QRNetwork

Mr John Hall
Chief Executive Officer
Queensland Competition Authority
GPO Box 2257
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Dear John

QR Network's Draft Amending Undertaking - West Blackwater Reference Tariff

I refer to my letter dated 31 July 2008 regarding QR Network's commitment to formally submit a Draft Amending Undertaking (DAU) for the West Blackwater Reference Tariff following the QCA's approval of the QR Network 2008 Access Undertaking (the 2008 Undertaking) and QR Limited's (QR's) withdrawal of its 2005 Access Undertaking (the 2005 Undertaking) effective from 1 September 2008.

The QCA approved the 2008 Undertaking on 23 October 2008. Accordingly, please find attached the formal submission on the West Blackwater Reference Tariff DAU.

As you are aware, on 1 August 2008 QR Network gave the QCA a 'preliminary' version of this document and the QCA sought comments from interested parties to facilitate the timely consideration of this formal submission.

The formal submission is substantially in the same form as the preliminary submission and differs only to address some minor matters that were brought to QR Network's attention following lodgement of the preliminary submission. These differences relate primarily to:

- an additional section discussing the recognition and adjustment of maintenance costs for non-coal train services; and

- a correction of Blackwater System Allowable Revenue for the years 2007-08 and 2008-09 to reflect only the incremental contribution of the inclusion of the additional Rail Infrastructure in the Central Queensland Coal Region Regulatory Asset Base and the 2006-07 revenue cap adjustment.

As previously advised, in developing the West Blackwater Reference Tariff, QR Network has sought to provide an appropriate balance between QR Network's legitimate business interests, the interests of current users of the relevant rail infrastructure and the interests of future Access Seekers. QR Network has sought to maintain a consistent approach for the West Blackwater Reference Tariff to the approach for developing reference tariffs for the rest of the Blackwater system.

This submission comprises an explanatory document, together with clean and marked up versions against the 2008 Undertaking.

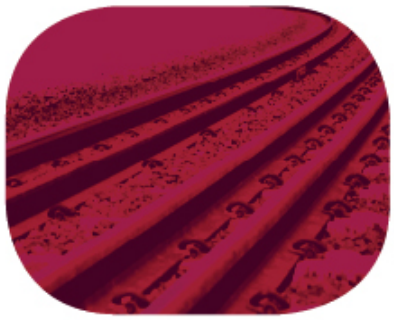
Please contact Gayle Andrews on 3235 5476 should you have any further queries regarding the submission.

Yours faithfully

[redacted]

Mike Carter
Executive General Manager
QR Network Pty Ltd

7 October 2008



QR Network Access Undertaking (2008)

Submission to the

Queensland Competition Authority

Voluntary Draft Amending Undertaking on

Proposed Reference Tariffs for the West Blackwater Cluster

Date: 30 /10 / 2008

1. Introduction

This submission has been prepared by QR Network in accordance with its obligations to develop Reference Tariffs under Section 6.4 of the QR Network 2008 Access Undertaking (QR Network's Undertaking). Due to the need for consequential amendments to parts of the QR Network Undertaking associated with the inclusion of relevant Rail Infrastructure into the Central Queensland Coal Region Regulatory Asset Base this submission has been prepared as a voluntary Draft Amending Undertaking (DAU). The submission sets out QR Network's proposal for a Reference Tariff for a new West Blackwater cluster to apply to coal carrying train services from the Minerva mine to the Port of Gladstone.

QR Network aims at all times to deliver a safe, reliable, environmentally sustainable and commercially viable network. As part of this drive, QR Network has a commitment to provide reference tariffs for the major coal regions to further foster transparency and certainty in pricing for QR Network customers. This commitment is embedded in Clause 6.4.2(b) which requires that where a new coal mine is developed and Train Services servicing that mine will utilise Rail Infrastructure in the Central Queensland Coal Region, the Train Services will be incorporated in a new or existing Reference Tariff in a manner consistent with Schedule F.

Coal Carrying Train Services commenced operating from the Minerva mine in November 2005. These Train Services operate on the Blackwater system to Burngrove and from that point utilise a combination of upgraded existing Rail Infrastructure (from Burngrove to Wurba) and new Rail Infrastructure (from Wurba to the mine). Prior to the commencement of Coal Carrying Train Service from the Minerva mine, the Burngrove to Wurba Rail Infrastructure was supporting non-coal carrying Train Services, such as grain and livestock. QR's revenues from these services have historically not been sufficient for QR to earn a commercial rate of return or to recover the economic cost of the Rail Infrastructure. Continued provision of this Rail Infrastructure was only possible as a result of financial support under the TSC.

In November 2006, QR advised the Queensland Competition Authority (QCA) that the Burngrove to Nogoa and Nogoa to Wurba Junction sections of track, previously included in the TSC network and funded under the Transport Service Contract (TSC) (Rail Infrastructure) from 1999/2000 to 2005/06, have been removed from the TSC supported network, effective 1 July 2006. Accordingly there is no requirement for TSC revenue for this rail infrastructure to be taken into consideration for the determination of the indicative Reference Tariff.

Since the commencement of coal services, QR now provides this infrastructure primarily for the purpose of these coal services (approximately 85% between Burngrove to Nogoa and 100% between Nogoa to Wurba of 2007-08 gross tonne kilometres) and on a commercial basis. Non-coal train services continue to operate on this Rail Infrastructure as a marginal user, in the same way as they do in the rest of the Blackwater System. Therefore, consistent with the approach to the development of the Reference Tariffs for the Central Queensland Coal Region (CQCR) the West Blackwater Cluster Reference Tariff is developed on the basis of it operating as part of a stand-alone coal network.

This submission details the relevant principles, methodology and underlying assumptions relied upon for the development of the West Blackwater Reference Tariff. Where relevant, the assumptions and methodology have been applied in a manner

consistent with the CQCR valuation finalised in 2001. However, the standard of the existing Rail Infrastructure, coupled with the required service levels for coal carrying Train Services from the Minerva mine imposes a low capital/high maintenance regime requiring consideration of some specific issues relating to the continued safe, reliable and efficient operation of this part of the Network.

1.1. QR Network's Preliminary Submission

QR Network's 2008 Draft Access Undertaking was given to the QCA on 29 July 2008 for commencement on 1 September 2008. Given the short timeframe required for approval of the 2008 Undertaking, QR Network did not include matters relevant to the West Blackwater Reference Tariff in the 2008 Undertaking.

Due to the estimated timeframes associated with undertaking consultation and approving a DAU (up to 6 months), QR Network did not consider it appropriate to delay the lodgement and consultation of this DAU until the QR Network Undertaking came into effect. Accordingly, QR Network lodged a 'preliminary' West Blackwater Reference Tariff DAU with the QCA on 1 August 2008.

In order to facilitate the timely consideration of QR Network's formal application, the QCA sought submissions in relation to QR Network's 'preliminary' West Blackwater reference tariff proposal by 29 August 2008. The QCA also released two technical reports on aspects of the costs of the Gindie-Minerva railway infrastructure to also assist stakeholders prepare their submissions. QR Network's response to the Worley Parsons Report on Gindie-Minerva Asset Valuation was provided to the QCA on 29 August 2008 and raised concerns regarding the ability to provide safe and reliable train services within the quantum and scope of maintenance proposed in that report.

QR Network has therefore not made any adjustment in this submission to the proposed incremental maintenance costs in the preliminary DAU on the basis of the QCA's technical reports. However, QR Network has made minor changes to address some issues raised by the QCA and stakeholders to the preliminary DAU. Specifically, these changes reflect:

- a recognition and adjustment of maintenance costs for non-coal train services; and

- a correction of Blackwater System Allowable Revenue for the years 2007-08 and 2008-09 to reflect only the incremental contribution of the inclusion of the additional Rail Infrastructure in the Central Queensland Coal Region Regulatory Asset Base and the 2006-07 revenue cap adjustment.

The QCA has indicated that provided QR Network makes no substantial changes from the preliminary proposal, it anticipates limited consultation to this submission. QR Network does not consider changes between this submission and the preliminary DAU are of a material nature for the QCA to alter the expectation of a limited consultation process.

1.2. QR Network's Approach

The submission and the development of the Reference Tariff are structured in a manner consistent with calculating a Maximum Annual Revenue Requirement using the building blocks methodology. Specifically, the submission:

- Identifies the capital values for the calculation of the return of and on capital;

- Proposes an efficient and optimised maintenance regime consistent with achieving contracted service levels;

- Evaluates the relevant incremental costs and necessary contribution to common costs;

- Develops a Reference Tariff consistent with the Schedule F tariff structures; and

- Details QR Network's proposed position in relation to incorporating the West Blackwater cluster into the CQCR.

QR Network has prepared the West Blackwater Reference Tariff using a four year financial model from November 2005, the commencement date of Minerva coal carrying Train Services, to 30 June 2009. Therefore, the Reference Tariff has been developed in a manner consistent with the development of the CQCR reference tariffs in UT2. However, QR Network is proposing to commence the West Blackwater Reference Tariff from 1 July 2007. QR Network is not seeking to recover the difference between the modelled access charge for the period between November 2005 and 30 June 2007, and the lower access charge in the Access Agreement for this period.

For the sole purpose of maintenance of the CQCR Regulatory Asset Base (RAB), the value of the RAB will be increased as at 1 July 2007 by the amount accepted by the QCA. As the QCA has notified QR Network of its acceptance of the 2006-07 CQCR RAB roll forward, QR Network has applied actual inflation in rolling forward the 2005-06 opening asset value to determine the incremental value of the West Blackwater assets to be included in the RAB at 1 July 2007.

In calculating the maximum allowable revenue, QR Network has rolled-forward the 2005-06 opening asset value in line with the UT2 forecast inflation rate of 2.5%. In calculating the quantum of the Reference Tariff to apply from the 1 July 2008, QR Network has escalated the modelled November 2005 base reference tariffs using actual inflation to align the 1 July 2007 Reference Tariff to what it would have been had the Reference Tariff applied from the commencement of railings. As QR Network has not escalated the incremental System Allowable Revenue by actual inflation, the model assumes a higher revenue recovery in the first two years from the commencement of railings. If the forecast inflation rate of 2.5% was used to escalate the November 2005 base reference tariffs, the Reference Tariff to apply from 1 July 2007 would increase to reflect the assumed lower revenue recovery earlier in the UT2 regulatory period. QR Network considers this reasonably and equitably addresses any issues related to the timing of the West Blackwater Reference Tariff development and as a consequence, QR Network foregoes revenue it might otherwise have been entitled to earn.

In this submission:

- References to 2001 Undertaking and 2005 Undertaking are to QR's Access Undertakings effective 1 July 2001 and 1 July 2005, and to 2008 Undertaking and 2009 Undertaking are to QR Network's Access Undertakings effective 1 September 2008 and to QR Network's Access Undertaking which is due to commence on 1 July 2009, respectively;

- References to QR Network's Undertaking are to the 2008 Undertaking;
- References to 'mines' are to coal mine owners as end customers pursuant to a haulage agreement with an Access Holder;
- Unless expressly stated otherwise, all references to Clauses, Subclauses and Paragraphs in Schedule F, Part B of QR Network's Undertaking; and
- Terms used that are defined in QR Network's Undertaking have the meaning given in QR Network's Undertaking.

2. Background

Minerva is a green field coal deposit located approximately 45km south of Emerald and approximately 415km from the Port of Gladstone. The $68 million Minerva mine project is a joint venture comprising Felix Resources Limited and Sojitz Corporation which has funded the mine development. A Felix subsidiary, Minerva Mining Pty Ltd, has been appointed to develop and manage the mine operations on behalf of the joint venture.

The Minerva coal deposit is located approximately 6km to the West of Wurba, at approximately 42.591km on the Springsure Branch. The Minerva Mine was established as an open cut mining operation with a Measured, Indicated and Inferred Resource of 53.3 million tonnes of premium thermal coal. These resource estimates have recently been increased to 84.3 million tonnes of which 34.5 mt is measured reserves. This has allowed the mine life to be extended to approximately 14 years to 2020 with the potential to extend further through mine efficiency improvement and the conversion of resource to measured reserve.

The mine was officially opened on 6 April 2006 and, is now fully operational, producing 2.5 million tonnes per annum (mtpa) of coal every year for export through the Port of Gladstone to markets including Japan and Korea.

Coal from Minerva is railed by diesel locomotive from a specifically constructed 3.62km long balloon loop in association with overhead bin coal load-out facilities (Figure 1). Prior to the commencement of the Minerva train services the existing rail infrastructure from Burngrove to Wurba the track was predominantly used for the transport of grain.

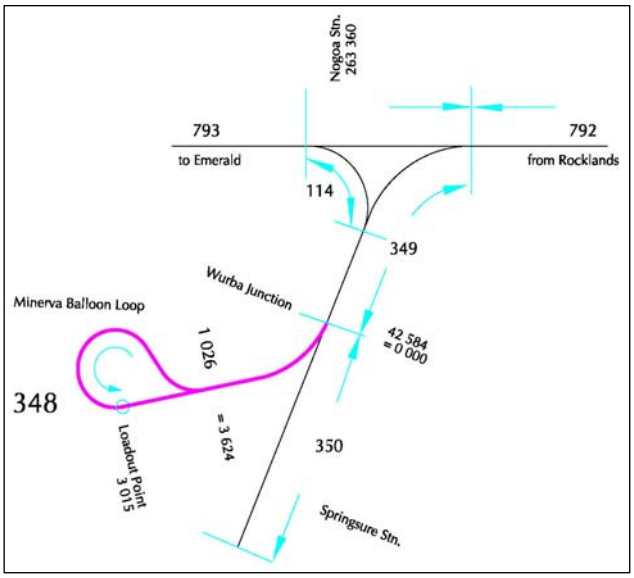


Figure 1 Minerva Balloon Loop

A major upgrade of this line occurred in 1985-86 to allow for the operation of train services at 15.75 tonne axle loads (TAL). This upgrade included replacement of rail, sleepers, ballast, points, turnouts and level crossings and significant upgrade/replacement of structures, eg. Culverts. In order to facilitate coal services, further upgrades of the rail infrastructure were necessary to accommodate 20 TAL at a volume of 2.5 mtpa. These upgrades are incremental to coal carrying train services

and offer limited service improvement to non-coal services which also operate on connecting rail infrastructure:

- west of Nogoa;
- south of Wurba Junction; or
- extending to the Auckland Point unloading facilities:

with a maximum capacity of 15.75 TAL.

In contrast to the Central Queensland Coal Network, the formation, substructure and alignment of the railway remains a timber track with relatively lighter rail than would be typical for a purpose-built modern railway.
This light track structure is reflected in the valuation of the existing assets. Consequently, the heavier axle loads and increased traffic from modern coal train operations impose significant wear upon the infrastructure. Therefore, the Burngrove-Wurba Rail Infrastructure constitutes a low capital-high maintenance regime which has been reflected in both the maintenance cost and asset valuations.

3. QR Network Undertaking

Schedule F of QR Network's Undertaking contains the Reference Tariffs applicable to nominated coal carrying Reference Train Services. These Reference Tariffs have been developed in accordance with the principles contained in Part 6 of this Undertaking and have been endorsed by the QCA for application in accordance with the terms and conditions set out in Section 1 of Schedule F.

Specifically, Clause 6.4.2(b) of QR Network's Undertaking requires that where a new coal mine is developed and Train Services servicing that mine will utilise Rail Infrastructure in the Central Queensland Coal Region, the Train Services will be incorporated in a new or existing Reference Tariff in a manner consistent with Schedule F.

In this regard, Clause 4 of the Part B to Schedule F of the Undertaking provides for the establishment of reference tariffs for new coal carrying train services. Specifically, subclause 4.1.2 specifies that the Reference Tariff for a new coal carrying Train Service will be the higher of (on a $/net tonne basis):

a) the Reference Tariff for the most relevant existing Reference Train Service: or

b) the sum of the new coal carrying Train's Service's Incremental Costs and required minimum Common Cost Contribution determined in accordance subclause 4.1.1.

In determining the relevant Reference Tariff for the Minerva mine, it is first necessary to calculate the new coal carrying train service's incremental costs. As coal carrying train services for the Minerva mine are utilising rail infrastructure not currently included in the Central Queensland Coal Region the incremental costs include the capital and operating costs associated with operating stand-alone coal carrying train services on the Rail Infrastructure from Burngrove to Nogoa, to Wurba and the Minerva mine balloon loop.

4. Incremental Costs for Minerva Coal Carrying Train Services

Incremental costs for Minerva coal carrying train services include the:

- the costs of a stand-alone coal corridor from the Burngrove junction to the Minerva mine calculated using the 'building blocks' methodology, comprising the;
    - capital related charges of return on, and of, capital associated with the relevant asset value;
    - efficient maintenance costs;
    - efficient railway management costs; and
- incremental maintenance costs on the Blackwater mainline.

4.1. Capital Related Charges for the West Blackwater Rail Infrastructure

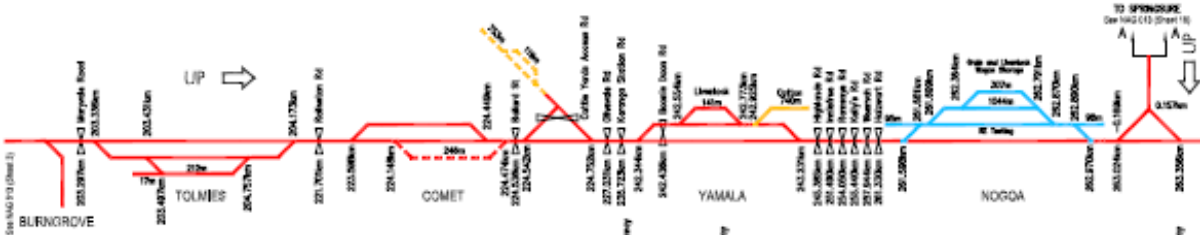
The Burngrove – Wurba Rail Infrastructure was originally built in 1884, but was the subject of a major upgrade in 1985/86 to allow for the operation of train services at 15.75 TAL. For the Burngrove to Nogoa section, this was undertaken in 1986 as part of the main line electrification project and for the Springsure branch, this was undertaken in 1985 for the purpose of accommodating an increasing grain business. These upgrades included replacement of all rail, sleepers, ballast, points, turnouts and level crossings and significant upgrade/replacement of structures eg culverts. Therefore, prior to the commencement of the Minerva train services, the track was designed and operated primarily as a grain line.

In order to facilitate the Minerva coal-carrying Train Services, a minimal upgrade of the Rail Infrastructure from Burngrove to Wurba was undertaken to allow for the operation of 20 TAL train services at a volume level of 2.5 mtpa. However, the line remains a timber sleepered track with relatively light rail. Consequently, the heavier axle loadings and increased traffic due to modern coal train operations impose significant wear upon the infrastructure. Notwithstanding the works completed under the Minerva Coal Rail Project, the formation, substructure, and alignment of the railway necessitate higher maintenance than would be so under a purpose-built modern railway such as Rolleston less than 100 kilometres distant utilising concrete sleepers, heavier rail and engineered formations.

Line diagrams detailing Rail Infrastructure from Burngrove to Wurba and from Wurba to Minerva are shown in Figures 2 and 3 respectively.

Figure 2 Springsure Branch Line Diagram (to Wurba)

Figure 3 Central West Line Diagram (Burngrove to Nogoa)



4.1.1. Asset Valuation

The process contemplated in the Undertaking to include assets into the Regulatory Asset Base for the Central Queensland Coal Region requires that where additional sections of *existing* Rail Infrastructure are incorporated into the CQCR, then those assets shall be valued in accordance with a Depreciated Optimised Replacement Cost (DORC) methodology.

The Undertaking defines DORC as follows:

> *"means the value of assets determined in the following manner:*
>
> *i) the replacement value of the assets will be assessed as the cost of modern engineering equivalent replacement asset;*
>
> *ii) optimisation of the asset base will occur, but such optimisation will only consider whether or not the infrastructure standard and infrastructure capacity are excessive, given the current and likely future requirements of Access Holders; and*
>
> *iii) depreciation of the optimised replacement asset value will be undertaken on a straight line basis over the useful lives of the assets."*

QR's methodology to valuing the Burngrove to Minerva Rail Infrastructure is consistent with this definition. However the history of the line and the frequency of coal carrying train services needs to be recognised in the application of these principles as discussed in the remainder of this section.

QR commissioned Connell Hatch to develop a DORC Valuation for the Burngrove to Wurba Rail Infrastructure prior to the commencement of coal carrying train services from the Minerva mine. A copy of this report is provided in Attachment A.

4.1.1.1. Replacement Value of Assets

The DORC definition within the Undertaking requires that the replacement value of assets will be assessed as the cost of modern engineering equivalent. If the Rail Infrastructure supporting the Minerva mine was a Greenfield investment, the rail infrastructure for the purpose of this traffic would have been likely to have been constructed to a different standard (eg concrete sleepers, wider formation, and

heavier rail) which would be more consistent with a high-capital, low-maintenance cost railway.

As part of the 2001 valuation it was accepted that the valuation should not be based on a higher standard of rail infrastructure than currently exists. That is, the modern engineering equivalent provision was interpreted as the modern engineering equivalent asset to provide the existing standard of rail infrastructure. Hence, timber sleepered track was valued as timber sleepered track (and the associated costs of maintaining timber sleepered track were recognised in the maintenance costs), and earthworks were valued based on the estimated quantities of cut and fill actually used for the corridor, rather than basing this on an estimate of what would have been required had current standards been applied. Therefore, the DORC valuation has been prepared on a consistent basis.

Identification and description of the Rail Infrastructure assets was ascertained by a physical stocktake. An Optimised Replacement Cost valuation was calculated using the asset quantities identified during this exercise and current unit rates sourced from rail projects currently under construction and other industry sources.

The timing and circumstances surrounding the acquisition of this corridor are the same as for the major part of the Blackwater system. Therefore, while current market rates are available for corridor land following the completion of the Bauhinia rail project, QR has elected to use the lower unit rates (per kilometre) for the market value of corridor land and the acquisition costs that were used for the Blackwater system in 2001.

4.1.1.2. Optimisation

The Undertaking definition of DORC requires that optimisation only consider whether or not the infrastructure standard and infrastructure capacity are excessive, given the current and likely future requirements of Access Holders.

As noted, the Rail Infrastructure was originally designed and maintained primarily for the purposes of grain traffic, and as such is a relatively light timber sleepered structure. Subsequent upgrades have allowed for the operation of 20 TAL coal traffic transporting up to 2.5 million tonnes per annum. On this basis, QR considers it clear that the existing standard of Rail Infrastructure is not excessive.

When determining the assets valuation for stand-alone coal services, it is appropriate that only those assets necessary for the operation of those Train Services are included in the asset valuation. Assets which are not required for the operation of coal carrying Train Services should be optimised from the asset base. In this context the following adjustments have been to the existing assets:

- The Minerva mine is currently serviced by one Train a day. Accordingly, there is no requirement for passing loops from Burngrove to Minerva to be included in the valuation.

- As the Minerva to Gladstone coal carrying train services are diesel trains the electrification assets from Burngrove to Nogoa have not been included.

- Given the volume of traffic operating on this Rail Infrastructure, train control is efficiently managed by Direct Train Control. Therefore, all line signalling has been removed from the asset base.

4.1.1.3. Physical Asset Lives and Depreciation

The Undertaking's definition of Depreciated Optimised Replacement Costs notes that depreciation of the optimised replacement asset valuation will be undertaken on a straight line basis over the useful life of the assets.

Asset lives may be categorised as either:

- the physical life of the asset, that is the period after which the deterioration of the asset from use and aging is such that it typically requires replacement; and

- the economic life of the asset, that is the period where the demand for the service provided by the asset discontinues prior to reaching the end of its physical life.

For the purposes of establishing the DORC valuation for the Burngrove to Wurba Rail Infrastructure, the physical asset lives for the Blackwater system used in the 2001 asset valuation have been adopted with the exception being the physical life of the corridor.

As at 2005, the original earthworks were 121 years old. There have been upgrades of the earthworks in the intervening periods (most recently as part of the track upgrades in 1985-86), However, the original earthworks have a continuing physical life as traffic operates using these original cuttings and embankments, which have been kept in a serviceable condition.

As a result of the indefinite physical life of the earthwork assets, QR Network considers it reasonable to propose an asset life assessed as the period from construction date until the expiry of the remaining useful asset economic life, as discussed in Section 4.1.2.

However, QR Network does propose to adjust the depreciated asset value of the earthwork assets to reflect the current condition of the asset. In particular, a modern engineered railway, such as Bauhinia, is comprised of an engineered formation. In contrast, the Springsure branchline was constructed on local blacksoil substructure due to the nature of the Train Services prior to commencement of coal carrying Train Services. The absence of an engineered formation and the higher 20 TAL necessitates a more rigourous maintenance regime to maintain track alignment and increases the susceptibility to formation failure. QR Network recognises that the valuation approach to formation (particularly to the component of the formation referred to as the Top 600) needs to reflect these matters. Either the maintenance costs can reflect those expected of a corridor with an engineered formation with the appropriate assumed asset value, or the asset value can be discounted to reflect the asset condition, but the access charge includes sufficient revenue to maintain service potential. Consistent with the approach used in the 2001 valuation of the CQCR, QR Network is proposing the latter of the two options and has further discounted the depreciated value of the formation from Nogoa to Wurba by 50%.

Similarly, some bridges between Nogoa and Wurba have construction dates which would result in the asset nearing the end of its presumed physical asset life. However, these bridges have also undergone upgrades since their build dates and

have been strengthened with the addition of concrete mid-supports which has extended the period of time until such assets would require replacement. In addition, routine and major maintenance activities have maintained the service potential of these assets. Applying straight line depreciation from the original build date would not adequately value the asset's remaining functionality or service performance. Accordingly, the Connell Hatch valuation assumes these assets are mid-life expired. This is consistent with the comments by PriceWaterhouseCoopers in its review of the ARTC DORC valuation:

> *'in relation to why most rail networks (of more than 2-3 decades in age) with MPM programs tend to have accumulated depreciation of 45 to 55% this is best explained by MPM and cyclical upgrades resulting in a 'saw-tooth' effect on condition quality around a mean of 50%.'*

However, QR Network has assessed that the ongoing maintenance costs associated with continual renewal, maintenance and inspection of the timber bridges on the Springsure branch between Nogoa and Wurba, relative to the higher standard concrete structures between Burngrove and Nogoa, is not consistent with that expected of at half-life expired. Therefore, QR Network has assumed timber bridges on the Springsure branchline to be 75% life expired.

The timber sleepers between Burngrove and Nogoa were also highly deteriorated. Accordingly, QR Network has assigned no economic value to those assets in the valuation. A 1 in 2 sleeper replacement program, approximately 43000 sleepers, was undertaken in 2006-07 which has been capitalised into the Regulatory Asset Base. Timber sleepers between Nogoa and Wurba are in reasonable condition and considered to be equivalent to half-life expired.

Since completion of the DORC assessment in November 2005, the Emerald district experienced a significant weather event in the summer of 2007-08, rated as a 1 in 50 year event. This event had a considerable impact on the below rail infrastructure within this district and the Springsure branchline experienced a number of formation failures.
Subsequent investigation of the formation and ballast integrity through a trenching program has identified a deficiency in ballast depth for a considerable proportion of the Springsure branchline due to a combination of weather, formation and service loads. It is expected that the full extent of the ballast deficiency will be accurately assessed following further evaluation with ground penetrating radar. Accordingly, QR Network has made a consequential variation to original DORC valuation by impairing the value of ballast for approximately 50% of the corridor length.

QR Network expects to incur additional capital costs related to formation strengthening, ballast deepening and drainage works between the period of the tariff commencement date and expiry of the 2008 Undertaking. Given the relatively immaterial cost of these upgrades relative to the size of the UT2 CQCR capital indicator the DAU has not amended the capital indicator provisions in the 2008 Undertaking.

4.1.1.4. Project Costs – renewal activities.

The Minerva Coal Rail Project comprised:

- Construction of a new 3.62 km long balloon loop at 45.59 km along the Springsure branch line and an overhead bin coal load-out facility.

- Upgrade of the existing railway from Burngrove to Wurba to suit the 20 TAL operation and the 2.5 mtpa of additional traffic from the Minerva mine. This included an upgrade of track and strengthening of bridge and culvert structures where required, with a major element being the upgrade of the Comet River bridge.

The projects costs have been included in the asset valuation as being incremental capital costs added to the value of the existing infrastructure prior to the Minerva project. Accordingly, the capitalisation of the project upgrade costs in the DORC valuation does not result in double counting as:

- the resleepering which occurred between Nogoa and Wurba replaced life expired assets. Accordingly, the weighted average value of timber sleepers between Nogoa and Wurba should have the same value whether valued as existing plus incremental or as the current configuration.

- The expired life of the rail is likely to be less than the average 50% assumed in the asset valuation through the application of average physical asset lives for similar assets in the CQCR due to the historically light utilisation of this corridor. Excluding track upgrade costs which included maintenance activities such as resurfacing, rail grinding and restressing, fails to fully recognise the extended physical asset lives required to meet the service requirements of coal carrying Train Services.

4.1.2. Remaining Economic Lives

As part of the 2001 asset valuation, the QCA made a general assessment of the economic life of the coal Rail Infrastructure, taking account of the forecast output from Queensland coal mines into the future. As a result of this assessment, the QCA concluded that the economic life of rail assets is not a factor that will constrain their operational lives.

Subsequently, as part of its assessment of QR's 2005 Undertaking, the QCA considered that, on balance there was sufficient justification for a 50 year economic life constraint on Rail Infrastructure assets. Therefore, the QCA considered it appropriate that QR Network's below-rail assets with remaining lives exceeding 50 years be revised to a remaining life of 50 years[1].

QR sought advice from Barlow Jonker with respect to the coal deposits west of Burngrove and the likely mine start dates and mine lives of these resources. Barlow Jonker identified that there were four known deposits in addition to the Minerva mine.

The Minerva mine plan accepted by the Department of Natural Resources and Water states a proposed mine life of 11 years on the measured and indicated reserves of 33Mt. Felix Resources has recently revised the expected Minerva mine life out to 2020, or 14 years of production.

Of the four other deposits, at least three may be exploited, including Athena, Taroborah and Valeria. Since Barlow Jonker's assessment, companies undertaking

[1] Queensland Competition Authority, Draft Decision, QR's 2005 Draft Access Undertaking, July 2005, p 63

exploration within the Blackwater system have made public announcements regarding deposit discovery and potential mine development which could utilise rail infrastructure in the proposed West Balckwater cluster. Details of these potential mine developments are provided in Table 2.

The potential for development of the Athena mine (immediately adjacent to the Minerva mine) is greatly enhanced by the sunk nature of spur line to the owner of the resource development rights and the relatively very high quality of the product. Publicly available information indicates the Athena deposit is low ash, high-energy and low in sulphur making it highly competitive. The overall competitiveness will be dependent upon the costs of underground production and the relative cost differentials in the supply chain. This will be particularly sensitive on whether users of the Wiggins Island terminal pay the incremental costs of its development or an average terminal price applied across all coal loading terminals in Gladstone. However, current market prices for thermal coal improves the economic viability of more distant mines and greatly increases the prospect of additional thermal coal mine development.

The Athena deposit has an Inferred Resource of 560 million tonnes. However, until such time as the necessary exploration activity is completed, details regarding reserves and extraction rates are unavailable to determine a reasonable mine life. However, on the basis of the available information, QR Network considers it reasonable to assume the economic life for the Rail Infrastructure between Nogoa to Wurba to be 30 years. While the Athena and Minerva deposits are the most likely to utilise this infrastructure there is the potential for exploration activity to identify exploitable resources in the future. Again where this occurs QR Network would seek to re-evaluate the remaining economic life of the assets.

QR Network considers that, due to the existence of additional deposits that could utilise the rail infrastructure from Burngrove to Nogoa, it is reasonable to assume a remaining economic life for this section of track consistent with that used for the remainder of the Blackwater System. QR Network accepts the uncertainty of whether the Burngrove to Nogoa junction Rail Infrastructure will continue to be used for coal carrying train services beyond the life of the Minerva Mine and Athena deposit.

Table 1. Possible mine developments west of Burngrove

Deposit	Owner	Location	Potential	Total Resources (mt)	Est. Mine Life (years)
Athena	Felix Resources and Sojitz Joint Venture	Adjacent to existing Minerva operations	Athena is prospective for underground development to produce coal that is low ash, high-energy and low in sulphur. Minerva infrastructure improves the prospects for commercial exploitation of Athena	560	Note yet determined
Taroborah	SK Corp	20 km west	Potential for open-cut and	80	20-25

	(50%) and Kores (50%)	of Emerald	underground extraction. Exploration planned to be completed by 2009 with mine production to commence post 2012. Owners have signalled importance of mine to Korean energy self sufficiency.[2]		years at a production rate of 2-2.5 mtpa
Valeria	Rio Tinto (71.2%)	38 km north west of Emerald	Potential open-cut mine with four seams of commercial significance. Mine may be a possible replacement for the Clermont mine which has an expected mine life up to 2025.	440	Estimated 5 mtpa production
Yamala	Nortthern Energy Corporation (92%) and Sojitz (8%)	22 km east of Emerald	Initial quality results indicate a high quality thermal coal and the potential for a low-ash, semi-soft metallurgical coal product. Potential to commence in 2013-14. Development is dependent on completion of Wiggins Island Coal Terminal.	190mt inferred	3-4 mtpa
Alpha South	Waratah Coal	170 km west of Emerald	Close-spaced drilling will shortly commence in the South Alpha resource to bring the open-cut potential to reserve status Transport route will depend on port capacity availability.	2100 mt inferred	Not yet determined

4.1.3. Return on Capital

QR's systematic risk profile for the Burngrove to Minerva Rail Infrastructure, on a stand-alone coal basis, is similar to that other Rail Infrastructure in the Central Queensland Coal Region, particularly that of export thermal coal Customers in the Blackwater system. Therefore QR will apply the weighted average cost of capital determined by the QCA for the CQCR in for the 2005 Undertaking in calculating the appropriate return on capital.

4.1.4. Return of Capital

As indicated in the discussion on economic life there is some uncertainty with the likely and potential development of coal mines west of Burngrove. QR has previously proposed, and continues to assert the appropriateness, of front-end loading the

[2] Comments attributed to the Korean Ministry of Commerce, Industry and Energy in the Korean Herald, 18 January 2006.

depreciation to mitigate the asset stranding risk and facilitate the recovery of a *normal rate of return* on the asset. However, applying accelerated depreciation to the relatively low volumes from the Minerva mine would result in a high Reference Tariff relative to the other Blackwater users.

Accordingly, depreciation of the assets for the West Blackwater cluster has been assessed by applying a straight-line methodology to the lesser of its remaining physical life or the economic life. The exception being rail infrastructure assets, such as rail, which are not consumed over time but according to usage related profile that is not consistent with a straight line methodology where the usage varies. The current volume forecasts from the Minerva mine are more consistent with a longer physical life than that implied by the average physical asset lives assumed in the asset valuation and are therefore being depreciated on a straight-line basis over thirty years.

4.1.5. Capital Expenditure Forecasts

As discussed in Section 4.1.1.3, the Springsure branchline experienced a number of formation failures in 2007-08 requiring repair and strengthening. QR Network is presently evaluating options for upgrades to minimise life-cycle costs associated with the asset condition and service requirements. Based on an assumed wet period every four years and associated probability of further formation failures it is anticipated that a combination of additional drainage works and ballast deepening to reduce load transfer to the formation will be necessary.

While future capital works such as these are normally provided for within the Capital Indicator (with variations in actual expenditure compared to the Capital Indicator dealt with in the Capital Expenditure Carryover Account), given these capital works are specific to the Burngrove to Minerva track section that where not included in the CQCR when the capital indicator was established, QR considers it reasonable to adjust the Capital Indicator to reflect additional forecast capital expenditure.

However, as the forecast capital expenditure in 2007-08 and 2008-09 of approximately $0.3 million and $0.9 million respectively does not have a material impact on the reference tariff or the system allowable revenue, QR Network does not propose to amend the Capital Indicator provisions in Schedule FB.

4.1.6. Asset Roll-forward

Paragraph 1.3 of Schedule FB provides for the increase in the value of the assets contained in the Regulatory Asset Base (RAB) if additional sections of existing Rail Infrastructure are incorporated into the CQCR. For the purpose of this provision the value of the RAB will be increased by the amount accepted by the QCA as of 1 July 2007.

As the QCA has notified QR Network of its acceptance of the roll forward of the CQCR RAB for the 2006-07 year, QR Network has modelled the West Blackwater Reference Tariff using actual inflation for asset roll-forward for the period of commencement of railings to 30 June 2007.

A summary of the Burngrove to Minerva asset roll-forward is detailed in Table 3.

Table 3 Burngrove to Minerva Rail Infrastructure Asset Roll-Forward

Inflation Rate	2005/06	2006/07
	4.13%	2.56%
QCA style summary	**2005/06**	**2006/07**
Opening Asset Value	52,721,720	71,356,506
Capital Expenditure	18,374,080	4,862,615
Inflationary Gain	1,945,830	1,889,179
Depreciation	1,685,124	2,674,490
Closing Asset Value	71,356,506	75,433,810

On the basis of the asset roll-forward for the incremental assets associated with the West Blackwater reference tariff, QR Network proposes to increase the value of the CQCR Regulatory Asset Base by $75.4 million from 1 July 2007.

4.2. Total Maintenance Cost of the Relevant Rail Infrastructure

In the maintenance plan for the Burngrove to Minerva Rail Infrastructure, as with all other maintenance plans for the network, the required level of maintenance intervention for each service product was determined based on projected asset deterioration rates. The derived maintenance scope was benchmarked against like systems with data normalised against the differing traffic task and existing asset condition and structure.

In determining the ongoing maintenance inputs for the following factors were considered:

- Forecast traffic task;
- Safety regulator requirements;
- Required asset performance;
- Asset condition, structure and age;
- Environmental;
- Efficient cost of service delivery.

In order to ensure the maintenance costs align with a stand-alone coal network, the maintenance plan was optimised to ensure only efficient costs relating to assets in the Regulated Asset Base are included as incremental costs. This removed all maintenance costs associated with turn-outs for the optimised sidings and passing loops and all costs related to electrification assets and line signalling.
As already noted within this submission, the track standard is considered to be lower than that which would be constructed for a greenfield investment supporting a heavy haul railway carrying coal train services (i.e. the Bauhinia Regional Rail Project). The asset value reflects this and the opening asset value is substantially lower than the cost of purpose built heavy haul railway. As a consequence, the track section between Burngrove and the Minerva balloon loop requires a higher cost maintenance regime in order to safely and reliably deliver the forecast tonnage.

The configuration of the track and structures is marginal for the tonnages, speed and axle loads on the line and therefore the condition of the infrastructure is optimised to

suit the service requirements. To sustain the marginal track in a fit-for-purpose state, maintenance activities such as:

- inspections to monitor the deterioration of the infrastructure; and
- repairs such as timber bridge repairs, resurfacing to lift and line track, resleepering and sleeper cluster management of timber sleepers;

will be high.

The maintenance plan can be evaluated in terms of activities considered as either routine or major in nature. Major periodic maintenance includes activities include:

- ***Resleepering***. Mechanised resleepering is generally undertaken at a frequency of 1 in 4 every five years. A major resleepering project between Burngrove and Nogoa, at a rate of 1 in 2 was undertaken in 2006-07. These activities have been capitalised and no further major resleepering for this line section is expected to occur during the 2005/2008 Undertaking period. Approximately, 8850 sleepers, or 15% of the sleeper population will be replaced between Nogoa and Wurba in 2007-08. This reflects the reasonable state of the existing sleeper assets and the replacement which occurred during the project upgrade.

- ***Resurfacing***. The combination of local black soils and the high axle loads relative to the lighter track structure imposes dynamic loads on rails which necessitates a more frequent resurfacing program.

- ***Restressing***. Due to the extreme temperatures and the traffic task, the rails need to be frequently stress tested and adjusted. This will assist in reducing the number of pull aparts and buckles which have been experienced on this line.

The routine maintenance includes activities such as inspections to track and structures, as well as minor repairs and adjustments to track structures and civil infrastructure. The prevalence of aggressive termite populations necessitates a vigilant sleeper and timber bridge monitoring program. Therefore, the cost of monitoring for the degradation of timber bridges and structures from increasing termite infestations is high. On the basis maintaining the infrastructure required for a stand-alone coal service between Burngrove to Minerva the annualised efficient maintenance costs, in 2006-07 dollars for the period up to the commencement of the 2009 Undertaking is:

- Approximately $1,123,000 per year, or $18,480 per track kilometre for Burngrove to Nogoa; and

- Approximately $1,630,000 per year, or $35,285 per track kilometre for Nogoa to Wurba.

A breakdown of the efficient maintenance cost forecasts for the Minerva Rail Infrastructure is detailed in the confidential submission in Attachment B.

4.2.1. Adjustment for Non-Coal Traffics

Coal carrying train services between Nogoa and Wurba effectively represent 100% of the gross tonne kilometres on this line section. Grain services may operate but do so on an adhoc basis in the Daily Train Plan. Coal represented 98.7% of gross tonne kilometres on this line section during 2006-07 and 100% in 2007-08.

Non-coal carrying train services between Burngrove and Nogoa while frequent in terms of train movement represent approximately 15% of gross tonne kilometres on this line section during 2007-08. This is a reduction from 20% in 2006-07. However, 2007-08 is a better representation of the proportion of non-coal use as coal carrying train services operated at the full contractual entitlement.

In establishing the appropriate contribution of non-coal train services to maintenance on the Burngrove to Wurba Junction corridor, QR Network has made a further reduction in the allocation of incremental maintenance costs to reflect the contribution of non-coal traffic, in terms of gross tonne kilometres, to the maintenance activities on the optimised Rail Infrastructure. This methodology is consistent with that applied to the determination of incremental costs in the Blackwater System.

There are two reasons as to why applying the Blackwater methodology may not be appropriate in assessing a reasonable contribution of non-coal services to the optimised maintenance costs. First, the West Blackwater cluster rail infrastructure is of a lower standard with higher maintenance costs relative to the Blackwater system. Second, a 15.75 TAL service operating on a 20 TAL system will have different impact on maintenance costs than a 15.75 TAL service operating on a 26 TAL system. However, this needs to be balanced against the additional maintenance costs incurred by QR Network on optimised assets such as resurfacing and routine maintenance of turnouts of sidings and angles and the maintenance of signalling infrastructure necessary for the frequency of train movements.

4.2.2. Reasonableness of QR's Maintenance Costs

The incremental maintenance costs for the Minerva mine have been developed using a bottom-up approach. However, QR recognises that there is a growing trend among regulators to benchmark the reasonableness of cost estimates against other rail operations, or the decisions of other regulators.

The principal benefit of benchmarking is that it provides a base for the evaluation of the reasonableness of costs. However, the effectiveness of benchmarking is dependent upon the robustness of the relative comparator(s).

QR has concerns regarding the relative circularity in regulatory decision-making for efficient maintenance costs. A number of studies on efficient maintenance costs prepared for regulators in other jurisdictions can be linked directly back to the Queensland Competition Authority Working Paper 2, '*Usage Related Infrastructure Costs in Railways*', or regulator approved rates with limited reference to actual maintenance costs. Accordingly, the use of benchmarking in regulatory decision making should be constrained to assessing the reasonableness of the proposal and not as a mechanism for the setting of efficient maintenance costs. For example, Charles Rivers Associates 'Review of compliance of ARTC with NSW Rail Access Undertaking ceiling test for 2004-05' prepared for the Independent Pricing and Regulatory Tribunal commented:

'the Queensland comparison is not presented as conclusive given the various difficulties with benchmarking that have been noted by ourselves as well as ARTC … we do not recommend any adjustment to the ARTC cost base.'

Benchmarking activities will provide more robust outcomes when constrained to comparing unit rates for activities which represent similar track configurations using similar technologies across various networks. The reliance on benchmarking activities for calculating the cost per kilometre which does not correct for required track conditions, service levels and environmental factors is likely to result in regulatory error with the consequential increase in the risk of asset or operational failure.

Any reduction in the scope of maintenance activities may result in asset degradation and consequential operating restrictions. The imposition of operating restrictions, such as speed, will have a significant impact on the efficiency of above-rail operations.

Benchmark comparators are generally prepared for the development of a network wide cost allowance, as occurs in the various systems in CQCR. However, these rates are an average rate and as noted within Working Paper 2, individual rail corridors and line sections, particularly for low tonnages, vary significantly from trend curves because of varying physical characteristics and track quality requirements.

The application of a trend rate is inconsistent with the objective of identifying the incremental cost of the service and likely to significantly underestimate the required maintenance cost. Nevertheless, by reference to Table 4.1 in Working Paper 2 and interpolating for a tonnage rate of 2.5 mtpa, this equates to a total cost of $13,500 per kilometre. Indexing this estimate at a rate of 5% over the five years between 2000 and 2005 results in an updated estimate of $17,230 per kilometre.

When considered in light of coal carrying train services operating within the upper envelope of asset capability, in terms of axle load and speed, the efficient maintenance cost estimates for the Rail Infrastructure from Burngrove to Nogoa are reasonable. Taking into account the removal of mechanised resleepering costs between Nogoa and Wurba, these maintenance costs are also reasonable.

QR Network is committed to both the safe operation of train services on its network and the provision of service levels consistent with Customer expectations and considers these maintenance activities to be essential in meeting this commitment.

By way of example, shortly after the commencement of coal carrying train services from the Minerva mine a derailment occurred due to track buckling, damaging the Rail Infrastructure. This incident is currently being assessed by On-Track Insurance, but requires QR Network to meet the excess component of this claim. Any decline in track infrastructure quality which increases the probability of these events may lead to a higher total service cost than what QR Network is seeking to recover through access charges.

4.3. Incremental Railway Management Costs

The management of the 107km spur and branch line will generate some increase to overall railway management costs. Railway management costs refer to train control,

CQCR telecommunications, infrastructure management, business management, corporate costs, systems development, and risk premiums.

As the Minerva coal-carrying Train Services are utilising existing Rail Infrastructure which also supports non-coal carrying Train Services, the railway management costs are partially captured within existing non-CQCR determined resources, i.e. for example direct train control is managed on the far-west control board. This is not to say that these costs are not incremental in the economic sense, only that they are not as readily separable had they been associated with a green field investment. QR Network has therefore calculated an incremental railway management cost for Minerva coal carrying Train Services by benchmarking against comparators in the CQCR.

The Rolleston spur line is a reasonable benchmark to develop the unit rate for the Minerva railway management costs due to its similar length. QR Network has discounted the Rolleston costs to reflect the lower frequency of train movements. Incremental establishment costs have been recognised in the first two years of the modelling period. These costs capture the contract, expert services, tariff development, asset valuation and other business related costs such as legal services in establishing the Minerva coal carrying train service and reference tariff.

The risk premium component included in the opex costs is benchmarked against the Blackwater System. The combination of the asset standard and the operating characteristics of the Minerva coal-carrying Train Services significantly increase the risk profile relative to the Blackwater System. QR has sought to reduce this risk to a comparable level through the higher maintenance cost regime. A reduction in the scope of maintenance activities would significantly increase the risk profile and necessitate a review of the risk premium.

4.4. Incremental Maintenance Costs on Mainline

Coal carrying Train Services for the West Blackwater cluster are shorter and have a wagon weight approximately 30% lower than other coal carrying services in the Blackwater system. It is reasonable to conclude that the West Blackwater services impose a lower incremental maintenance cost than that reflected in the current AT_1 tariff for the Blackwater System.

Working Paper 2 on “Infrastructure Usage Charges’ includes a number of hypothetical incremental maintenance cost case studies, one of which estimates a reduction factor for reducing the Blackwater axle load from 26 to 20 TAL. The case study indicates that a 6 tonne reduction in axle load corresponds to an 8.3% reduction in maintenance costs.
While this is a reasonable approach in the long term, QR Network notes that the UT2 maintenance costs estimates for the Blackwater System were developed inclusive of the Minerva coal carrying train services.

The AT_1 tariffs for Blackwater clusters were also established on the assumption that Minerva coal carrying train services would be set at the equivalent 26 TAL. Therefore, to reduce Minerva’s contribution to Blackwater mainline maintenance relative to the Blackwater system would not allow the full recovery of revenue required to meet the Blackwater maintenance task over the UT2 period. Accordingly, QR Network proposes to set the maintenance contribution of Minerva coal carrying services to the mainline maintenance costs at a comparable level to the Central Blackwater cluster.

5. Minimum Contribution to Common Costs

When a new Reference Tariff is developed for a Train Service, its minimum contribution to QR Network's Common Cost, for non-electrification assets, will be developed in accordance with subclause 4.1.1 of Schedule F, Part B. Common Costs is defined in the Undertaking as meaning:

> '*those costs associated with provision of Rail Infrastructure that are not Incremental Costs for any particular Train Service using that Rail Infrastructure*.'

For a Train Service in the Blackwater system the contribution for common costs (in cents/'000 gtk) shall equal:

350 – 0.3M – S

where: M = is the relevant mine's mainline length in kilometres (Gladstone to Burngrove); and
S = the relevant mine's spur length in kilometres (includes the full corridor length from Burngrove to Minerva).

Under this approach the minimum contribution to common costs for the Minerva mine is:

350 – (0.3 x 312) – 107 = $**1.49/'000** gtk[3]

However, the application of the formula is constrained where there is a significant difference in the train configuration such that the actual contribution to common costs is manifestly inadequate. In this context, the Minerva coal carrying train service description is a lighter and shorter Train relative to those operating in the Blackwater system. Accordingly, the gtk per Train Path Contribution is lower than the Predominant Train Service.
QR is not seeking to equalise the contribution to common costs on gtk per train path due to the high spur costs, overall haul length and the relatively low volumes from the Minerva mine. The Blackwater Reference Tariffs for the UT2 period were developed on basis that the coal carrying train services from the Minerva mine are making a contribution to common costs as determined in accordance with the formula above.

6. Cluster Test

As discussed in Section 3, subclause 4.1.2 of Schedule F specifies that the Reference Tariff for a new coal carrying train service will be the higher of (on a $/net tonne basis):

a) the Reference Tariff for the most relevant existing Reference Train Service: or

b) the sum of the new coal carrying Train's Service's Incremental Costs and required minimum Common Cost Contribution determined in accordance subclause 4.1.1

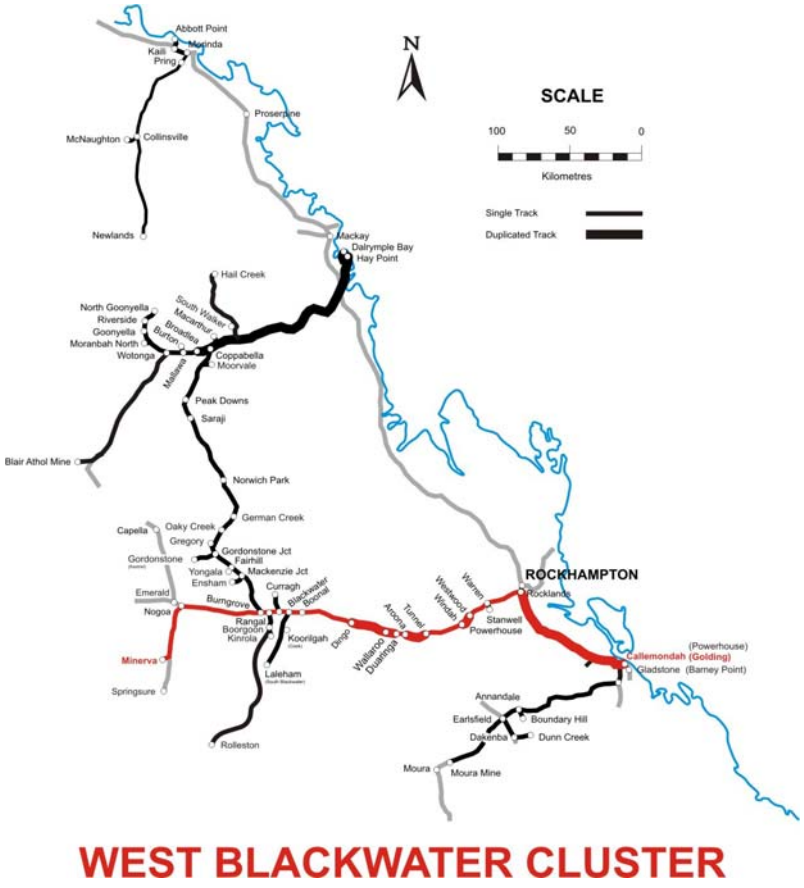
[3] As of June 2005.

A comparison of the sum of the Minerva mine coal carrying train service's incremental costs as determined within Section 4 and the minimum contribution to common costs calculated in Section 5 and the applicable access charge, expressed in net tonnes, for the most relevant existing reference train services as of 1 July 2007 is shown in Table 4.

Table 4 Minerva Access Charges

Central Blackwater	North Blackwater	Incremental + minimum CCC
$3.27	$2.95	**$5.67**

Therefore, QR proposes to develop a new West Blackwater Reference Tariff for coal carrying Train Services from Minerva to Gladstone.



7. West Blackwater Reference Tariff

On 30 June 2007, the QCA approved QR Network's proposal to amend its approved access undertaking to implement a hybrid revenue cap for coal-carrying services in the central Queensland coal region.

As a consequence of the form of regulation review a new provision has been added to Schedule F which requires Access Charges for the Central Queensland Coal Region to have the same structure. Specifically, subparagraph 3.5.1 requires that:

'Unless prior written approval from the QCA is received, QR must calculate all Access Charges used for coal-carrying Train Services in the Central Queensland Coal Region by reference to the same components as Reference Train Services (AT_1, AT_2, AT_3, AT_4, AT_5 and EC if appropriate), even if the Train Service does not constitute a Reference Train Service.'

As the Minerva coal carrying Train Services are provided by diesel locomotives, there is no requirement for the Reference Tariff to include the AT_5 or EC components.

The AT2 component of the reference tariff structures is currently priced on the basis of train paths. Minerva coal carrying train services do not consume any more train paths than other diesel coal carrying train services operating in the Blackwater system.

7.1. Commencement Date

Subparagraph 6.4.2.(i) specifies the commencement date for new Reference Tariff services. Specifically:

If the QCA approves a proposed Reference Tariff for a new Reference Train Service submitted under Paragraph 6.4.2(a), or resubmitted under Subparagraph 6.4.2(k)(ii):

(i) the proposed Reference Tariff will apply from the earlier of:
- *(A) the date of the QCA decision;*
- *(B) where Paragraph 6.4.2(b) applies, the date of the first Train Service servicing the new coal mine; and*
- *(C) where Paragraph 6.4.2(c) applies, the date when the relevant notice is given by the QCA,*

except where the QCA specifies a later date in its decision, in which case the proposed Reference Tariff will apply from that date.

As QR Network has developed the proposed Reference Tariff for a the New Reference Train Service submitted under Paragraph 6.4.2(b), the Reference Tariff should apply from the date of the first Train Service servicing the new coal mine. However, QR Network notes that applying the Reference Tariff from November 2005 would introduce significant complexity in regard to retrospective variations to the 2006-07 revenue cap variations and would be unreasonable in light of the period of time elapsed since Train Services commenced.

Currently, the contribution of coal-carrying train services from the Minerva mine to the Blackwater system revenue cap adjustments is limited to its contribution to its common cost of the Blackwater mainline as determined in Section 5. QR Network is of the view that this is consistent with the QCA comments in approving the 2006-07 revenue cap variation:

The Blackwater system's reference tariffs and allowable revenue were approved on the basis that a Minerva reference tariff would be submitted for the Authority's approval and that the Minerva service would make the appropriate common cost contribution to the Blackwater system.

In the absence of a Reference Tariff for the Minerva Service the QCA could exercise its discretion and determine the appropriate common costs contribution to the Blackwater System by applying the Reference Tariff for the most relevant existing Reference Train Service, the central Blackwater Tariff. The QCA has advised that it may exercise its discretion in a similar manner should a similar issue arise in future revenue cap adjustment applications.

As the current access charge for the Minerva coal service was negotiated on the basis of the applying the contribution to common costs in the Blackwater system in accordance with Section 5 and the central Blackwater AT1 tariff component, plus the indicative costs associated with the Burngrove to Minerva Rail Infrastructure, the uncertainty associated with the QCA's approach to QR Network's 2007-08 revenue cap variation application exposes QR Network to a significant financial exposure.

Therefore, QR proposes a commencement date for the West Blackwater Reference Tariff of 1 July 2007.

In November 2006, QR advised the QCA that the Burngrove to Nogoa and Nogoa to Wurba Junction sections of track, previously included in the TSC network and funded under the Transport Service Contract (TSC) (Rail Infrastructure) from 1999/2000 to 2005/06, have been removed from the TSC supported network, effective 1 July 2006. Accordingly there is no requirement for TSC revenue for this rail infrastructure to be taken into consideration for the determination of the indicative Reference Tariff.

Based on the factors discussed in Sections 4 and 5, and the train consist, tonnage profile and resultant estimated traffic statistics assumptions for the Minerva mine (included in Attachment B), the Reference Tariff ceiling for this new cluster on a stand alone basis for the remaining period of the current undertaking to apply from 1 July 2007 would be as follows:

Reference Tariff Component	*Reference Tariff 07-08 $*
AT_1	*$0.71*
AT_2	*$1,662*
AT_3	*$5.29*
AT_4	*$2.21*
QCA Levy	*0.00560*

Attachment A – Final Draft Valuation Report Wurba Junction to Burngrove – Depreciated Optimised Replacement Cost (DORC) Assessment

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Final Draft Valuation Report Wurba Junction to Burngrove – Depreciated Optimised Replacement Cost (DORC) Assessment Queensland Rail

1 May 2007
Reference HN82
Revision 2

Connell HATCH
infrastructure for industry

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Figures and Tables

1. Introduction

1.1 Project Scope

Connell Hatch was commissioned by Queensland Rail to develop a Depreciated Optimised Replacement Cost assessment (DORC) of the track section between Wurba Junction and Burngrove.

The DORC assessment was split into a number of stages;

1. Desktop Assessment – included a review of the working plan and section diagrams to determine the location of major structures, cuttings etc for review during the site visit.
2. Site Visit – included an inspection of the track using noting any discrepancies between the information collected during stage 1 (from the working plan and sections) and the condition and appropriateness of the infrastructure on site.
3. Data Verification – included a review of the data collected on site, which was compared against the data collected during the desktop evaluation.
4. Draft DORC Assessment - using data collected on the site visit, a replacement cost, contemplating Modern Engineering Equivalent (MEE), was completed and a draft was submitted to QR for comment (Revision 0, 17 November 2006).
5. Final DORC Assessment - discussions were held to with QR following the draft evaluation. Minor changes were made and the final evaluation report was provided (Revision 1 (this report), 30 March, 2007).

This ***Final Valuation Report*** is based on Stage **5 only**. The 'Site Visit Report' which covers Stages 1-3 and the 'Draft Valuation Report' (Stage 4) were provided previously.

1.2 Site Visit

The site visit along the track section from Wurba Junction to Burngrove was undertaken from Wednesday 19 July 2006 to Friday 21 July 2006. The objective of the visit was to:

- Inspect the length of the line from Wurba Junction to Burngrove;
- Review and assess the track condition along the length of the line;
- Note any discrepancies between the information provided on the working plan and section drawings and what is actually on the line; and
- Consult with various track personnel in the area to determine any specific maintenance requirements or other points of interest with special requirements.

1.3 Project Background

Minerva Mine

The Minerva mine is located 45km south of Emerald in Queensland's Bowen Basin, and is operated under an unincorporated joint venture between Felix Resources and Sojitz Corporation of Japan.

- The balloon loop for the Minerva Mine meets the Springsure branch at Wurba Junction.
- Minerva is a multi-seam, open cut mine designed to produce a total of 2.5 million tonnes per annum of medium volatile PCI coal and premium thermal coal.
- All product is railed from Minerva for export through the Port of Gladstone.
- The first coal was mined in July 2005, with the first shipment leaving Gladstone in November 2005.
- In June 2006, Minerva's production (when annualised) met the rate required to achieve 2.5Mtpa.

Wurba to Burngrove Line Section

The Gindi Minerva to Gladstone train services use the existing Blackwater system between Burngrove and Gladstone. In addition, these train services use additional sections of QR's existing rail infrastructure (not currently defined as included in the Blackwater system or the Central Queensland

Coal Network) between Gindi Minerva (Wurba Junction) and Burngrove. This includes pre-existing rail infrastructure between Wurba and Burngrove, and a new balloon loop connecting Wurba to Gindi Minerva mine. In order to develop the reference tariff applicable to Gindi Minerva train services, it is necessary to develop a regulatory asset value for the Gindi Minerva (Wurba Junction) to Burngrove section of track.

The Wurba to Burngrove rail infrastructure was originally built in 1884, but was the subject of a major upgrade in 1985/86 to allow for the operation of train services at 15.75 Tonne Axle load (TAL).

- For the Burngrove to Nogoa section, this was undertaken in 1986 as part of the main line electrification project and for the Springsure branch, this was undertaken in 1985 for the purpose of accommodating an increasing grain business.
- These upgrades included replacement of all rail, sleepers, ballast, points, turnouts and level crossings and significant upgrade/replacement of structures eg culverts.
- Prior to the commencement of the Gindi Minerva train services, the track was designed and operated as primarily a grain line.

Train services from the Gindi Minerva mine commenced in November 2005. The spur from Wurba to Gindi Minerva has been purpose built for the Gindi Minerva mine and was completed in 2005.
In order to facilitate these train services on the mainline, a *minimal* upgrade of the rail infrastructure from Burngrove to Wurba was undertaken (included in the Minerva Coal Rail Project which discussed in more detail in section 3.5) to allow for the operation of 20TAL train services at a volume level of 2.5 Mtpa. However, the line remains a timber sleepered track with relatively light rail. Consequently, the heavier axle loadings and increased traffic due to modern coal train operations impose significant wear upon the infrastructure. Notwithstanding the works completed under the Minerva Coal Rail Project, the formation, substructure, and alignment of the railway necessitate higher maintenance than would be so under a purpose-built modern railway such as Rolleston less than 100 kilometres distant utilising concrete sleepers, heavier rail and engineered formations.

In summary, in contrast to the current Central Queensland Coal Network, the Wurba to Burngrove rail infrastructure constitutes a low-capital, high-maintenance regime which imposes a significant expenditure in sustaining maintenance to ensure track integrity necessary as a result of –

- The black-soil environment;
- The train configuration (triple header, 75 wagons) which vary greatly from the short, grain trains which previously operated on the infrastructure,
- The resident termite populations (necessitating vigilance in sleeper and timber bridge monitoring), and
- The light rail and timber sleepered track construction.

The low-capital, high-maintenance nature of this rail infrastructure will need to be recognised, both in the asset valuation and in the provisions for maintenance costs for the Wurba to Burngrove section.

Figure 1 : Central West System Schematic Diagram

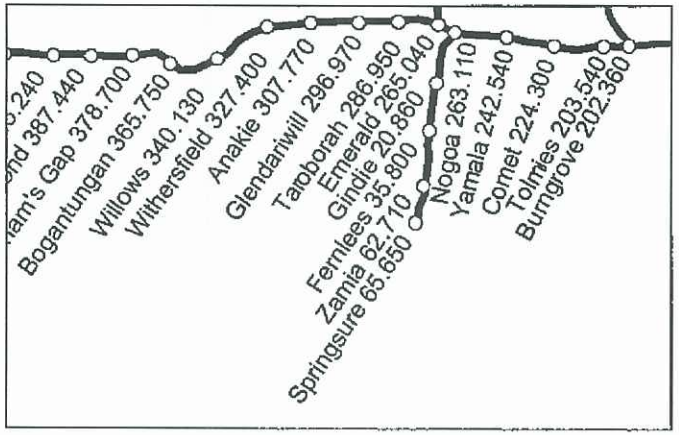


Figure 2 : Springsure Branch Line Diagram

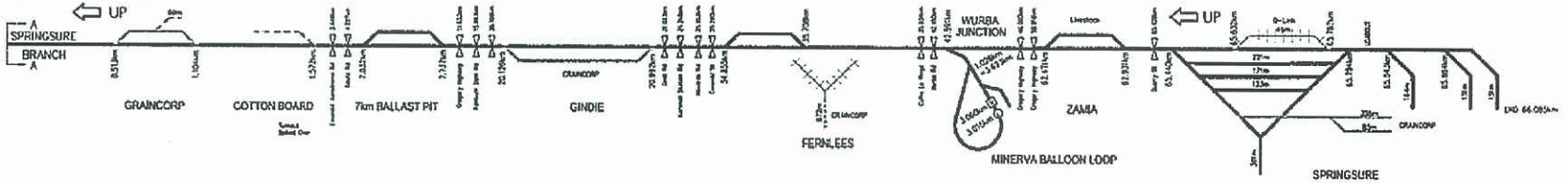
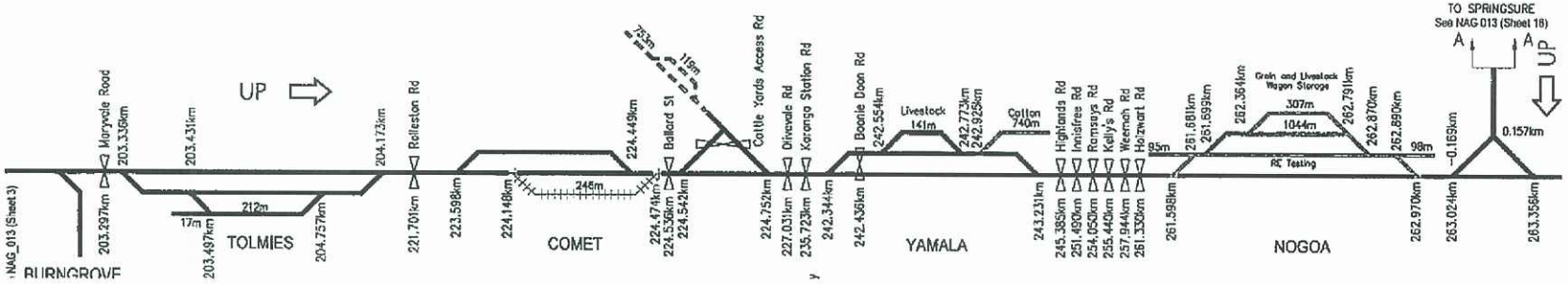


Figure 3: Central West Line Diagram (Burngrove to Nogoa)



2. Limitations

This report has been prepared by Connell Hatch for Queensland Rail (QR) as part of QR's assessment of the DORC valuation of the Wurba Junction to Burngrove track section. This report may be used by QR in assisting with the determination of an appropriate tariff for access to this line.

This report shall not be used nor relied upon by any other party nor for any other purpose without the express written consent of Connell Hatch. Connell Hatch accepts no responsibility for damages, losses or claims of any third party resulting from decisions made or actions based on this report.

This estimate was based on the QR data that was available at the time, while the information provided was reviewed, the Consultant was required to rely upon this information without independently verifying its accuracy.

The methodology as described in Sections 3 and 4 was devised to suit the time period over which the study was conducted. Where appropriate, assumptions and allowances were made as described in the report.

While it is believed that the information contained herein is reliable under the conditions and subject to the limitations set forth here, this report has been prepared based upon information and data obtained by the Consultant from the management and staff of the Client, its contract staff and advisors, or from public sources the Consultant deemed reliable. The Consultant therefore cannot and does not guarantee its accuracy.

The comments in the report reflect the Consultant's best judgment in light of the information available at the time of preparation. The Consultant further relied upon the assurance of the Client and its advisors that they were unaware of any facts that would make the information provided to the Consultant incomplete, misleading or inaccurate. The Consultant shall not be responsible for any errors or omissions in this report or in any information contained here regardless of any fault or negligence of the Consultant or others.

The disclosure of any information contained in this report is at the sole responsibility of the Client.

3. ORC Estimate Methodology

The following section outlines the methodology and assumptions made during the calculation of the Optimised Replacement Cost (ORC) estimate. The detailed spreadsheet containing the calculations is provided in Appendix B.

3.1 Definitions

Definitions are taken from Queensland Competition Authority (QCA), Asset Valuation, Depreciation and Rate of Return, Issues Paper, May 1999.

The *Replacement Cost* of an asset is an estimate of the current cost of replacing the asset with similar assets (not necessarily the same) which can provide equivalent services and capacity to the asset being valued. That is, it measures what it would cost today to provide an asset to deliver the same service potential as the asset being valued.

Optimised Replacement Cost (ORC) measures, from an engineering perspective, the cost of replacing the system in the most efficient way possible. That is, it does not factor in the cost of replacing inefficient excess capacity, redundant services provided by the asset, inefficient scale or obsolescence.

3.2 Valuation Date

The purpose of the valuation is for the development of a reference tariff that will apply to train services from Gindi Minerva to Gladstone, with that reference tariff commencing in November 2005. In order to determine the value of assets applicable at the commencement of the period for which the reference tariff applies, the rail infrastructure has been valued as at 1 July 2005 (i.e. prior to the Minerva Coal Rail Project). This value would is then rolled forward (to the extent appropriate), and the capital costs of the Minerva Coal Project added, to arrive at a valuation for use in the assessment of the reference tariffs.

3.3 Unit Rates

The primary source of data for the optimised replacement cost estimate includes projects completed under the supervision of Connell Wagner and/or Connell Hatch, advice from industry rail estimators and supporting documentation such as

- Valuation of Queensland Rails below rail assets for the Coal Network, November 2000, GHD
- Valuation of certain assets of the Rail Access Corporation, May 2001, IPART

In developing this report we have found wide fluctuations in the 2005 period as a result of stocks being drawn from existing inventory and market demand for new products driving prices up. We have strived to find a reasonable mid point.

A summary of the unit rates used in the assessment is provided in Appendix A.

3.4 Indirect Costs

Costs including engineering, design, procurement and contract management (EPCM), project initiation costs and contractor's profit and preliminaries represent real costs in the delivery of rail projects and hence need to be included in either the unit rates or separately as an additional line item. In this valuation we have included contractor's profits in the unit rates, however EPCM, owner's costs, and contractor's preliminaries are not included in the rates, and hence are added as an additional cost.

3.5 Minerva Coal Rail Project

The Minerva Coal Rail Project was undertaken as the minimal works required on the rail infrastructure west of Burngrove to allow for the operation of coal carrying services required for the Gindi Minerva

mine. The scope of the project was accepted by the Gindi Minerva mine as part of the development of the access arrangements to apply.

The scope of the Minerva Coal Rail Project broadly included the following:

- The construction of a new balloon loop (3.63km long) located at 42.592km on the Springsure branch line; and
- Upgrading the existing railway line between Burngrove and Wurba to suit the 20TAL operation and additional 2.5mtpa over the line, more specifically including:
  - Track upgrade to allow for 20TAL operation;
  - Reconditioning of Nogoa angle
  - Targeted upgrade of level crossings to ensure compliance with TAL and project longevity requirements
  - Comet River bridge upgrade to allow for 20 TAL
  - Upgrade of 5 timber bridges
  - Extension of DTC to the Springsure branch

As advised by QR, the total cost of the project as at 31 January 2007 is [redacted] million (excluding interest during construction. There is no significant additional expenditure anticipated for this project.

The costs for this project will be included in the DORC valuation at the actual expenditure using a base date of November 2005 (excluding interest during construction). No inflation will be applied to this value as the project has been completed within the last 12 months.

3.6 Asset Items

The track section has been split into the following sections;

Table 1 : Track Sections

Section	From	Ch	To	Ch
1	Burngrove	202.360	Comet	224.300
2	Comet	224.300	Yamala	242.540
3	Yamala	242.540	Nogoa	263.110
4	Nogoa	0.000	Gindie	20.860
5	Gindie	20.860	Wurba Junction	42.591
6	Minerva Balloon Loop	42.591	Minerva Balloon Loop	42.591

All costs have also been split into the following components (based on the structure provided by QR);

Table 2 : Cost Components

Asset Number	Name
1	Track
2	Signals
3	Bridges
4	Culverts
5	Earthworks
6	Other
7	Land Acquisition
8	Telecom
9	Land

Asset Number	Name
10	System
11	Regional
12	Elec System
13	Power System
14 - 19	CapEx

3.7 Optimisation

The valuation has been completed based on a stand alone coal railway operating over the Wurba Junction to Burngrove track section. As there is only one train per day servicing Minerva mine, there is no need for passing loops, hence these have been removed from the valuation. In addition, no electrified assets have been included as the Springsure branch is not electrified.

3.8 Inflation

In order to escalate the July 2005 valuation to November 2005, a rate of 2.3% was used. This is based on the ABS data for the Construction index for Queensland as outlined below.

Table 3 : Inflation Rates

	Index Number ; General construction (41) Queensland
Catalogue Number	6427.0
Series ID	A2333709J
Jun-2005	138.5
Sep-2005	141.1
Dec-2005	143.3
Total (6 months)	**3.5%**
Total (4 months)	**2.3%** (pro rata, based on above)

4. DORC Estimate Methodology

4.1 Definition

Definition is taken from Queensland Competition Authority (QCA), Draft Decision on QR's Draft Undertaking, Volume 3 – Reference Tariffs, December 2000

A *Depreciated Optimised Replacement Cost* adjusts the optimised replacement cost to account for asset consumption, that is, through depreciation. This method therefore estimates the net current cost of replacing the asset in its current (partly worn out) state with an asset that has a similar service potential. Asset replacement costs need to be depreciated where the existing asset's remaining service life is less than the life that would normally be expected from a new asset. The depreciation effectively recognises the limited remaining life.

In this case, the Optimised Replacement Cost has been constructed by considering that a hypothetical track section would be constructed at the datum date of ***1 July 2005***. The Depreciated Optimised Replacement Cost is then constructed by discounting (or depreciating) the ORC to take account of the "used" nature of the actual rail infrastructure.

4.2 Depreciation Formula

The depreciation formula which was adopted for the valuation is in line with the 2001 asset valuation;

Formula Description	Formula
Straight Line Depreciation	$\text{Depreciation Factor} = \frac{\text{Residual Life}}{\text{Effective Life}}$

4.3 Construction Date

As noted earlier, the original date of construction of the railway was 1884. However, there has been significant upgrading of the rail infrastructure at various times since the original construction.

Most recently, major track upgrades were completed on the Springsure branch in 1985 and the Burngrove to Nogoa track section in 1986 which included replacement of all rail, sleepers, ballast, points, turnouts and level crossings and significant upgrade/replacement of structures eg culverts. In addition, the Minerva Coal Rail Project was completed in 2005.

Based on these two upgrades the following construction dates were used for rail infrastructure assets:

Table 4 : Construction Dates for Track Infrastructure

Item	Construction Date	Notes
Earthworks	Original date :1884	
Track and turnouts	Burngrove to Nogoa: 1986 Springsure branch: 1985	
Structures (Bridges and Major Culverts)	Various	Where QR records cannot identify the construction date, it will be assumed that the assets are half life expired.
Level Crossings	Burngrove to Nogoa: 1986 Springsure branch: 1985	
Signalling, Train Control and Communications	Various	Where QR records cannot identify the construction date, it will be assumed that the assets are half life expired.

4.4 Asset Lives

There are two perspectives to the determination of asset lives:

1. determining the ***physical life*** of the asset, that is the period after which the deterioration of the asset from use and ageing is such that it typically requires replacement; and
2. whether the life of the resource served by the asset (that is, the life of the coal mines that are served by QR's network – often referred to as the ***economic life*** of the asset) will be exhausted prior to the deterioration of the asset from use and ageing.

The life of the asset should be based on its physical life, but should be capped by its remaining useful economic life.

4.4.1 Physical Lives of Rail Infrastructure Assets

The physical life of assets adopted in the 2001 asset valuation is shown in Table 5. However, QR also provided a list of asset lives, as shown in Table 6.

Table 5 : Asset Lives adopted in 2001 asset valuation

(Reference: Queensland Competition Authority (QCA), Draft Decision on QR's Draft Undertaking, Volume 3 – Reference Tariffs, December 2000, p166)

Asset group	Asset life (years)
Culverts, earthworks, embankments, concrete pipes, steel bridges, road overbridges, retaining walls	100
Track – composite life	40
Steel pipes, timber bridges, yard drainage, access roads	50
Traction power distribution	40 – 50
Field signal equipment	10 – 35
Traction power system equipment, track turnouts, buildings	25
Traction power system control, fences and noise barriers	15

Table 6 : Asset Lives as provided by QR (November, 2006)

	GOONYELLA	BLACKWATER	MOURA	NEWLANDS	CQ Coal
Track (track & turnouts)	35.0	35.0	40.0	44.0	37
Civil (culverts & earthworks)	100.0	100.0	100.0	100.0	100
Bridges	100.0	100.0	100.0	100.0	100
Electric	35.0	35.0	35.0	35.0	35
Signals	30.0	30.0	30.0	30.0	30
Other	38.0	38.0	38.0	38.0	38
Land	1,000.0	1,000.0	1,000.0	1,000.0	1,000
Land Acquisition	100.0	100.0	100.0	100.0	100
Regional	25.0	25.0	25.0	25.0	25
System	30.0	30.0	30.0	30.0	30

With the exception of earthworks and embankments (discussed below), and land acquisition (we were instructed by QR to use a 50 year life), the estimate of the physical life of the assets are based on those provided by QR for the Blackwater system as a first priority, or those adopted in the 2001 asset valuation where the data does not specifically exist in Table 6 (eg fences and roads).

The asset lives used for each group are listed in Appendix A.

4.4.2 Asset lives for Earthworks

In effect, earthworks were assigned a physical life of 100 years in the 2001 asset valuation as a proxy of likely maximum economic life. In reality earthworks have an indefinite physical life provided that they are properly maintained.

For the Burngrove to Nogoa rail infrastructure, the track was originally constructed in 1884, hence, as at 2005, the original earthworks were 121 years old. While there have been upgrades of the earthworks in the intervening period (most recently as part of the track upgrades in 1985/86) these were not as extensive as occurred on the Blackwater system mainline, with the result that much of the track is still based on the original earthworks. It is clear that the original earthworks have a continuing physical life as traffic currently operates using these original cuttings and embankments, which have been kept in a serviceable condition.

As a result, the life for the earthworks assets has been assessed as the period from its assessed construction date until the expiry of the remaining useful economic life.

- Assessed construction date = 1884
- Expiry of remaining useful economic life = 2055 (50 years from 2005 valuation date)
- Earthworks asset life = 2055 – 1884 = 171 years

4.4.3 Remaining Economic Life of Rail Infrastructure Assets

As part of the 2001 asset valuation, the QCA made a general assessment of the economic life of the coal rail infrastructure, taking account of the forecast output from Queensland coal mines into the future. As a result of this assessment, the QCA concluded that the economic life of rail assets is not a factor that will constrain their operational lives.

Subsequently, as part of its assessment of QR's second Undertaking, the QCA considered that, on balance there was sufficient justification for a 50 year economic life constraint on rail infrastructure assets. Therefore, the QCA considered it appropriate that QR's below rail assets with remaining lives exceeding 50 years be revised to a remaining life of 50 years.

QR has sought advice from Barlow Jonker with respect to the coal deposits west of Burngrove (see Appendix C) and the likely mine start dates and mine lives of these resources. Barlow Jonker identified that there are four known deposits in addition to the Gindi Minerva mine. However Barlow Jonker does not consider them to be likely to be developed prior to 2020. The likelihood of their development post 2020 is uncertain. The Gindi Minerva mine itself has been developed with a 10 year committed life, with some potential for this to be extended. [redacted]

Given this advice from Barlow Jonker, QR proposes to use a two tiered approach to the assessment of economic life,

- For those rail infrastructure assets that were already in existence prior to the development of the Gindi Minerva mine (and where QR did not specifically construct the assets for the purpose of the Gindi Minerva mine), QR considers it reasonable to base the future economic life of the rail infrastructure on the general expected life of the coal industry in central Queensland (i.e. a remaining life of no greater than 50 years). This requires that QR accept the uncertainty of whether they will continue to be used for coal carrying train services beyond the life of the Gindi Minerva mine.
- [redacted]

[redacted]

This approach is consistent with the way in which the economic lives for the central Queensland coal region have been assessed. For the infrastructure that was pre-existing at the commencement of the valuation, a maximum economic life of 50 years has been assumed. [redacted]

4.4.4 Summary – Asset Lives

Based on the above, the asset lives have been assessed on the following basis:

- With the exception of earthworks and embankments (discussed below), the estimate of the physical life of the assets are based on those provided by QR for the Blackwater system as a first priority, or those adopted in the 2001 asset valuation where the data does not specifically exist in Table 6 (eg fences and roads);
- the life for the earthworks assets will be assessed as the period from their assessed construction date until the expiry of the remaining useful economic life;
- the life of the rail infrastructure assets existing at 1 July 2005 will be capped at no more than 50 years from that date; and
- the life of assets created as part of the Minerva Coal Rail Project will reflect [redacted] 30 years from 1 July 2005.

5. Summary of Results

Tables of results for the ORC and DORC estimates are provided in the tables below. (For more detail see Appendix B.

Table 7 : ORC/DORC Estimate – Summary

	Total ($M)	Total ($/km)
ORC ($ Jul 2005)	$147.4	$1,420,000
ORC ($ Nov 2005)	$167.0	$1,460,000
DORC ($ Jul 2005)	$55.1	$530,000
DORC ($ Nov 2005)	$72.6	$550,000

Notes:
* excludes Minerva Rail project
** includes Minerva Rail project, plus inflation

Figure 4 : ORC/DORC Estimate ($M)

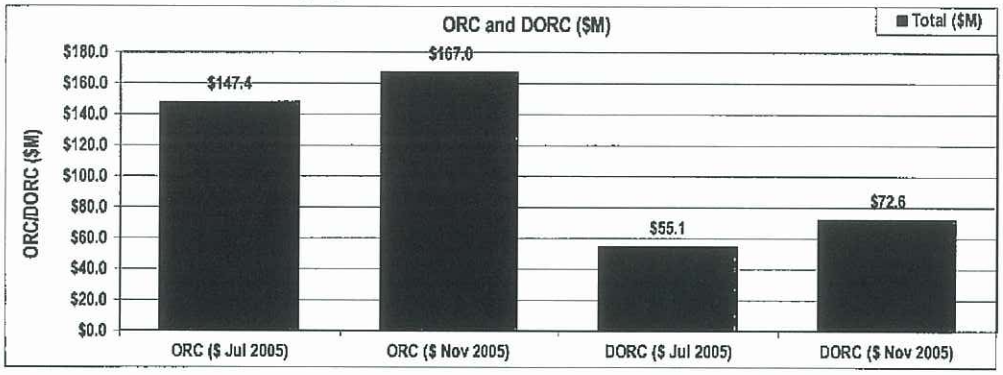
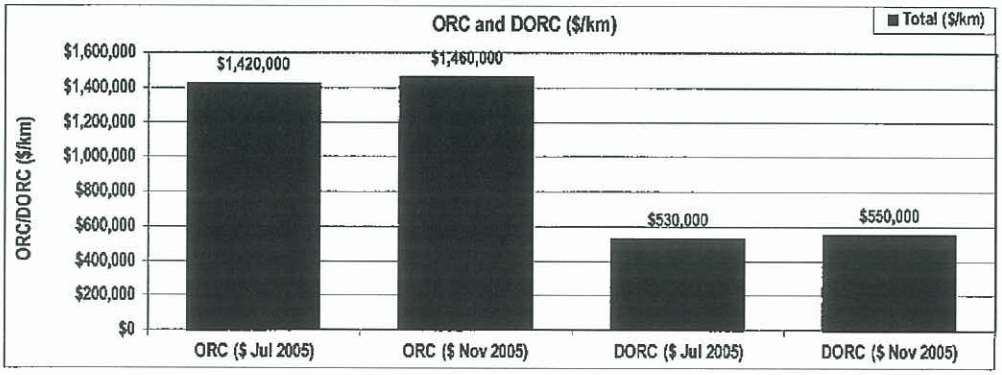
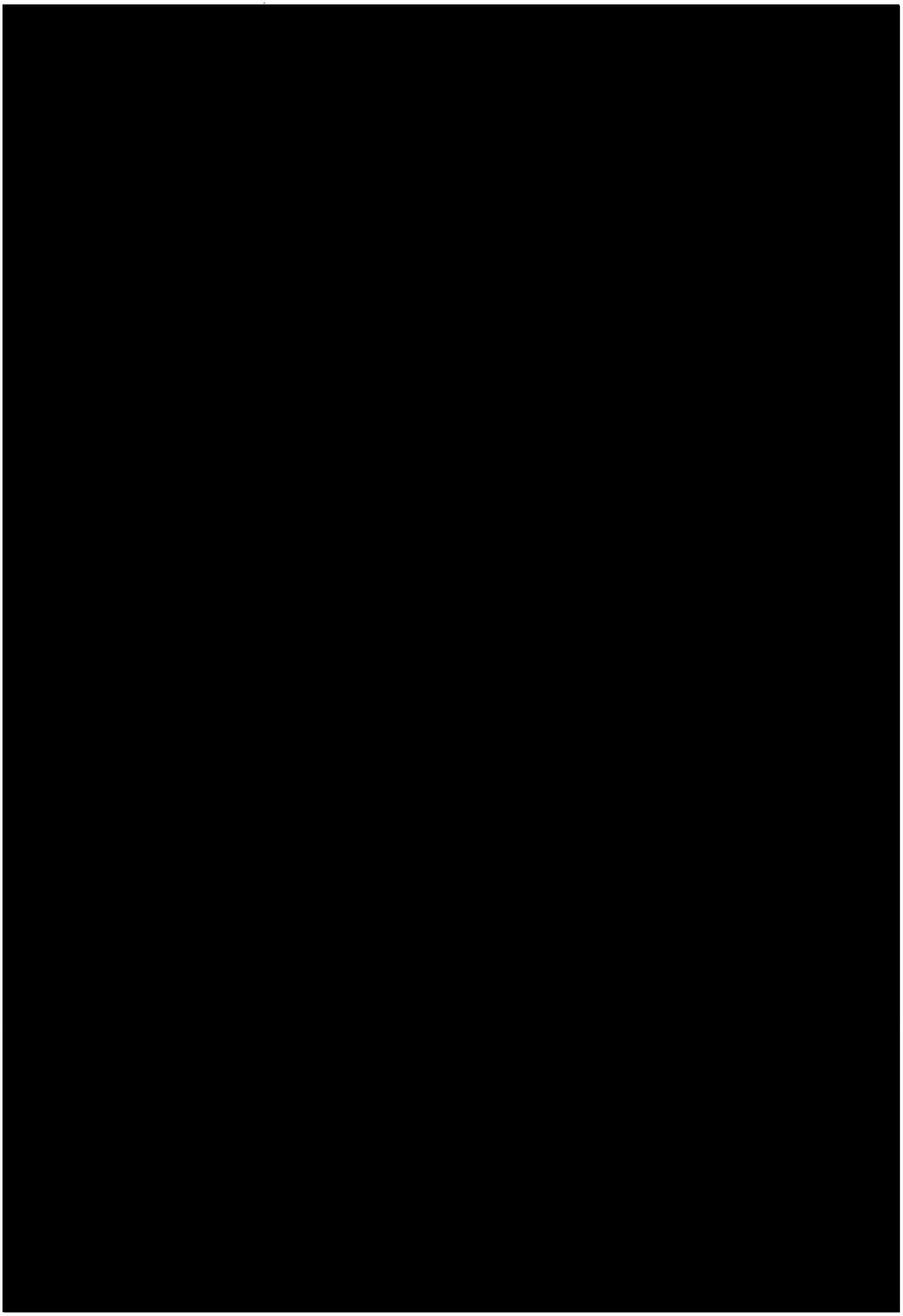


Figure 5 : ORC/DORC Estimate ($/km)



Appendix A

Unit Rates



Appendix B

ORC/DORC Detailed Estimate

Appendix C

Barlow Jonker Advice – Letter 23 August 2006