From an economic perspective, the QCA's interpretation of its task involves two related missteps. First, the QCA has adopted an overly narrow interpretation of efficiency, by limiting the concept to cost minimisation. Second, the QCA has applied its cost minimisation principle to just one functional element of the supply chain.

There are several dimensions to the concept of efficiency which we believe the QCA should take into account in the context of the access objective:

- *productive efficiency* – the least cost combination of inputs to produce a given output;
- *allocative efficiency* – resources are allocated to their most productive use from an economy-wide perspective, maximising overall economic welfare;
- *dynamic efficiency* – achieving productive and allocative efficiency over the longer term, and is related to incentives for innovation and longer term technological change;
- *transactional efficiency* - minimising transaction costs (including information costs) and reduce exposure to opportunistic behaviour or 'hold ups'.[15]

In the context of the coal supply chain, this suggests that a proposal that is least cost (or productively efficient) for one part of the supply chain (eg below rail) but which imposes higher costs or inefficiencies on other parts of the supply chain and which increases the cost to end users, is unlikely to satisfy the other elements of efficiency. Consequently, such a proposal is unlikely to be consistent with the overall objective of promoting efficient operation, use of and investment in the declared service. It is also likely to have an adverse impact on overall economic welfare.

3.4 Competition in locomotive supply market

In light of a number of submissions which indicated that the market for locomotive supply is in fact a competitive global market with multiple suppliers, the QCA has asked stakeholders for further comments on how the DAAU might affect competition in the locomotive supply market.

As set out in our September submission, the market for locomotive supply is broader and more competitive than described by the QCA in its Draft Decision. As noted by the QRNN and other submissions, there are multiple locomotive suppliers in the global market, including: Siemens; CSR; CNR; JSC Transmash; URAL Locomotives; Bombadier; Alstom; Toshiba; Hitachi Rail; and ABB Group. There is also the ability to adapt locomotives to different gauges or electric voltage of the power supply system as the underlying design and technology is very similar, requiring relatively straightforward 'adaptive engineering' to meet a particular design brief.

Given the extent of competition in this market and its global scale, it is highly unlikely that the DAAU, by changing the pricing relativities between electric and diesel traction in the Blackwater system, would have any impact on competition in the market for locomotives. In other words, the price of electric locomotives will not be driven by the Central Queensland market.

Importantly, the fact that Siemens has been the only successful tenderer for supply of electric locomotives in Central Queensland in recent years does not mean that it has market power. Purchasers of locomotives have the option of sourcing this product from multiple suppliers. There are no barriers to entry to this market other than the local regulatory requirements that apply equally to all locomotive suppliers. As noted by Siemens in its submission, it is not a monopoly supplier in this market.[16] Having entered the market in early 2000s in response to a tender it has since invested to increase its service and efficiency. Further, Siemens points out that the majority of achievements in technology for both diesel and electric are based on global market incentives, so that it is primarily rivalry on a global scale that has driven continuous improvement in innovation in locomotive technology. Given this, QRNN notes that, to the extent Siemens continues to offer a competitive product and is able to maintain its market share over time, this in fact reflects a benefit to the Central Queensland coal region from a competitive locomotive supply market via global tenders of locomotive supply.

[15] See: Re Fortescue Metals Group [2010] ACompT 2 at [802]

[16] Siemens submission, section 1

3.5 Competition in haulage market

In its Draft Decision the QCA identified Blackwater and Goonyella as separate rail haulage markets, and formed the view that the DAAU would adversely affect competition in those markets. QRNN disagrees with the QCA's view in regard to both the definition of the market and the likely impact of the DAAU on competition in that market. QRNN considers that the haulage market is broader than the system-based definition adopted by the QCA. Further, we do not consider that the DAAU would have an adverse impact on competition in this market.

Definition of haulage market

QRNN considers that there is a strong basis for adopting a broader definition of haulage markets.

Markets are typically defined in terms of several dimensions: product, functional, geographic, and time. As noted by the National Competition Council (NCC), a definition of a market adopted by the Trade Practices Tribunal (predecessor to the Australian Competition Tribunal) that has been subsequently accepted is:[17]

> ... the area of close competition between firms or, putting it a little differently, the field of rivalry between them (if there is no close competition there is of course a monopolistic market). Within the bounds of a market there is substitution — substitution between one product and another, and between one source of supply and another, in response to changing prices. So a market is the field of actual and potential transactions between buyers and sellers amongst whom there can be strong substitution, at least in the long run, if given a sufficient price incentive. ... Whether such substitution is feasible or likely depends [on a number of factors] ... in determining the outer boundaries of the market we ask a quite simple but fundamental question: If the firm were to 'give less and charge more' would there be, to put the matter colloquially, much of a reaction?

In essence, this indicates that the boundaries of a market are set by determining the limits of substitution possibilities, including in the long run. This includes consideration of both demand-side and supply-side substitution.

In seeking to define the above rail market, the QCA appears to have relied on the fact of particular mine-port combinations in below rail access contracts (or port access contracts) to set the boundaries of this market. However, this factor does not define the limits of the above rail market.

In its Draft Decision, the QCA appears to have focussed on the demand-side of the market for rail infrastructure, concluding that the scope of the market is limited to the respective supply chains on the basis that end users in either Blackwater or Goonyella would not switch to shipping coal through the other rail system given they are usually tied to existing mine-port combinations. Nevertheless, the QCA noted that some cross-system traffic does exist, being driven by the port at which a mine is able to obtain capacity, rather than the port with the shorter haul distance and lower cost. Further, the QCA acknowledged that a mine could shift to using other rail systems in the long run.[18] With the planned development of new coal terminals in Queensland (including at Abbot Point, Dudgeon Point, Wiggins Island and Balaclava Island), the scope for greater cross system traffic in CQCN will only increase in future as mines seek to lock in scarce port capacity, even at longer haul distances, where the economics of coal production support this.[19] QRNN considers that the existence of some degree of demand-side substitution, including over a longer term, indicates that a broader market definition is justified.

However, more importantly, the QCA does not appear to have differentiated between the rail infrastructure market, where demand-side substitution options are limited, and the rail haulage market, where substitution options are much more apparent.

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[17] National Competition Council, Declaration of Services, A Guide to Declaration under Part IIIA of the Trade Practices Act 1974 (Cth), Version 3, August 2009, p. 28

[18] QCA Draft Decision, p. 33-34

[19] The ACCC's decision on the likely competition impacts of Brookfield's proposed acquisition of the Abbot Point Coal Terminal in 2011 supports the view that supply chains do not form distinct and separate markets in CQCN. The ACCC concluded that any ability to exercise monopoly power would be constrained over the longer term by the likely future presence of competing coal terminals. While this assessment was in the context of the market for coal terminals, it highlights the fact that, increasingly, supply chains in CQCN are interconnected, with substitution possibilities existing across supply chains (ACCC, Brookfield Infrastructure Group – proposed acquisition of Abbot Point Coal Terminal, Reference 44723, 8 March 2011. Available at: http://www.accc.gov.au/content/index.phtml/itemId/976840/fromItemId/751043 [Accessed 25 October 2012]

From the demand-side, the scope for substitution of locomotives between systems is facilitated by the development of alternate forms of access which provide the ability for mines to separate their capacity rights from haulage rights, giving a greater degree of control over access rights and the flexibility to appoint and substitute train operators over the course of an access agreement. Where a customer has a number of mines across more than one system, this contracting arrangement would facilitate operator flexibility across systems as a customer manages its portfolio of capacity rights. This alternative contracting structure has been developed in response to strong demand from industry and the QCA. This enhanced flexibility in management of haulage rights again supports a broader definition of the haulage market than the system-based view adopted by the QCA.

In addition, the supply-side of the market is also relevant in defining the market. That is, the scope for a train operator to switch locomotives between Goonyella and Blackwater (and indeed other) rail systems in response to market changes is also a relevant consideration in defining the market. In this regard, as noted in QRNN's September submission, there is considerable evidence that haulage markets are broader than stated by the QCA given the scope for substitution across systems:

- train operators have a mobile fleet and rollingstock standards are increasingly consistent across the entire CQCN, allowing operators over time to reallocate locomotives and rollingstock as required to meet customer needs and changing market demands;
- the network is increasingly interconnected, with the development of GAPE and the Surat Basin Railway, providing a physically interconnected network spanning Surat Basin, Moura, Blackwater, Goonyella and Newlands;
- below rail access agreements do not define train service entitlements in such a way as to link specific locomotives or traction type to the train service entitlement;
- train operators will have a portfolio of haulage contracts covering a number of mines in different locations (including across systems). Over time, train operators have the ability to deploy their fleet across their portfolio of haulage contracts that may span several systems.

In addition, QRNN understands that train operators consider fleet deployment on a broader basis than just system by system. In a business planning context, for example when making decisions to buy new locomotives, train operators will have regard to the optimal deployment of existing fleet and new locomotives. In the case of QRN, this is evidenced by the existence of a Rollingstock Master Plan (RSMP) which sets out the planning framework for the purchase and deployment of locomotives. This tends to be driven by either a planned replacement strategy or a growth strategy – that is, in response to new demand or replacement of old locomotives. Our understanding is that there is a significant degree of shifting of locomotives between systems over time. This reflects a fleet-wide rollingstock management approach, indicating that, from a supply-side perspective, haulage should be regarded as broader than a system-based market.

The submission from Lend Lease also recognised the scope for cross-system operation as it noted that the incentive to adopt diesel traction in Goonyella will increase due to the ability to operate flexibly across APCT, DBCT and HPCT.

All of the above evidence indicates that a train operator manages the supply and deployment of its locomotive fleet on a broader basis than simply system-by-system. This reflects the fact that it is possible to shift supply of locomotives between systems over time in response to market circumstances, supporting a broader market definition.

Impact on competition in haulage market

In any event, QRNN considers that the actual impact of the DAAU on competition has been misunderstood. In particular, there has been undue emphasis on the short term impact on a particular competitor, and not on competition itself. In QRNN's view, the proposal in the DAAU would not have an adverse impact on competition for the following reasons:

- the proposals apply equally to all operators;

- competition for new haulage contacts would be unaffected. This is the point at which competition actually occurs in the market. Train operators' ability to compete vigorously for new contracts would not be adversely affected;
- train operators typically have the ability to pass through access charges to mine customers under haulage contracts. This means that a change in reference tariffs for existing haulage contracts is unlikely to result in an erosion of Pacific National's profitability;
- train operators have the ability to redeploy locomotives elsewhere in CQCN. In particular, diesel locomotives may be deployed across the entire network;
- there are significant growth opportunities in the market for coal haulage at present given new mine and coal terminal developments, giving ample opportunities for operators to compete for new tonnages;
- even in the event that changes to price signals promoted electric traction to the point where operators only offered customers electric traction, this still would not lessen the extent of competition in the haulage market. Operators would continue to compete vigorously for new contracts. Effective competition will continue to occur even in the absence of competition on the basis of traction choice. This is evidenced by the strong competition for new haulage contracts that exists in other systems which don't operate on the basis of mixed traction, for example, Goonyella and Newlands.

These factors indicate that competition in the haulage market (however defined) is in fact unlikely to be adversely affected by the DAAU proposals. To the extent that individual market participants are adversely affected by the proposals in the DAAU to promote electric traction in Blackwater, this is best dealt with through transitional measures rather than perpetuating a flawed pricing structure for electric infrastructure.

In summary, QRNN considers that:

- the market for electric locomotive haulage is defined by the scope of the electrified network – that is, Goonyella and Blackwater combined;
- the market for diesel locomotive haulage is the entire CQCN; and
- the DAAU proposals would not in fact have an adverse impact on competition in these haulage markets. To the extent that individual market participants are adversely affected, this is best dealt with by transitional measures.

3.6 Strategic conduct

The QCA has requested further comments on whether strategic behaviour is likely to occur when new electric capacity becomes available in Blackwater. The QCA further asks if the DAAU itself could be considered on the same basis in terms of having an adverse impact on competition, and whether this would be resolved if AT5 was no longer based on average cost.

The key point QRNN wishes to make on this question of strategic conduct is that it is important that the QCA recognise that parties other than QRNN have incentives to engage in strategic conduct. In its Draft Decision, the QCA had focussed solely on QRNN's incentives, but not that of other parties. The average pricing mechanism for AT5 provides a means of raising rivals' costs. As noted above, the incentives to engage in this type of conduct are enhanced now, not necessarily because there is more capacity but because the investment in below rail electrification assets is now sunk and relies on increased utilisation to be able to recover this investment. As a result, the risk of strategic conduct is higher now.

QRNN believes that the average cost structure of AT5 provides a mechanism by which strategic conduct can occur. Therefore, changes to the structure of AT5 so that traction choice by one operator/customer will no longer affect the access charges paid by others is an important part of the solution to this issue. However, as discussed above, it is unlikely to be the entire answer as it may not be sufficient to achieve full cost recovery given the possibility of bypass.

In response to the QCA's question as to whether the DAAU could be regarded as an example of strategic conduct by QRNN seeking to increase the price for diesel services, it is important to recognise the difference between QRNN submitting a regulatory proposal in a public, transparent process in relation to a longstanding concern on price structure, compared to parties making operational decisions to take advantage of anomalies in the regulatory

framework. Further, QRNN would like to emphasise that, at the time of submitting the DAAU, QRNN considered it likely that all operators could meet the utilisation requirement given a whole-of-system view. Nonetheless, if the DAAU is shown to have an adverse impact on an operator, then transitional arrangements are appropriate, as the purpose of the DAAU is to influence future decisions and not to penalise past ones.

3.7 Asset stranding

Tipping point

The QCA has invited further submissions on whether a 'tipping point' has been reached in terms of diesel penetration in Blackwater reaching such an extent that the price impact of this on electric services means that train operators will shift away from electric traction, despite its inherent advantages. Further, the QCA asks whether, if it has not yet been reached, at what point would stranding risk be realised.

QRNN is concerned that the implication of the QCA's question is that, if it can be determined that a tipping point is not imminent, it may be acceptable to defer action. For the reasons outlined below, QRNN strongly disagrees with this view. Asset stranding risk for Blackwater electrification assets will increase the longer the issue of inefficient price signals for traction choice remains unresolved, as will the probability of promoting a diesel-only system despite the existing investment in, and inherent advantages of, electric traction. Indeed, this process whereby the AT5 charge promotes a shift away from electric traction is acknowledged by the QRC, which considered it the 'logical eventuality' of the existing price structure.[20] QRNN considers that the question of identifying when exactly this point is reached is less important than changing the underlying structural pricing problem. The costs associated with this problem will only increase the longer resolution is delayed.

Incentives embedded in the current pricing structure for electric assets means that it becomes less attractive to run an electric train the greater the take up of diesel traction. This effect has already been observed in Blackwater – with the situation having been compounded in recent years by the need to operate a substantial proportion of volume with diesel traction, while the additional feeder stations required to operate increased electric services were under construction.

The power system upgrade required to provide additional electric capacity in Blackwater has resulted in a significant increase in the total cost of providing the electric infrastructure. The challenge for the Blackwater system is to increase the use of electric traction now that the additional electric capacity is in place in order to realise efficiencies of scale.

As noted in our September submission, volume of as much as 60% of existing Blackwater tonnages is expected to be contracted over the next year. This includes a substantial volume to RG Tanna Coal Terminal where existing contracts are close to expiry, as well as WICET Stage 1 volumes to be transported via the Blackwater system.

In the event that operators commit to using diesel locomotives for a substantial proportion of this contestable tonnage, then the electric utilisation in Blackwater will quickly deteriorate. The greater the number of new diesel locomotives that are purchased for introduction into the Blackwater system, the longer it will take for alternate demand elsewhere in the market to develop to the point where there is a ready opportunity to redeploy these locomotives. A sustained period of low electric utilisation is likely to result in stranding of electric assets.

Therefore, while electric utilisation is expected to increase following completion of the feeder stations, if, following the contracting of these contestable tonnages over the next 12 months, diesel traction is again being used for more than approximately 50% of the Blackwater system tonnages, then it is likely that this tipping point will have occurred.

Given the amount of tonnages that either are or soon will be contestable for Blackwater, and the consequences for the system if operators invest in diesel locomotives to provide these services, QRNN submits that it is extremely important for the future efficiency of the Blackwater supply chain that these negotiations take place with the benefit of efficient price signals in terms of traction choice. In this sense, it is a decisive moment for the system in terms of determining future traction outcomes.

[20] QRC submission, September 2012, p. 5

Investment planning process

A range of views have been expressed by stakeholders about the intent and effectiveness of the Coal Rail Infrastructure Master Plan (CRIMP) and capex approval process in the Access Undertaking. The QCA has also asked for comment on what processes QRNN should be obliged to follow and what information it should provide to justify protection from asset stranding now and in the future.

Basis for inclusion in Access Undertaking – the 'regulatory compact'

In its September submission, QRNN set out the intention of the capex approval process and the coordination failures it was intended to address. Specifically, the regulatory customer vote and approval mechanism for capex that is included in the Access Undertaking is intended to operate as a proxy for long term contracts in the sense that it is a means to: (1) elicit customer preferences; and (2) provide the certainty necessary for QRNN to undertake investments.

Ideally, certainty for an infrastructure owner looking to invest in a significant expansion of capacity would be attained by ensuring such an investment was underwritten by long term take or pay contracts with customers. However, in an environment such as a supply chain there is significant scope for coordination failures which may prevent the use of contracts for this purpose. These coordination failures arise from a number of characteristics of supply chains, namely the existence of: multiple current and potential future users, shared infrastructure, and several service providers in the supply chain. These factors mean that, without a regulatory coordination mechanism such as the customer approval process, 'hold up' of efficient investments in below rail infrastructure may occur.

In this context, the customer approval process in the Access Undertaking provides a regulatory mechanism to overcome these coordination failures. It provides a means for customer preferences for expansion options, following their own detailed assessment of any relevant complementary or alternate supply chain expansions, to be conveyed, indicating support for the investment and, it may reasonably be inferred, an intention to utilise the infrastructure. It also provides the infrastructure owner with the certainty necessary to proceed with the investment by providing confidence that the value of the assets will be included in the regulated asset base (RAB) and the cost of this investment recovered through access charges. This is in essence the 'regulatory compact' that is at the heart of the customer approval process.

The nature of this compact has been set out by the QCA in previous decisions. The concept of a coordinated investment planning process involving consultation on a master plan which sets out proposed expansions and a customer vote on specific proposals was first recommended by the QCA in its assessment of the Dalrymple Bay Coal Terminal (DBCT) Access Undertaking. In this context, the QCA stated the following:[21]

> Given DBCT Management's concerns about the future sustainability of forecast tonnages, the Authority is prepared to undertake that, effectively, once it agrees that new capital expenditure will enter the asset base, it will not seek to optimise that investment in the future or, for that matter, the original DORC valuation by the Authority.

Further, in discussing the need for DBCT to obtain long term assurances that its investments would not be optimised and the inability to rely on up-front customer agreements for this purpose, the QCA stated that:[22]

> While the Authority recognises that such long term take or pay contracts are usual for other infrastructure industries (eg gas transmission), the Authority also understands that this would be unusual for the coal industry where this has not been the historical practice and where individual mine lives are likely to be less than this. In this context, the Authority is prepared to undertake that, once it agrees that new capital expenditure will enter the asset base, it will not seek to optimise that investment in the future.

The CRIMP and associated capex customer approval process was adopted in QRNN's 2006 Access Undertaking to address similar issues by providing a longer term planning mechanism and the ability for customers to endorse the scope of a proposed expansion. This capex approval process fed into the reference tariffs which were then reflected in commercial contracts, giving QRNN the confidence that it would recover its investment without

[21] QCA, Final Decision, Dalrymple Bay Coal Terminal Draft Access Undertaking, April 2005, p. 34

[22] QCA, Final Decision, Dalrymple Bay Coal Terminal Draft Access Undertaking, April 2005, p. 46

specifically addressing this in the commercial contracts themselves. This provided a regulatory response to the coordination failures which may otherwise have resulted in a 'hold up' of efficient investments in below rail infrastructure. The essence of this regulatory compact was stated by the QCA at the time:[23]

> In the Authority's view, the process should place obligations on QR to provide detailed information to stakeholders on capacity requirements, infrastructure expansion options and proposed capital expenditure. In return, the process should provide certainty to QR that capital expenditure undertaken in accordance with the plan and supported by stakeholders will be accepted as prudent and efficient by the Authority and not subsequently optimised out.

There are other precedents in rail access regulation for customer consultation and approval of capital expenditure proposals. The NSW Rail Access Undertaking includes a requirement that the infrastructure owner consult with access seekers to identify and evaluate capital expenditure priorities. This includes a mechanism for capital expenditure which was subsequently considered necessary and agreed by access seekers to be included in the RAB prior to commissioning.[24] The ARTC Hunter Valley Access Undertaking also includes a customer consultation mechanism in its Capacity Investment Framework. This includes a requirement for formal consultation with the Rail Capacity Group (RCG, comprising access holders, operators and the Hunter Valley Coal Chain Coordinator) in the development and implementation of a project. This consultation process involves a number of stages, with the RCG asked to endorse the project proceeding to the next stage. If endorsed by the RCG, costs incurred for the next stage are deemed prudent to the extent of endorsement. Any endorsed costs incurred will normally be included in the RAB.[25]

The submission by Ergas, Robson and Owen which was provided by QR National to the QCA in September, set out the economic case for why administrative mechanisms such as customer voting are necessary in vertically separated supply chains. This paper noted that voting schemes for quasi-public goods have been applied in contexts ranging from airports to electricity transmission networks, where they serve the twofold purposes of reducing the costs of regulatory error (as it is end-users who decide on the level of supply, avoiding the need for the regulator to estimate end-user valuations) and of providing the access provider with a reasonable level of certainty about major investment decisions. The paper goes on to note that, for these purposes to be achieved, the regulator's commitment to enforce the scheme must be credible. In other words, once the procedural requirements have been satisfied: (1) the regulated entity must supply the assets; and (2) end-users must bear the costs of the assets, in a manner consistent with achieving full cost recovery.[26]

This encapsulates the nature of the regulatory process QRNN followed in undertaking its investment in electrification assets in Blackwater. In particular, in accordance with the customer approval process in the Access Undertaking, QRNN sought customer approval for these investments, which was duly obtained. This process was approved by the QCA in its regulatory pre-approval of the scope of the recent investment in new Blackwater feeder stations.[27]

A qualification to the regulatory mechanism described above is set out in clause 1.4 (Schedule A) of the Access Undertaking. This states the limited circumstances in which the QCA would optimise the assets in the RAB that had been approved under this process. These are:

- the decision to accept the expenditure into the RAB was made on the basis of information that was false or misleading;
- demand deteriorates to such an extent that regulated prices on an unoptimised asset would result in a further decline in demand;
- there is a possibility of actual (not hypothetical) bypass.

QRC has argued that this optimisation provision is intended to deal with the current situation in relation to Blackwater electrification assets. Further, QRC states that this provision is not subject to the customer approval

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[23] QCA, Decision, QR's 2005 Draft Access Undertaking, December 2005, p. 41

[24] NSW Rail Access Undertaking, Schedule 3, clause 3.2. Available at: http://www.railcorp.nsw.gov.au/__data/assets/file/0018/675/nsw_rail_access_undertaking.pdf

[25] Hunter Valley Coal Network Access Undertaking, 23 June 2011, section 7

[26] Ergas, Robson and Owen, p. 10

[27] QCA, Regulatory Pre-approval for Coal Master Plan 2008 capacity expansion projects, letter to Mr Lance Hockridge, 23 April 2009. Available at: www.qca.org.au

process.[28] QRNN fundamentally disagrees with this latter point. As explained above, customer approval via the voting process and a commitment by the regulator not to optimise the subsequent investment in assets that were endorsed through this process are two sides of the regulatory compact. How this process is intended to work needs to be considered in the context of the history of its inclusion in the Access Undertaking and the nature and design of the voting process. In this regard, we note the following points:

- the inclusion of the capex pre-approval mechanism in the Access Undertaking was intended to overcome investment hold up issues at the time. This mechanism was intended to address the issue of providing sufficient certainty to enable the infrastructure owner to invest with confidence in long lived assets where such investment is unable to be underwritten by contracts with end-users;
- voting mechanisms provide a means of eliciting customer valuations of quasi-public goods;
- voting rights are proportional to customers' contracted tonnages, indicating that the greater the customer's stake in the supply chain the greater say they have in approving the proposed investment.

These factors support a view that the customer vote was intended to matter in terms of being a commitment to underwriting the investment. Further, as noted in our September submission, historical evidence suggests that customers do in fact take this process seriously and will vote against an investment if they do not believe they have sufficient information to decide whether they support it. This was evidenced by the fact that $1.1 billion of the $1.4 billion of proposed projects in the 2010 customer vote process failed to receive the required 60% support from affected customers at the time. Moreover, if this process of obtaining customer approval is not intended to imply a commitment by customers to fund cost recovery of the investment (and hence provide the necessary certainty to the infrastructure owner), it is not clear what purpose it is intended to serve. Without this implied compact, it is essentially a meaningless mechanism.

More broadly, QRNN does not consider that the optimisation provision in clause 1.4 should be considered an easy or costless solution to this problem. QRNN considers that the RAB which is used to determine the maximum allowable revenue for the combination of Train Services using Rail Infrastructure within the relevant line sections comprises all rail infrastructure within that line section. Accordingly, this should only apply where demand for ALL train services for the relevant line section has deteriorated such that the prices which have been differentiated to achieve revenue adequacy would result in a further decline in demand. This provision is intended to address long term changes in the coal industry such as a decline in total demand (by all train services using the infrastructure), and not the situation presently facing the electric infrastructure in Blackwater (ie. declining demand for electric infrastructure but continued strong demand for train services generally).

That is, QRNN should be legitimately entitled to rely on provisions which have been included in the access regime and material investment has been made in reliance on those provisions to price differentiate between diesel and electric traction services before a decision is made to optimise assets under clause 1.4 of Schedule A.

Some stakeholders appear to imply that optimisation of Blackwater electrification assets is a ready solution that would solve the issue of the increasingly uncompetitive price for use of electric traction. However, while this may serve the short term interests of existing users, it is clearly not in QRNN's legitimate business interests that such a significant and recent investment should be stranded. Nor is it in the long term interests of customers or the coal industry more generally as this extreme response would have far-reaching implications for QRNN's incentives to invest in below rail infrastructure in future, or indeed, the incentive of a user-funder to expand the network. In effect, optimisation would have a chilling effect on future investment in below rail infrastructure and, indeed, in coal supply chains more generally given the regulatory risk it would create.

Application of process to Blackwater electric assets

QRNN notes that some stakeholders in submissions on the DAAU have criticised the customer approval process for the Blackwater electrification assets, in particular, raising concerns about the adequacy of information provided. QRNN is strongly of the view that concerns about information disclosure raised after the event, and in this case, several years after the event, is not a basis to reappraise the validity of a customer vote. We welcome the QCA's support of this position in its Draft Decision, namely that it is not appropriate to expose QRNN to the potential of asset stranding risk on the basis of dissatisfaction with the process after the event.[29]

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[28] QRC submission, p. 6

[29] QCA Draft Decision, p. 40

In terms of whether the customer approval process was undertaken correctly and sufficient information provided, QRNN considers that the QCA April 2009 approval of the scope of the project effectively 'signs off' on the adequacy of this process. Presumably the QCA, in exercising its statutory role on this matter, would not have given approval if it had formed the view that the process had not been properly followed in any way. However, having given its approval, QRNN and other parties should be able to rely on the QCA's approval decision to provide the necessary confidence to proceed with the investment on the basis that the costs would be recovered.

As noted, the purpose of the voting process is to seek to overcome the coordination failure in the supply chain. The coordination failure arises due to both disaggregation of the investment decisions necessary to achieve investment alignment and the information asymmetry required to optimise alignment. Customers should not absolve themselves of their responsibility through effective control over investment across other elements of the supply chain in determining whether the investments proposed by QRNN are prudent from the perspective of the supply chain. While QRNN uses reasonable endeavours to undertake these assessments it has no power to compel other parties to provide information, which they are generally unlikely to willingly provide given the competitive tension between ports and operators.

In relation to the Blackwater electrification assets in question, QRNN reiterates that it followed the process as set out in the Access Undertaking, including consultation with customers and provision of information. Importantly, approval was sought and given on a project-by-project basis, so that customers were clearly able to assess the need for the investment and vote on each project accordingly. In addition, during this process, customers had the opportunity to reject the investment proposal if they did not consider the information provided was adequate. This process resulted in customers supporting the investment, both in relation to the initial vote on the investment in the four substations and the subsequent vote on the 2009 Master Plan for the expenditure on concept and pre-feasibility study for renewing/replacing the Callemondah feeder station.

An important point to recognise is that, under clause 3.2.1(a)(ii) of Schedule A of the Access Undertaking, a customer obtains the right to vote if the inclusion of those assets in the RAB will have an effect on their access charge at any time in the future. Given this, customers should be aware that they are accepting that they will be required to contribute to the recovery of those investments, regardless of whether they are directly used by access holders. This is evidenced by the customer vote on the GAPE process.

Indeed, the fact that customers should have been well aware of the expected price impacts of the electric investments is supported by the fact that QRNN's UT3 submission (September 2008)[30] - which was published prior to the vote on prudency of the investments occurring - included a proposal for a single AT5 tariff, including information to be able to ascertain individual system price impacts. From the pricing information provided in this submission, customers would have been able to understand the impact of the proposed investment on tariffs, including if the proposal to socialise costs across systems was rejected. If customers were concerned about this impact, they had the opportunity to reject the investment.

It should also be recognised that the environment at the time the decision to invest in the Blackwater electrification assets was made was one in which there was considerable pressure on supply chain infrastructure service providers, including QRNN, to expand capacity to accommodate expected increases in volume. In particular, the expected growth in volumes planned to be shipped through both RG Tanna Coal Terminal (RGTCT) and Wiggins Island Coal Export Terminal (WICET) indicate an environment in which there was strong demand for below rail infrastructure to be expanded to align with new port capacity and expected growth in throughput.

For example, the WICET development process commenced in 2008, with first coal expected to be shipped in 2015. Once fully commissioned, it will have a capacity of 80 mtpa, with Stage 1 providing 27 mtpa, which is fully contracted. WICET is progressing plans to expand the terminal, with expressions of interest in over 175 mtpa received. Capacity Commitment Deeds have been entered into for the first stage of this expansion. Demand for below rail capacity on the Blackwater system can be inferred from the associated coal terminal expansions in progress at the time at RGTCT and WICET.

In summary, not only did QRNN have direct customer endorsement of its investment in Blackwater electrification assets from its customers, in accordance with the Access Undertaking requirements (and approved by the QCA), but this support was given in an environment where infrastructure service providers, including QRNN, were under

[30] QR Network, Submission re: 2009 DAU, Volume 1, Attachment F, September 2008

considerable pressure to expand capacity in order to accommodate expected growth in throughput by mines. Moreover, from the nature of the customer approval process and the information available at the time, it is also reasonable to assume that customers and other stakeholders would have been cognisant of the requirement to contribute to the cost recovery of any endorsed investment.

Future application of process

QRNN considers that the core design of the CRIMP/customer approval process is valid and that, applied as intended, it serves a very valuable role as part of a capacity investment framework. This process is beneficial to all parties, allowing customers the ability to have input into expansion plans and enabling the infrastructure owner to obtain the necessary certainty to allow it to proceed with significant investments. The key design features which are fundamental to this mechanism working include:

- adequate information provision to allow informed decision-making;
- customer voting rights which are proportional to contract tonnages; and
- obligation to recover costs through access charges on the basis of customer approval.

The concerns raised by some stakeholders on the process in this instance appear to relate more to procedural issues than a fundamental rejection of the key principles underlying this mechanism. In this regard, QRNN recognises the need to continue to improve and refine the process and, to this end, intends to propose a number of improvements as part of UT4. Nevertheless, we consider that the core concept and design remains valid and has an important role to play in underpinning supply chain investment.