

# QR Networks Access Undertaking (2009)

*Western System Coal Tariff Development*

*September 2008*



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## 1 Executive Summary

Part C to Volume 1 of QR Networks Submission of the Draft UT3 Undertaking to the QCA, lodged in September 2008, outlines QR Network's development of its proposed UT3 Reference Tariff for Coal Carrying Train Services on the Western System within the SEQ cluster. This Reference Tariff is based on a developed ceiling price calculated using the building blocks approach consistent with the pricing principles applied to Coal Carrying Train Services in the Central Queensland Coal networks.

The Western System has unique characteristics compared to the Central Queensland Coal network. This includes the need for export traffics to travel on the Brisbane Metropolitan network, the age of the assets and the need to share the network with a higher proportion of non-coal traffics, particularly between Rosewood and Fisherman's Island (the Port of Brisbane). These issues have historically posed challenges for developing Western System Reference Tariffs.

QR Network has sought to establish the ceiling price for coal traffics using the Western System (Macalister to Fisherman Islands). While it is feasible to do this for the section of the network west of Rosewood where coal is the dominant traffic, this has not been done for the section between Rosewood and Fisherman's Island, which is dominated by metropolitan passenger services (and to a lesser extent freight). Whilst the track quality in the Metropolitan system is higher than west of Rosewood, the characteristics of this system are driven by the requirements of passenger services. The assets that would be required for a stand-alone coal railway cannot be simply identified as a subset of the existing assets.

QR Network considers that any valuation of the rail infrastructure required for coal services in the Metropolitan network is likely to be excessively high. As capital costs are the largest component of the ceiling price, QR Network believes that a ceiling price in the Metropolitan system would be higher than the ceiling price west of Rosewood. Whilst the track quality in the Metropolitan system (and therefore the ceiling price) is higher than that west of Rosewood, unless this standard is replicated west of Rosewood train operators will not benefit from this higher standard.

As a result QR Network is proposing to apply the ceiling price determined for the Rosewood to Macalister section to the section between Rosewood and Fisherman's Island. This also ensures that coal traffics are providing a reasonable contribution towards the costs that they impose on this part of the network.

QR Network has analysed the ceiling price applicable to Coal Carrying Train Services in the Western System by considering the following building block elements:

- An estimate of the asset value prepared for QR Network by Connell Hatch. This valuation determined a Depreciated Optimised Replacement Cost (DORC) value for the track sections of the Western System between Rosewood and Macalister. This condition based DORC valuation has been undertaken in a manner consistent with the approach used by Connell Hatch for the valuation of the track sections between Burngrove and Minerva, which has been used in QR Network's preliminary DAU to establish a Reference Tariff for new Train Services to the Minerva mine;
- An estimate of the future coal-specific capital expenditure for this section over the UT3 period;
- An estimate of the coal-specific maintenance costs for this section over the UT3 period; and
- An apportionment of QR Network's forecast system wide and regional costs over the UT3 period, based on the methodology used to determine the system wide and regional cost forecasts for the CQCR, which is discussed in Volume 2 of QR Network's 2008 submission.

Using this information, QR Network has identified a ceiling price for the track sections between Rosewood and Macalister of around \$32 per thousand GTK. This ceiling price reflects the Maximum Allowable Revenue (MAR) QR Network is entitled to seek from coal traffic on this section of the network, in accordance with section 6.2 of the 2005 Undertaking.

However due to unique conditions in the Western System QR Network believes that pricing at this MAR is unrealistic and as such is seeking a nominated Reference Tariff of \$22.07 per thousand GTK.

Since 2002, QR Network has invested in infrastructure improvements that are primarily related to track infrastructure, to improve reliability and service quality for coal carrying train services. QR Network has undertaken these investments and is committing additional capital expenditure over the UT3 period to further improve this corridor. These recent and future investments mainly in track infrastructure have been undertaken with the expectation that QR Network will earn an appropriate commercial return. In this context, the tariff reflects the full recovery of the capital charges associated with track infrastructure (i.e. sleepers, rail and ballast) and forward looking operating and maintenance costs. This is inclusive of costs incremental to coal traffics and a reasonable allocation of shared or common costs (i.e. system wide costs). The balance of the proposed tariff is a contribution to the recovery of non-track infrastructure asset (such as corridor land, tunnels and bridges) that represents only 5.7% of the capital related charges for these assets.

As noted above, QR Network intends to apply this tariff to coal traffics both on the Western System and between Rosewood to Fishermans Island or domestic destinations within the Metropolitan network

## **2 Introduction**

### **2.1 Background**

The purpose of this paper is to detail the basis on which the proposed UT3 western System tariff has been determined. This paper has been developed to support Section C of QR Network's Volume 1 to the Draft UT3 Undertaking submission lodged with the QCA on the 9<sup>th</sup> of September 2008. (2008 Submission)

This paper should also be read in conjunction with Volume 2 of QR Network's 2008 Submission. This volume to the submission details the rationale and development of each of the building blocks in relation to the CQCR. This paper will build on this by providing a discussion on the building blocks for the Western System Coal tariff.

The UT2 Reference Tariff was essentially a negotiated outcome between (the then) QR Network Access (QRNA) and the QCA in order to finalise the 2005 Undertaking. At this time there was a concern by both parties over the robustness of QRNA's proposed ceiling price and a lack of detailed analysis that supported it.

Recognising the inherent difficulties that are associated with developing Western System Reference Tariffs, QR Network has therefore sought to develop a ceiling price as part of the UT3 review.

## **2.2 History & System Characteristics**

QR Network's Western System is located in Southern/Southwestern Queensland, stretching from Quilpie in the west to Rosewood in the east a distance of 836km. The first section of the railway line in Queensland, a section 35km between Ipswich and Grandchester was opened to traffic in July 1865. The western railway was extended over the following years reaching Toowoomba in 1867, Roma in 1880 and Cunnamulla in 1898. In 1913 the main Western Line was extended from the junction at Westgate and reached Quilpie in 1917. Historically the line catered for passenger, livestock, freight and primary produce (e.g. grain, cotton) traffics.

Export coal carrying services commenced on the Western System in 1982, and initially from mines located just west of Ipswich. Today the Western System services Wilkie Creek, Acland Ebenezer coal mines in the Surat Basin loading at Macalister and Jondaryan, Ebenezer respectively. Coal is transported via rail from these mine load outs to the Port of Brisbane for export and to domestic users close to Ipswich. To reach these destinations both export and domestic coal has to also traverse the Brisbane Metropolitan system. In 2007/08 5.4mt of coal was carried on the Western System.

The 2008 Coal Rail Infrastructure Master Plan identifies the system enhancements required to extend the current capacity up to a theoretical 9.7mtpa via the Port of Brisbane<sup>1</sup>. This expansion path would require mine and port enhancements, an above rail investment and additional below rail infrastructure. This 9.7mtpa is not achievable with the optimised network identified in the DORC Valuation, or with the current level of non-coal traffics on the Western System and the Metropolitan constraint on coal paths.

The Surat Basin has proven coal reserves in excess of 4 billion tonnes. Currently there are twenty five identified deposits and six operating mines. The operating mines include:

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<sup>1</sup> Coal Rail Infrastructure Master Plan - 2<sup>nd</sup> Addition, page 110

- Wilkie Creek and New Acland exporting coal through the Port of Brisbane;
- Kogan Creek near Chinchilla and Commodore near Millmerran, associated with domestic power stations. This is currently not serviced by rail; and
- New Oakleigh and Jeebropilly near Ipswich both producing for export and domestic power station use.

In the UT3 period it is expected that one of the identified deposits, Camby Downs, will commence operations and load coal on the main line near Columboola east of Miles for export via the Western System. In the medium to long term, the development of Wiggins Island Coal Terminal (WICT) and the Surat Basin Rail Project (also known as the Southern Missing Link) to the Moura System may provide an alternative corridor for coal traffics originating at new mine developments in the Surat Basin.

## **3 Business Environment**

### **3.1 Business Objective**

As in the CQCR the below rail aspect of the Western System coal supply chain is only one element and needs to work with mines, above rail operators and port operations to ensure the effectiveness of the system. The role of QR Network in the Western System is to provide the infrastructure required to respond to the real demand growth without exposing the business to unacceptable risks and to ensure efficient and reliable operations.

### **3.2 The UT3 Environment**

Much has been said about the current commodities boom both in coal and iron ore. This boom has resulted from the growing sale price for these products in their raw form. This has increased pressures on infrastructure providers and managers to keep pace with the growing demand of mines to maximise their export capacity and financial returns. The dramatic growth in infrastructure projects in Queensland has also affected the markets for materials supply and human resources. The impacts of these factors on QR Network are outlined in Volume 2 of the 2008 submission.

As owner and manager of the below rail element in the coal supply chain QR Network plays a critical role in maximising its competitiveness by:

- Investing in necessary capacity to accommodate demand growth;
- Maintaining the network to a level that is consistent with the level of service required by users; and
- Maximising efficient utilisation of available network capacity.

At the same time QR network must be able to maximise the value of the business to its shareholders and meet its obligations under its Undertaking, including ensuring consistency with the pricing principles, which are outlined in Part 6 of the Undertaking.

## 4 Western System Characteristics

The Western System has unique characteristics that have presented challenges for the development of Reference Tariffs for coal carrying train services. These characteristics are summarised below.

### 4.1 Utilisation by Non-Coal Traffics

The system is shared by a number of different traffics, including long distance passenger services and seasonal grain traffic.

The following table details the forecast weekly loaded train paths and annual gross tonnes by traffic type over the Toowoomba Range<sup>2</sup> (this track section has been used as all traffic types traverse the range and the range crossing is an identified system bottleneck).

Traffic Type	% total weekly loaded Paths	Annual GTK's ('000)	% of Annual GTK's
Coal	72.2%	2,510,307	92.52%
Passenger	2.5%	127	0.01%
Freight	8.9%	61,834	2.47%
Grain	10.1%	94,060	3.75%
Livestock	6.3%	31,475	1.26%

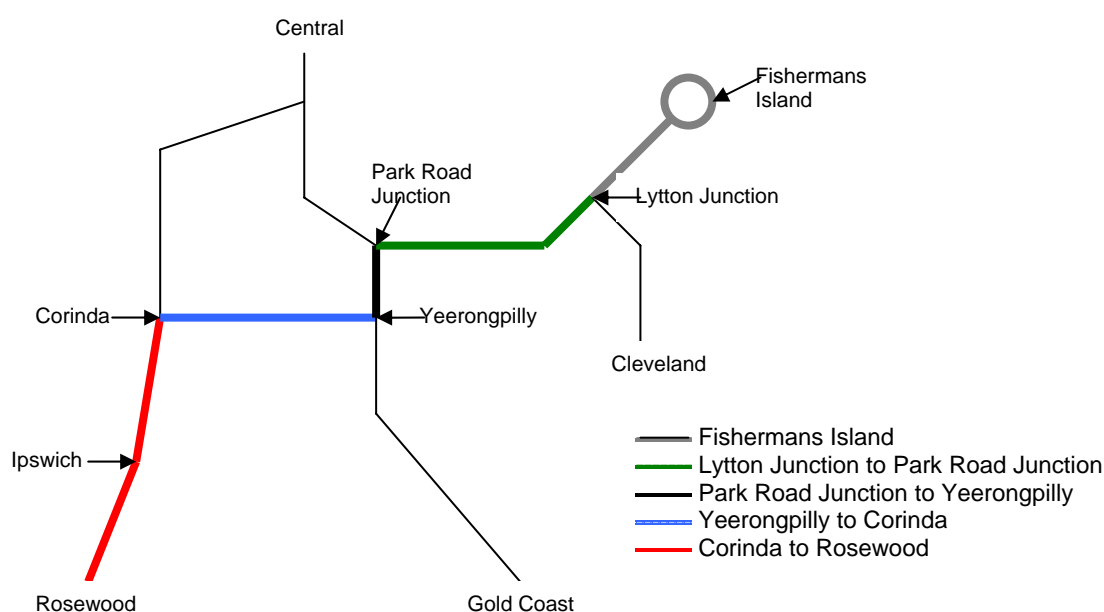
<sup>2</sup> Forecast 2008/09 financial year

The above table identifies that on the track section between Helidon and Toowoomba (the Toowoomba Range crossing), coal is the predominant traffic, and this is the circumstance for the entire track section Rosewood to Macalister. This situation is reversed in the Metropolitan networks where coal traffic becomes an incremental user with City Train services the predominant traffic in terms of utilised paths. The effects of coal as an incremental user on system capacity are outlined in the following section.

## 4.2 Brisbane Metropolitan Network

The section of the Western System traversing the Brisbane Metropolitan network commences with the coal terminal load-out facility on Fishermans Island, the dedicated dual gauge freight and coal line loops and rejoins the duplicated Metropolitan System at Lytton Junction. From here coal traffic utilises both the Cleveland and Beenleigh Metropolitan lines between Lindum and Yeerongpilly where coal traffics turnout towards Corinda on the Yeerongpilly to Corinda line. At Corinda the coal traffics join the Ipswich line and continue on this duplicated line through to Rosewood. Rosewood forms the end of the Metropolitan System and the extent of electrification in the west. As all coal traffics utilise diesel locomotives the value and use of electric assets have not considered as part of this process.

The diagram below shows the path of coal traffics through the Metropolitan system from Rosewood to Fishermans Island and returning on the same path.



This interface with the Brisbane Metropolitan network (Metropolitan) impacts on the capacity and possession planning of coal originating in the Surat Basin:

- Currently there is a limit on the number of available paths provided to coal within the Metropolitan system due to clashes with passenger services and peak passenger periods. Loaded and empty coal trains are not allowed to operate in the Metropolitan system between 0600 – 0859 and 1600 – 1759 Monday to Friday. This constrains the system as all trains must be staged to enter and depart the Metropolitan system during the day between Metropolitan services or overnight.
- As the Metropolitan lines utilised by coal traffics are in close proximity to residential dwellings the overnight window is contentious due to environmental (e.g. noise) issues.
- Currently there are a reduced number of coal services in the Metropolitan system on weekends due to the maintenance scheduling on the Toowoomba Range. It should be noted that major shutdowns in the Metropolitan system also occur on weekends to not impact weekday passenger services.
- The South East Queensland Infrastructure Program (SEQIP) includes a raft of projects in the Metropolitan system that result in rolling weekend closures of the Ipswich line for construction. These closures limit the Metropolitan system's availability for coal services.
- The Government has mooted that coal traffic will be unable to use the Metropolitan network from 2020. As no formal announcements have been made in this regard and the likelihood and timing of this remains uncertain, at this stage QR Network has not sought to factor this into the analysis.

There is also a future possibility that metropolitan off peak passenger service levels may be increased from the existing 30 minutes to 20 or 15 minutes<sup>3</sup>. This would result in a further reduction of available paths to coal. As mentioned previously the development of the Surat Basin Rail link could alleviate any future reduction to coal paths in the metropolitan system.

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<sup>3</sup> Separation is the timetabled time separation between train services

The constraints caused by the metropolitan system are not unique to coal or freight services in Brisbane. In March 2008 the ACCC commissioned PriceWaterhouse Coopers (PWC) to conduct a review of the ARTC DORC valuation of its interstate network conducted on ARTC's behalf by Booz Allen Hamilton<sup>4</sup> (BAH). In its review PWC noted that *"Sydney has total restrictions on freight operations during weekday peak periods and although this is outside this DORC valuation, these restrictions have an external impact on ARTC's optimising the functional capacity of the network close to suburban or in outer suburban areas"*. The review also identified that congestion occurred in the relationship between freight and passenger services in Melbourne and Adelaide during peak passenger periods<sup>5</sup>. The practical effect of this is that optimisation of the ARTC network needed to recognise these constraints.

Similarly, for the Western System volume growth is constrained by the relevant capacity at the port and within the Metropolitan Network. The passenger priority arrangements for allocation of train paths and the reliance on Government funding for financing infrastructure enhancements in the Metropolitan network effectively replicates the horizontal separation that exists for the Interstate Network through Sydney. In this regard, capacity allocation and investment decisions are too an extent exogenous to QR Network and should be recognised as such in the consideration of Western System optimisation.

### **4.3 Age of the Network**

Much of the network west of Rosewood was originally constructed in the 1800s and was designed for the carriage of passengers and freight, not minerals. This also provides constraints on capacity, that is, even if some of the scheduling frequency constraints in the metropolitan network were alleviated, capacity upgrades would be required in order to accommodate increased volumes. The Toowoomba range also poses a significant capacity constraint. Alleviating the Toowoomba Range carrying capacity may not add additional capacity without mine, port and above rail investment.

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<sup>4</sup> Now known as Booz & Co.

<sup>5</sup> [www.accc.gov.au/content/Pwc/review/ARTC/assetvaluation.pdf](http://www.accc.gov.au/content/Pwc/review/ARTC/assetvaluation.pdf)

#### **4.4 Implications for Developing Reference Tariffs**

These characteristics pose unique challenges in developing Reference Tariffs. As noted above, the tariff arrived at for the second undertaking period was a negotiated outcome between QRNA and the QCA. QRNA had engaged BAH to do the review of the stand-alone cost of a coal-only Western System. However, the outcomes of this review were rejected by the QCA. The QCA concluded that an appropriate DORC valuation of the Western System would involve:

- relying on efficient replacement costs;
- optimising the route, based on an independent study, and designing the system to an appropriate standard for the purpose of coal-only traffic;
- an evidence-based assessment of the age of system assets, based on actual asset ages or a condition-based assessment of effective asset ages; and
- a transparent methodology for calculating efficient prices for coal taking into account other traffics and system constraints.<sup>6</sup>

QR Network does not consider route optimisation relevant to the consideration of the DORC valuation as it:

- is inconsistent with the historical approach to the valuation of coal related rail infrastructure; and
- would represent a hypothetical bypass and not a real bypass.

The most feasible alternate route alignment for the Toowoomba range is the Gowrie to Grandchester bypass. This route was subject to review for the inland rail study and has recently been estimated to cost approximately \$1.3 billion. In the absence of an identified greenfield port solution, any proposed bypass option would be volume constrained due to the Metropolitan Network. Therefore, on a stand-alone coal basis the investment is likely to be uncommercial. The use of a hypothetical bypass is also inconsistent with the optimisation principles in Schedule FB where optimisation will only occur where it becomes clear there is a possibility of actual bypass.

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<sup>6</sup> Queensland Competition Authority (2005b). Decision: QR's 2005 Draft Access Undertaking, December, p.77.

The issue of optimisation of route alignment was considered in the 2001 Undertaking and the initial valuation of the CQCR RAB. The QCA noted that<sup>7</sup>:

*The current Blackwater system follows a circuitous route via Rockhampton. While the line was upgraded to handle coal traffic in 1967, duplicated in the mid-1980s through to the early 1990s, and partially re-laid in the mid-1990s, much of the original alignment of the late nineteenth century remains. The QCA's preliminary review indicated that a stand-alone railway would have a substantially shorter haul for the Blackwater system, effectively bypassing Rockhampton.*

The QCA chose not to penalise QR for its past investment decisions and optimisation was conducted on a limited brownfields basis. However, the QCA did note that route optimisation be considered as one means of addressing asset stranding risks. QR Network does not consider demand based asset stranding risk is material in the current market at the forecast volumes.

Similarly, in consideration of issues relating to the valuation of the Gindie-Minerva rail infrastructure, Worley Parsons did not recommend geographical realignment of the existing corridor citing<sup>8</sup>:

*the distance between Burngrove and Minerva mine could be considerably shortened by taking a more direct route. As well, the vertical alignment could be optimised for the purpose of improving the efficiency of above rail operations. On the other hand, the consideration of what would be a completely undepreciated infrastructure in the DORC could possibly negate the savings of the lower ORC. For these reasons, we have not considered the totally greenfields option and this is consistent with the QCA's approach to previous assessments for other lines in the central Queensland coal network.*

Therefore, in determining the stand-alone tariff for Western System coal carrying train services, QR Network has approached the valuation as a brownfield valuation and not optimised the route.

QR Network's response to the remainder of the QCA concerns is outlined in the methodology below.

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<sup>7</sup> Queensland Competition Authority, Final Decision 1999 Draft Access Undertaking, Chapter 13 – Asset Valuation and Depreciation p 376/377.

<sup>8</sup> <http://www.qca.org.au/files/R-08DAUamend-Worley-RepGindieAssVal-0808.pdf>

## **5 Methodology for Developing Western System Tariffs**

### **5.1 *Building Blocks Approach***

QR Network has sought to apply the building blocks methodology to develop its Western System Reference Tariffs, which requires determination of:

- an opening asset value, based on the DORC methodology;
- volume forecasts;
- return of capital;
- return on capital;
- maintenance cost forecasts; and
- system-wide and regional cost forecasts.

To the extent possible, QR Network has sought to apply this methodology in a manner that is consistent with the approach used to develop its CQCR Reference Tariffs. The key inputs are examined in section 6.

### **5.2 *Treatment of the Metropolitan Network***

One of the key issues associated with determining a ceiling price for the section of the network traversing the Metropolitan network is coming up with an appropriate DORC valuation. Whilst the track quality in the Metropolitan system is higher than the track quality west of Rosewood, the characteristics of this system are driven by the requirements of passenger Train Services. The assets that would be required for the provision of coal services on a stand-alone basis cannot be simply identified as a subset of the existing assets (as occurs elsewhere on the network) as a valuation on this basis would not reflect the quality of service that is provided to the coal services. If it could be done, QR Network considers that a DORC valuation of the Rail Infrastructure required for coal carrying Train Services travelling through the Metropolitan network is likely to be high due to:

- The land value that would be attributed to the rail corridor;
- The track standards that would be required to be applied on Rail Infrastructure through a major metropolitan area to address environmental and amenity issues;

- The Rail Infrastructure being of high quality and generally much newer than the Rail Infrastructure west of Rosewood, therefore substantially less depreciation would be applied to the optimised replacement cost; and
- The high cost of the coal unloading facilities at the Port of Brisbane.

As capital costs are the largest component of the ceiling price, QR Network believes that it is likely that a ceiling price for coal carrying Train Services in the Metropolitan network would be higher than the ceiling price west of Rosewood. However, whilst the standard of Rail Infrastructure (and hence the ceiling price) is substantially higher in the Metropolitan system (as is likely to be reflected in the relevant DORC valuation), unless this standard is replicated west of Rosewood Train operators will not significantly benefit from this higher standard. QR Network has therefore not sought to determine a ceiling price for the section of the Western System traversing the Metropolitan network based on a DORC valuation. QR Network believes that the activity of establishing a stand-alone coal tariff in the Metropolitan System would be onerous and not add any value as the resulting tariff would be of such a high dollar value that it would be unrealistic to charge this amount to coal hauls. The infrastructure in the Metropolitan system is also built to a passenger standard and as such is over engineered for coal traffic. This would increase the complexity of developing an optimised stand alone coal network.

Another option considered was to set a price for this segment based on the incremental cost of providing access to coal carrying Train Services.

Again, estimating the incremental cost of coal traffic's use of the Metropolitan network was problematic to determine, particularly in terms of ensuring that the full impact of coal traffics' use of the network is appropriately captured. QR Network is therefore of the view that applying the ceiling price determined from Rosewood to Macalister will deliver the most reasonable outcome.

As QR Network are applying the same tariff for coal services in the Metropolitan network as for the Western System no maintenance, capital expenditure or operating costs for the Metropolitan system have been included in the Western System pricing model. Coal traffics do gain a benefit from maintenance and capital expenditure works in the Metropolitan system conducted for passenger and freight services.

Coal specific maintenance and capital expenditure activities do occur in the Metropolitan system as the axle load of coal trains is greater than for passenger services, however as the track is constructed and maintained to a level for passenger safety and ride comfort these expenditures are minimal. In any case, the application of the price determined for the Rosewood and Macalister section is considered to provide a reasonable contribution towards these costs, including contributing towards the degradation that can result from coal trains' higher axle loads.

The balance of this report therefore focuses on the determination of the ceiling price from Rosewood to Macalister.

### **5.3 Treatment of Non Coal Traffics**

As noted previously, unlike the CQCR coal systems there is a moderate level of non coal traffics that utilises the Western System and which coal carrying services need to integrate.

The treatment of these non-coal traffics in the pricing model is as follows:

- Asset Value – The DORC valuation that is the basis for the asset value was conducted on a stand-alone coal basis (that is, the system was optimised to only coal traffic). More information on this valuation is provided below.
- Volume Forecast – Only coal tonnages were considered when forecasting volumes. The volume forecast includes both export and domestic tonnes.
- CAPEX – only CAPEX related to coal traffics has been considered, this CAPEX will be utilised by non-coal traffics but would be avoidable if coal was not running over the track section.
- Maintenance – A subset of the Network Asset Management Plan (NAMP) has been prepared by the Regional Asset Manager to ensure that only maintenance-related to coal traffics has been considered. Once again the benefits of this maintenance will be utilised by non-coal traffics but would be avoidable if coal was not running over the track section.
- OPEX – System wide and regional costs are split between coal and non-coal traffics firstly by track section, and then based on annual train paths across the selected track section. This approach ensures that the allocation is consistent with usage of the shared system.

## **5.4 Treatment of TSC Revenue**

The Transport Service Contract (TSC) is QR Network's agreement with Queensland Transport (QT) to maintain and improve the TSC supported network. The entire South Western System, including the Western System main line from Rosewood to Quilpie and the branch lines to Millmerran, Dirranbandi, Wallangarra, Jandowae, Glenmorgan and Wandoan is TSC-supported.

As much of the non-coal traffic on the Western System has limited capacity to pay, the TSC funds the shortfall between QR Network's revenues and costs (as well as providing an agreed rate of return). This is assessed on a whole-of-system basis, that is, specific Transport Service Payments are not allocated to each traffic type, or to defined track segments within the Western System.

Clause 6.2.2 of the 2005 Undertaking provides that prices will not:

*...exceed the level that will recover the expected Stand Alone Cost of providing Access for the Individual Train Service after giving consideration to the level of contribution provided by Transport Service Payments towards the relevant Rail Infrastructure...*

The TSC revenue should be a consequence, rather than a driver, of price-setting decisions for each traffic on the network. If this revenue was a driver, it would distort pricing decisions in relation to the relevant traffics and could result in inequitable outcomes between Western System tariffs and other coal systems to the extent that TSC revenue is not received in these other systems.

In practical terms, treating TSC payments as a consequence rather than a driver means that the ceiling price is determined based on the stand-alone cost of providing access to the network, ignoring any revenue that is otherwise received under the TSC (which in any case, is not directed to any particular traffic type). Once the Reference Tariff is set relative to this limit, if the actual revenue from access charges and the revenue received under the TSC exceeds the efficient costs of operating and maintaining the entire network, the payments under the TSC would be adjusted downwards.

This position was confirmed by the QCA in the 2005 Final Decision and subsequently clarified in the Undertaking:

*The Authority agrees with QR that Transport Service Payments rather than access charges should be reduced to ensure that QR does not exceed its allowable revenue. This is not inconsistent with the underlying principle that the sum of access charges and Transport Service Payments should not exceed QR's revenue limit.<sup>9</sup>*

Hence, when attempting to ascertain the appropriate level of tariffs for Western System coal traffics, the current revenues received under the TSC are not relevant to the price determination process. Once the tariff has been determined and approved by the QCA, any consequent adjustment to TSC revenue would be sought based on the terms of the contract and subject to negotiation with Queensland Transport.

### **5.5 Treatment of Service Quality Issues**

Another characteristic of the Western System outlined above is a lower service quality, when compared to the other central Queensland coal systems. Consideration therefore needs to be given as to how this will be reflected in pricing. In QR Network's view, the most appropriate (and transparent) approach is to determine a ceiling price that reflects the DORC valuation of the optimised coal-only network, and then make adjustments to this price for service quality to arrive at the Reference Tariff. The basis for this is outlined below.

## **6 Building Blocks**

The section below details the assumptions, inputs and rationale behind the relevant values in the QR Network Western System Tariff Model. This model calculates the adjusted ceiling price detailed in Section C of QR Network's Volume 1 to the Draft UT3 Undertaking submission.

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<sup>9</sup> Queensland Competition Authority (2005), Decision: QR's 2005 Draft Access Undertaking, December, p.142.

## **6.1 Asset Value**

### **6.1.1 Western System DORC Valuation**

In preparation of the UT3 submission QR Network engaged Connell Wagner to conduct a Western System DORC valuation. Cognitively of the concerns raised by the QCA in their 2005 Draft Access Undertaking this valuation was conducted on a stand-alone optimised coal system basis on the track section between Rosewood and Columboola (the proposed load point for the future Camby Downs mine). The DORC valuation involved both a desk top study and site visit to assess condition and age of assets. A diagram of the optimised network is available in the Connell Hatch report. The network was optimised to facilitate a theoretical capacity of 7.2mtpa over the Toowoomba Range (not inclusive of tonnes from mines east of Rosewood).

This assessment was conducted over four stages

1. Desktop assessment – a review of the working plan and section diagrams to determine the location of assets for use during the site visit
2. Site visit – conducted 27 to 31 August 2007 with staff from both Connell Hatch and QR Network as observers. The purpose of the site visit was to validate the asset location and description from the desktop assessment and update any discrepancies. The site visit was also identified the standard of the network and served as an opportunity for Connell Hatch to review and assess the track and related assets condition along the length of the line.
3. Data Verification – including interviews with the Regional Manager Infrastructure Management (QR network) and Infrastructure maintainers and constructors. Details on commissioning and upgrade date of new or upgrade assets collected and added to site visit data.
4. Draft DORC Assessment – using data collected or provided a DORC estimate was completed and approved by QR Network before the valuation project was closed

QR Network has provided a full copy of the final Connell Hatch DORC valuation to the QCA and a vetted copy prepared for public release. This report details the assumption made with regards to the unit rates for Modern Engineering Equivalent (MEE) assets, asset lives, CPI and depreciation. It also outlines the method that assets have been handled in the event that information was not available or incomplete.

The DORC was conducted based around three track sections:

Track Section	From	Chainage (km)	To	Chainage (km)	Distance
1	Rosewood	56.080	Toowoomba	160.600	104.520
2	Toowoomba	0.000	Macalister	108.510	108.510
3	Macalister	108.510	Columboola	194.780	86.270

It should be noted that the DORC valuation did not consider the capital cost of signalling works required on the optimised track section between Rosewood and Helidon on mainline. The current safe working signalling configuration is in place to support a duplicated track; the optimisation of this duplicated track would require the safe working signalling system to be upgraded to support bi-directional traffics.

As the Western System coal tariff model only models between Rosewood and Macalister (current contracted tonnages), QR Network has removed the Macalister to Columboola portion out of the modelled DORC valuation by these track sections.

The datum date for the DORC Valuation is 31 August 2007. The determination of the opening UT3 asset value for the pricing model has been a DORC plus upgrade approach, which is the opening asset value plus all capital upgrades (CAPEX) between the datum date and the commencement of UT3, being 1 July 2009.

The allocation of the above QR System wide and Western System wide CAPEX is explained in section 6.3.

## 6.1. 2 CPI and Depreciation

The CPI index for Brisbane has been used to inflate or deflate values.

Consistent with the approach to estimating remaining asset lives in the CQCR, the Western System remaining assets lives are either the lower of their remaining physical life or an economic life of fifty years. Depreciation is based on the straight line methodology.

### 6.1.3 Cost of Capital

QR Network has applied the cost of capital determined for CQCR to apply in the UT3 period. This estimate will be subject to revision where market conditions change between the applied averaging period and the period to be assessed for setting the UT3 cost of capital. As QR Network is not seeking to apply the ceiling rate derived from the building block maximum allowable revenue any change in the cost of capital will be recognised as a variation to the relativity against the theoretical ceiling price.

## 6.2 Volume Forecast

As there are only a limited number of mines in the Western System and system constraints governing available capacity there is more surety in forecasting tonnage volumes over the four year UT3 period than in the other CQCR systems.

The volume forecast has been sourced from the Coal Business team within QR Network and is a calculation of existing contracted tonnages and tonnes for which an Access Application has been received or is in negotiation. The forecast of tonnages are detailed in the following table.

	Tonnes expressed as mtpa <sup>10</sup>			
Western System Coal	2009/10	2010/11	2011/12	2012/13
Export Contracted	5.23	5.231	5.231	5.23
Export New	-	1.94	1.94	1.94
Domestic Contracted	0.51	0.51	0.51	0.51
Domestic New	-	-	-	-
<b>Total Tonnes</b>	<b>5.73</b>	<b>7.67</b>	<b>7.67</b>	<b>7.67</b>

As part of its UT3 development QR Network engaged Halcrow Pty Ltd to undertake a review of the QR Network UT3 Volume forecast. The resulting report has been provided to the QCA as attachment F to Volume 2 of QR Network's September 2008 Submission. The forecast tonnages expressed in this report differ from those considered in the Western System Coal Tariff model. The tonnes in the Halcrow report reflect export tonnages only and do not include the 0.501mtpa domestic tonnes originating from Jondaryan for domestic use.

<sup>10</sup> Mtpa = million tonnes per annum

## 6.3 *UT3 Capital Expenditure*

### 6.3.1 Coal Related CAPEX

QR Network carries out infrastructure enhancements in line with required demand through communication with supply chain participants and in line with external capacity constraints. The challenge in the Western System has always been to increase the availability of train paths for coal carrying services down the Toowoomba Range and through the congested Brisbane metropolitan area, and to do so in a cost effective way.

As the pricing model is for coal traffics only, only coal-related CAPEX and the allocations of QR system-wide and Western System wide CAPEX has been considered. As coal is the predominate traffic over the line section between Rosewood and Macalister and coal traffic is the longest and heaviest traffic the majority of CAPEX in the Western System is coal related.

QR Network has applied a similar approach to expressing the forecasted UT3 CAPEX in the Western System to that for the CQCR. For the CQCR, QR Network is required to develop a Capital Indicator that reflects the forecast capital expenditure per system over the UT3 period. QR Network has presented this capital indicator using a smoothed approach.

QR Network has replicated this approach to expressing the forecasted UT3 CAPEX in the Western System. Both coal specific capital expenditure and a share of system wide capital projects relevant to the Rosewood – Macalister section have been included in the derivation of the Western System Capital Indicator. Construction interest associated with these projects has also been allowed for.

The table below shows the forecast CAPEX for the western system over the UT3 period:

Western System Coal Capital Expenditure Forecast	2009/10	2010/11	2011/12	2012/13
UT3 Forecast CAPEX	4,100	39,915	4,100	4,100

### **6.3.2 Allocation of CAPEX to Western System Coal**

Allocation of costs of QR system-wide projects has been calculated as follows:

- An 18% allocation of full project cost has been applied to the entire Western System<sup>11</sup> as per the QCA endorsed QR Network Costing Manual.
- For non telecommunications projects this 18% has been further split by 50% train kilometre and 50% GTK's.
- For telecommunications projects this 18% has been further split by 75% train Km + 25% Route Km.

This approach is consistent with the methodology used in QR Network's 2006/07 Capital Expenditure claim subsequently approved by the QCA.

## **6.4 Maintenance**

### **6.4.1 Planned Periodic Maintenance**

Maintenance works and activities are required to ensure that the railway is kept at a required service level, whilst minimising the track possession time either during the maintenance activity or indirectly through response time to fault rectification. There is a trade off between the level of maintenance and the amount of track possession; a large amount of maintenance will result in a high service level but will impact on track availability and throughput capacity or minimal maintenance will result in high throughput capacity but a degrading track system that may result in track failure. Reference is made to QR Network's 2008 Maintenance Costs submission (in relation to the CQCR) for more information regarding these tradeoffs (Attachment G to Volume 2).

The maintenance cost input to the pricing model comes from the 30 year Network Asset Management Plan (NAMP) maintained by the Western System Regional Manager of Assets. The NAMP details the location, duration and details of all maintenance activities within the entire Western System. The Regional Asset Manager provided QR Network with a subset of the NAMP listing only those maintenance activities benefiting coal traffic.

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<sup>11</sup> Track section from Quilpie to Rosewood

These maintenance tasks will also be of benefit to other traffics on the network but would not be required if coal was not running over those sections of the network. The level of maintenance for the track sections that support coal traffic is higher than for the remainder of the Western System as coal trains are heavier and longer than other services.

These maintenance activities have been broadly allocated into five classes;

- 1 Track – the ongoing maintenance of all elements related to the track (excluding mechanised re-sleepering). Track maintenance includes the following activities:
  - Formation strengthening
  - Fencing repairs
  - Turnout replacement
  - Rail grinding
  - Fire & vegetation control
  - Earthwork maintenance
  - Rail renewal
  - Track resurfacing
  - Track recording
  - Rail lubricators
- 2 Mechanised Re-sleepering – the ongoing replacement of life expired or damaged wooden sleeper with concrete sleepers. Currently 88.376km of the optimised track section between Rosewood to Macalister (213.030km) has been upgraded to concrete sleepers, this equates to 41.48% of the line section.
- 3 Trackside Systems – the maintenance of the telecommunications network related to the rail corridor as well as the power supply to electric points, level crossings and signals.
- 4 Facilities - The maintenance of buildings and facilities belonging to the QR Network
- 5 Structures – The maintenance of structures required for the safe operation of the rail system, structures include;
  - Bridges
  - Retaining walls
  - Culverts
  - Tunnels
  - Drainage

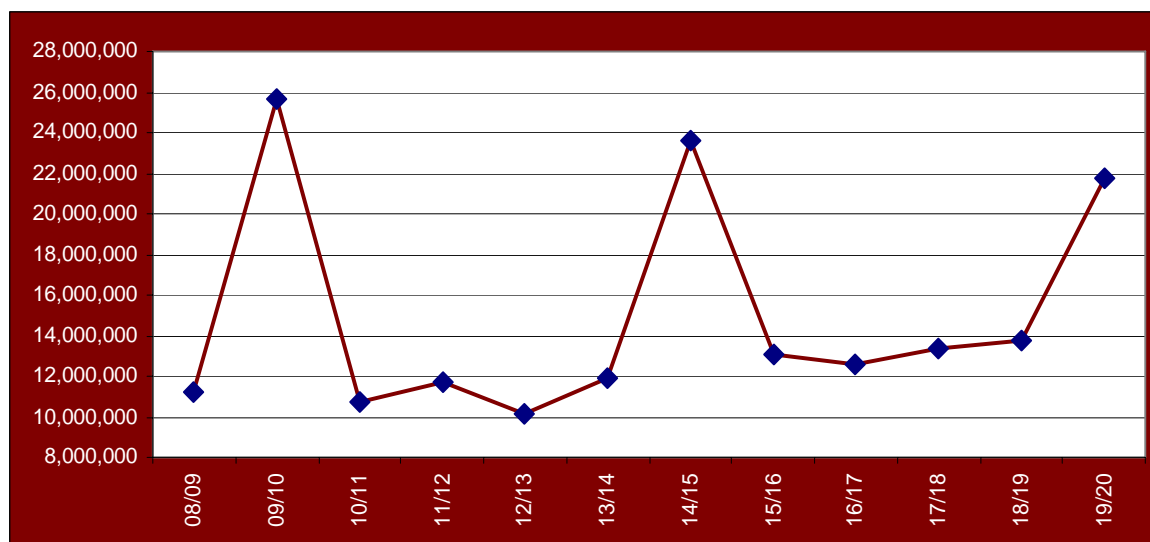
QR Network has assumed a 15% operator margin to capture the return that a maintenance provider would be expecting above costs if it were to bid for the coal contract. A margin of 15% has been chosen based on an analysis of similar rail maintenance companies by KPMG. This 15% margin is consistent with the operator margin assumed in the CQCR<sup>12</sup>.

The table below shows the maintenance costs for the four year UT3 period.

	2009/10	2010/11	2011/12	2012/13
<b>Track (excl Mechanised Resleepering)</b>	6,643,258	6,287,243	6,475,919	7,301,146
<b>Mechanised Resleepering</b>	10,739,815	-	-	-
<b>Trackside Systems</b>	1,466,758	1,476,991	1,473,760	1,468,200
<b>Facilities</b>	-	-	-	-
<b>Structures</b>	2,419,128	1,170,052	1,848,155	1,154,566
	21,268,958	8,934,286	9,797,834	9,923,913
<b>Margin for ISG's Overhead and ROA</b>	3,190,344	1,340,143	1,469,675	1,488,587
<b>TOTAL</b>	<b>24,459,302</b>	<b>10,274,429</b>	<b>11,267,510</b>	<b>11,412,500</b>

Currently, mechanised re-sleepering is conducted every four to five year governed by the availability of the re-sleepering equipment and associated staff. During each four year cycle it can be expected that up to 45km of re-sleepering can occur. The level of maintenance costs is reflective of this cycle. The graph below shows the maintenance cost forecast until the year 2019/20; this illustrates the costs spikes related to the re-sleepering programme.

<sup>12</sup> As detailed in Attachment G of Volume 2, QR Network's CQCR Maintenance Report



## 6.4.2 The Toowoomba Range

The 470m climb of the Toowoomba Range is the longest and highest rail range crossing in Queensland<sup>13</sup>. This rail section from Murphy's Creek to Toowoomba includes three passing loops, nine tunnels and a ruling grade of 1 in 50. Because of its nature the Toowoomba range crossing demands a high level of continuous maintenance to ensure track condition is maintained. This track section also requires additional infrastructure such as wayside lubricators to reduce wheel squeal noise and sacrificial rail on tight radius curves.

This high level of maintenance impacts the capacity of the system. To negate or minimise this, maintenance activities on the range are timed in conjunction with the curfews placed on coal services through the Brisbane Metropolitan System. The range crossing is made available to ensure that trains can traverse the range at times to meet the available slots through Brisbane whilst maintenance activities are conducted when trains are either west of Toowoomba or east of Murphy Creek. If required during major maintenance shut downs or system recovery from incidents, trains can be staged in the Willowburn holding yard.

<sup>13</sup> For coal carrying services

## 6.5 Operating Costs (OPEX)

### 6.5.1 Actual Cost Assessment

For UT3 QR Network has sought to assess system wide and regional (SWR) costs on an assessment of the actual costs of these activities. This differs from a theoretical stand-alone cost assessment that was undertaken for the UT1 period and subsequently rolled forward for the UT2 period. Reference is made to Attachment I of Volume 2 of QR Network's 2008 submission for more details regarding the methodology it has employed to forecast its system wide and regional costs.

In seeking to reflect the actual cost of its business QR Network has taken the following approach to the cost build-up of its SWR costs:

**Actual Cost =** Direct coal activity costs (regional) +  
Direct coal costs (system-wide) +  
Refined allocated costs (regional and system-wide) +  
Default allocation of cost (System-wide)

#### Direct costs

QR Network has taken costs directly attributable to Western System coal and this is shown against the relevant activity's cost centres. The type of activity, staff and consumables for these activities has been examined and the future impacts on the area have been considered in determining future staffing and cost efficiency.

#### Refined allocated costs

Where a team/unit performs tasks that are not completely coal related (for instance, Regulation and Policy) an attribution has been performed based on the amount of activity that is performed for the coal network. This information has been provided by the relevant Managers within each area.

#### Default allocators

Where there is minimal information about the underlying nature of the cost allocation, this is allocated based on default allocators using the methodology that was previously established in the QR Network Costing Manual.

### **6.5.2 Risk Premium**

QR Network has included a risk premium amount consistent with the allocation method applied in the CQCR as detailed in Attachment K of Volume 2 of QR Network's 2008 submission. This risk premium is intended to provide an appropriate cash flow allowance for the cost of insurance and self-insurance against particular risks and the inclusion of pass-through provisions against other risks that are assessed as having a low probability but high cost. The Western System risk premium has been derived by applying the risk premium calculated for the Moura System to a GTK rate OF \$0.13 per '000 GTK

It should be noted that the risk premium for the Western System is likely to be greater than the CQCR as a consequence of the relative grading and greater risk of land slips. However, QR Network considers that if the Western System was built to a standard equivalent to the CQCR then the risk premium would be comparable.

### **6.5.3 Working Capital**

In UT1 the QCA estimated a working capital requirement for QR Network as being approximately 0.3% of total revenue. The approved allowance in UT2 was also estimated on this basis. QR Network has therefore estimated its UT3 working capital allowance based on this assumption.

It could be argued that as the applied tariff is lower than the maximum allowable revenue the working capital allowance should also reduce. However, the reduction in capital related cash flows would also increase the working capital requirements to reflect the change in the operating cost ratio. Therefore, the working capital margin will increase as the proportion of capital related charges decrease and the allowance is independent of the difference between the forecast revenues and the maximum allowable revenue.

### **6.5.4 UT3 Forecast OPEX**

The table on the following page outlines the Western System Coal OPEX costs for the UT3 period

	2009/10	2010/11	2011/12	2012/13
<b>Regional Costs</b>	1,466,636	1,579,358	1,706,053	1,753,823
<b>System Wide Costs</b>	1,445,621	1,392,529	1,612,761	1,684,787
<b>Risk Premium</b>	228,713	320,663	320,663	320,663
<b>Working Capital</b>	16,936	24,409	25,093	25,795
<b>Total</b>	3,157,905	3,316,959	3,664,569	3,785,068

The allocation of costs to Western System coal was based on the average of the system-wide standard cost allocator for the Moura and Newlands systems (excluding GAPE). Although the Western Coal System carries less coal than Moura or Newlands it has comparable costs because of the greater haul length and smaller train size in the Western Coal system.

## 7 Western System Coal Reference Tariffs

To summarise, QR Network has analysed the ceiling price applicable to coal carrying Train Services in the Western System by considering the following building block elements:

- An estimate of the asset value prepared for QR Network by Connell Hatch, who determined a DORC value for the track sections of the Western System between Rosewood and Macalister;
- An estimate of the future coal specific capital expenditure for this section over the UT3 period;
- An estimate of the coal specific maintenance costs for this section over the UT3 period; and
- An apportionment of QR Network's forecast system wide and regional costs over the UT3 period including an allocation for both Cost of Risk and Working Capital.

Using this information, QR Network has identified a ceiling price for the track sections between Rosewood and Macalister of around \$32 per thousand GTK.

As mentioned previously, QR Network has not sought to reflect the impact of the issues associated with service quality in this estimate of the ceiling price. QR Network recognises that given these service quality restrictions there are likely to be concerns if QR Network were to attempt to price the Western System coal carrying Train Services at a ceiling price that is unadjusted for these factors. Unfortunately, there is no clear and robust way of adjusting the ceiling price to take account of these issues.

The unadjusted ceiling price reflects the Maximum Allowable Revenue (MAR) QR Network is entitled to seek from coal traffic on the western System.

In view of the above, QR Network is not proposing to seek the MAR at the ceiling price and to price at this level for the 2009 Undertaking. Rather, QR Network is proposing to apply a nominated Reference Tariff of \$22.07 per thousand GTK.

Since 2002 QR Network has invested in infrastructure improvements that are primarily related to track infrastructure to improve reliability and service quality for coal carrying train services. QR Network has undertaken these investments and is committing additional capital expenditure over the UT3 period to further improve this corridor. These recent and future investments have been undertaken with the expectation that QR Network will earn an appropriate commercial return. In this context, the tariff reflects the full recovery of the capital charges associated with track infrastructure (i.e. sleepers, rail and ballast) and forward looking operating and maintenance costs. This is inclusive of costs incremental to coal traffics and a reasonable allocation of shared or common costs (i.e. system wide costs). The balance of the proposed tariff is a contribution to non-track infrastructure assets (such as corridor land, tunnels and bridges) that represents only 5.7% of the capital related charges for these assets.

In terms of the standard Western System Reference train the \$/net tonne rate equates to an average of \$6.80 per net tonne.

QR Network has sought to set the tariff for coal carrying Train Services on the Western System utilising the building block approach to ensure the tariff is transparent to both the QCA and stakeholders.

QR Network believes that the proposed \$22.07 per thousand GTK tariff is appropriately considerate of the Western System service issues raised in previous Western System tariff submissions and negotiations.