Goonyella Coal Chain Capacity Review – Second and Final Report

Summary

Action is well underway within QRN working on short term initiatives (Business Improvement Plan) to maximise the utilisation of the existing coal chain assets. A major procurement plan to obtain additional rolling stock to meet projected coal volumes has been announced and QRN are developing contract options to provide the commercial framework to support this investment.

It is recommended that Coal Producers consider future rail haulage contracts with a view to defining the total installed rail supply chain capacity required to move the total tonnage of coal through the system. Penalties for under resourcing of total rail haulage capacity could then be applied as well as minimum take or pay volumes to underpin investment in rolling stock.

The Master Planning process should be clearly defined and preferably facilitated by a representative of the Coal Producers. This is based on the principle that the coal chain infrastructure is there to support the coal industry export markets and any investment is ultimately paid for by the industry. The situation where an element of the supply chain infrastructure is expanded without a full assessment of what additional investment may be required in other parts of the supply chain should not be allowed to happen again. Particularly, when this additional capacity is contracted out and there is no understanding of the economics of up rating the capacity of the whole supply chain to meet the proposed expansion. It should also be stated that this is not a criticism of BBI but more a reflection on the quality of Master Planning processes for the total system at that time.

Further discussions have been held with the coal producers on the scope of the central coordinator. There is full agreement for a facilitation role which would cover the whole supply chain. The primary responsibility of the role would be to identify and then facilitate initiatives on behalf of the system stakeholders. These initiatives are expected to be primarily associated with master planning processes. There are many complex issues (operational, regulatory in nature involving a multitude of stakeholders) associated with the Dalrymple Bay Coal Terminal (DBCT). There is full agreement that a coordination role work across the part of the supply chain associated with DBCT. An MoU to cover the proposed arrangements for the role is in the final stages of preparation.

Agreement on the above is a major step forward for all stakeholders in that it will improve the overall governance of the system and in particular, resource the master planning issues which are critical to future growth in export coal tonnages.

Port Capacity Study

A report was commissioned by Babcock & Brown Infrastructure (BBI) to assess the capacity of the Dalrymple Bay Coal Terminal (DBCT) post the phase one, phase two and phase three expansions. This report (Sandwell Report) was updated on the 3rd July, 2007. Phase 1

completion is expected early 2008 with full completion of works planned around the end of 2008.

A summary of the conclusions from the report concerning the capacity of DBCT are listed on the next page.

Terminal Configuration	Throughput Capacity		
	Inloading (Mt/y)	Outloading (Mt/y)	Overall (Mt/y)
Present	59.0	60.0	59.0
Phase 1	87.0	70.0	70.0
Phase 2	94.0	80.0	80.0
Phase 3	94.5	89.0	89.0

This report which is based on detailed modelling of processes within DBCT makes assumptions about the how the rail system will interface and interact with the port. It is strongly recommended that a joint approach between coal producers, QRNA, rail haulage operators and the port is taken with a view to determining the system capacity based a detailed assessment of how all the elements interact, rather than the current approach, which has a very detailed analysis of the port supported by more general assumptions for the rest of the system.

Design Rail Haulage Capacity

Assuming there are no rail infrastructure bottlenecks, the capacity of the rail haulage system will be ultimately set by the unload stations. The number of trains required is a function of the unload station cycle time (train unloading time + minimum inter train gap), total train turnaround time (overall cycle time for a run and additional dwell time – e.g. for crew changes or provisioning) and the number of planned coal train paths (CTP's) on the network.

In appendix 1, there are charts summarising the interaction between train paths, number of trains, train turnaround times and train unloading times. The most important message from the charts is that as the unload station capacity is reached, adding additional trains will not increase system capacity. However, reaching maximum unload station capacity requires that trains are presented evenly throughout the day and in the correct sequence to the unload stations. In order to ensure unload station utilisation is maximised, additional capacity estimated to be of the order of 10% over and above the theoretical design figure would be required. However the utilisation, as stated earlier will be lower for these additional rail assets.

It is recommended that Sandwell or similar group, study the whole DBCT coal chain or at least review the analysis of the major elements to confirm consistency in the key assumptions used by parties. It is believed that both BBI and QRNA would support such a proposal. This

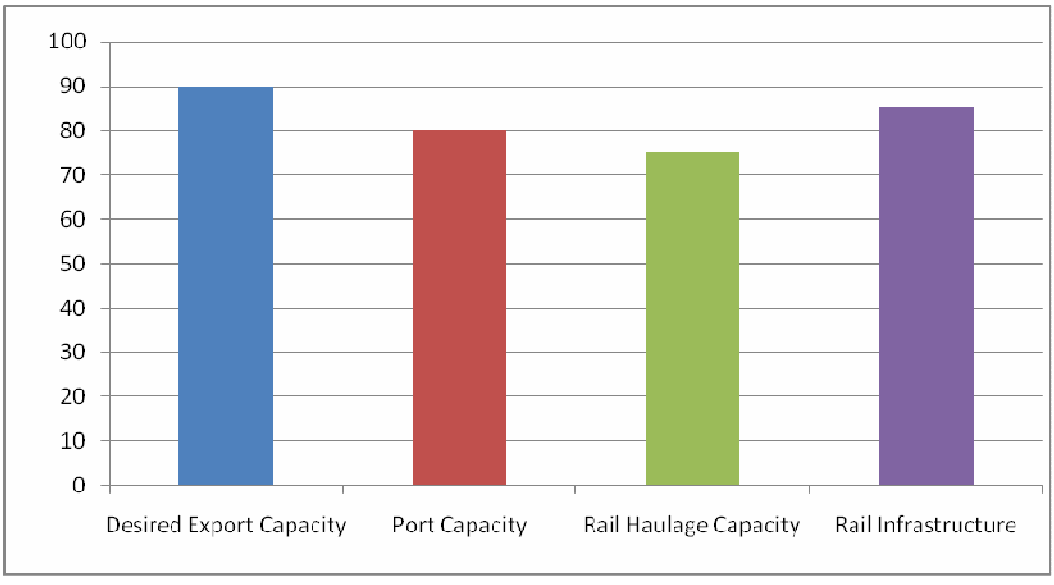
would be a big step forward in resolving the issue of DBCT capacity and its relationship to the rest of the supply chain. Sandwell also have a live rail model which, at first sight, would be very useful in determining infrastructure bottlenecks and assisting in short term planning.

Daily meetings to determine root cause analysis should be initiated between DBCT, QRN and QRNA. The supply chain is complex and many of the variances as they present themselves are manifestations of more deep seated issues, some of which may have occurred earlier in time. This process would yield much better insights into how to maximise performance as well as improve cross organisational understanding (assuming the will is there to do so). It is recommended that for the first twelve weeks this daily meeting is attended by senior members of the respective organisations. This will serve two purposes: establish the necessary priority to the organisation and secondly educate leadership in what some of the issues really are within the total supply chain. A process such as this would, for instance, establish to what extent the new yard configuration at DBCT will alleviate congestion around the two ports (Appendix 2). After an initial period, a review should be held to determine the future format going forward and if it should be extended to consider other aspects of the operation of the coal chain.

Rail Haulage Contracts

As long as the desired export volume exceeds the capacity of the port and rail system, some capacity allocation system will have to prevail for at least the next 3 years until the completion of the Jilalan upgrade and the commissioning of sufficient rolling stock to meet demand. In the simplest form this can be through a pure turn of arrival process or mechanisms such as the present Queue Management System (QMS) which focuses exclusively on the rationing of port contracts.

Capacity of Elements of the Coal Supply Chain (example only)



In the situation where the export capacity is constrained, individual rail contracts will have little relevance other than the rate to be charged. The volume railed will be set by QMS and there will always be fertile ground to argue who is actually to blame for the shortfall in export volumes. Of primary concern to the Coal Producers should be a requirement to assess the total installed rail haulage capacity, rather than just the capacity allocated to their contract. If this rail haulage capacity is above the capacity of the other elements in the supply chain, then the Producers should have confidence it will be railed. Consideration should be given to penalties in the rail haulage contract where a supplier's total installed capacity falls below a pre determined figure. This capacity figure should also include an allowance for buffer capacity to ensure the agreed tonnages can be met. A proposal such as this can only work if all producers accept this principle, as the system cannot be easily managed to differentiate one type of contractual arrangement versus another. Neither BBI nor QRNA have any volume risk in their revenue model. The volume risk issue for the above rail operators can be addressed through 'take or pay' arrangements whereby the Producers carry the volume risk associated with Production issues. By the same token, above rail operators should carry the volume risk associated with their own performance (this would provide focus on mitigating the risk through operational excellence rather than pricing in the risk).

Business Improvement Program (BIP)

The BIP has been in place within QR over 12 weeks and is well established and starting to realise gains. A weekly review has monitored the program and improvements have been grouped in the following categories.

- Organisation structure – identifying the positions required to supervise and manage the operations as well as those for the performance of operational work.
- Reasons for train payload losses and initiatives to improve lift payload.
- Program to up rate the maximum train capacity.
- Monitoring of network speed restrictions and having timelines in place for the speedy removal of these.
- Increasing the range of route knowledge across train drivers to improve flexibility
- Improving locomotive asset utilisation.
- Rolling stock maintenance performance, timely response to work orders and reduction of back log.

QR management are committed to the program and it is well resourced. Although it is at an early stage many of the initiatives have a positive trend line. This will have a significant benefit for QR as it will increase the utilisation of the existing assets as well as for the coal producers who are starting to see much more focus on the operations. Over the next few months the program should broaden out to cover the interfaces between the producers (load point performance) and the coal terminals (train interaction with the unload stations).

Contract Renewal

A new supply chain-focused contracting framework is in the process of being developed by Queensland Rail. The proposed framework includes a number of key issues and business

requirements that were raised during the first stage of consultation with DBCT customers and BBI DBCT.

The new contracting framework being developed details the requirements of each supply chain party in supplying capacity to the chain to lift the desired tonnage.

The new contract framework (from QRN's perspective) is expected to require:-

- The support of all stakeholders and customers to renew during 2008 any current rail contracts prior to their existing expiry date;
- Key changes to the current and future rail and port undertakings to provide a more flexible business operating environment; and
- A new "cause and effect" reporting process to be implemented to correctly, identify, through one trusted source, performance achievement or not of each party in the supply chain.

A more extensive range of consultation is now planned to seek comments on their draft contract and specifically on the new concepts. This will commence in late October. After this, QRN state that any new contract will then be tailored to meet the specific business needs of each customer.

Locomotive Procurement Program

Delivery has now commenced of the production run of 60 electric locomotives ordered in 2005. Three prototypes of these locomotives were delivered into the Goonyella system earlier this year.

Delivery of a further 20 electric locomotives ordered in early 2006 ex Germany, will occur during late 2008 and 2009. A site inspection of the build program was conducted by QR in September 2007, with a permanent QR representative to be located on site during production.

A further 25 electric locomotives are now on order for 2009/10 and 2010/11 delivery for the Goonyella system, following receipt of approval from QR's Shareholding Ministers.

In addition to these locomotives for the Goonyella system, QR also is commencing delivery of 15 new diesel locomotives for the other systems, with a further 15 on order for 2009/10 and 2010/11 delivery. These locomotives are for additional coal volumes on the Blackwater, Moura, Newlands and Northern Missing Link systems.

510 x 106 tonne wagons have been approved for construction, with a further 1190 currently requested from an overall build requirement for all systems. These wagons will be constructed to complement the delivery of the locomotives.

Upgrade of the Jilalan yard to support both the additional Goonyella train operations and maintenance requirements is also required. Design work has progressed with requests for investment approvals occurring later this year for a late 2009 commissioning. This upgrade is considered essential to allow the coal chain to operate at the desired capacity. Every action should be taken to expedite completion of this work which is expected to be completed twelve to eighteen months after the final phase of the port expansion.

Coordination Role

Following further consultation, primarily with the coal producers, there is full agreement for a facilitation role which identifies and progresses initiatives on behalf of all stakeholders in the Goonyella supply chain. The elements of the Goonyella system associated with DBCT are more complex. This is primarily a function of the number of stakeholders and complex regulatory environment. A more intensive coordination approach is required across this part of the system. These positions could be filled by one individual or two depending on background and availability of candidates.

Key accountabilities for the facilitation role are:

1. Facilitation of Master Planning processes across the whole system. In particular, address the question of rail infrastructure requirements to operate DBCT at 89.0Mt/y and how the proposed Northern Missing Link interacts with any investment decisions to upgrade rail infrastructure to DBCT. Assist in the development of an approach to ensure that any future plans to lift capacity consider the operating and capital costs across the whole supply chain with a view to preparing an optimum solution.
2. Facilitation of special projects as nominated by the Stakeholder CEO's.

Key accountabilities for the coordination role are:

1. Optimising the throughput of the current supply chain. This would be achieved through facilitating processes such as the proposed 'root cause' analysis. A review of all the different meetings, their charters, make up and a clear definition of how they all fit together in governing the supply chain would be beneficial. Identification of governance processes that lead to coordinated management of resources across the supply chain, whilst at the same time respecting the individual commercial arrangements of stakeholders would also be of benefit.

2. Reviewing and recommending commercial frameworks to better align the interests of system stakeholders to help ensure that the necessary commercial drivers are in place to provide the required assets to maximise the supply chain throughput.

As stated earlier the supply chain is there to support the coal industry. With a clear direction fully supported by the whole of the industry it will move forward to meet its stated goal of having 'best practice operations' throughout coal producer and supplier operations suppling export markets.

Conclusion

The coal supply chain is a complex system. Not only from an operational aspect with the different stakeholders but also considering the different commercial agendas of the stakeholders and the different regulatory frameworks. In the only short term, the business improvement program improvement is the only initiative which can be undertaken to lift export volumes from the existing rail assets. An independently led approach managing the DBCT supply chain on a daily basis (short term planning and day of operations oversight) would also be beneficial not so much in lifting export volumes but in facilitating the interaction of the stakeholders.

In the medium term plans are well underway to purchase additional rolling stock and develop a new contracting framework to better align the interests of stakeholders in the supply chain and ensure export volumes are maximised from the supply chain.

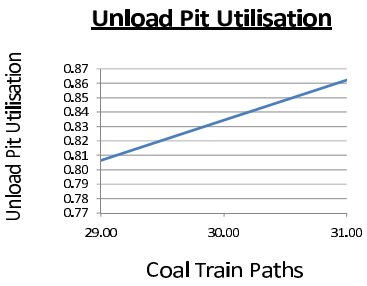
A coordinated approach to master planning of infrastructure is essential. The situation where investments are being made without concurrent investment in other parts of the supply chain and then additional forecast tonnages are contracted out should never be allowed to happen again. The regulatory frameworks that underpin the governance of the supply chain should support this approach. Implementing the facilitation and coordination roles will be a significant step in moving forward.

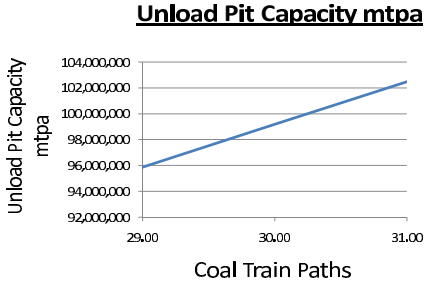
I would like to thank all parties who have provided information and assistance during this study.

Stephen O'Donnell

Appendix 1 – Supporting Rail System Information

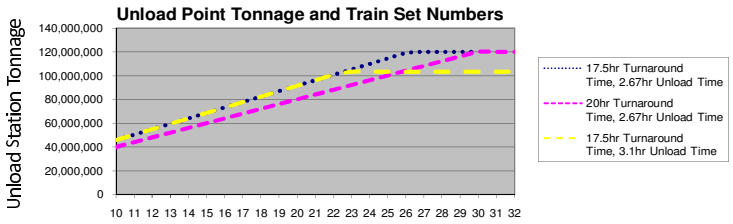
The system is presently designed to operate with a total of 30 coal train paths (CTP's) a day to both ports. The charts below translate this into unload pit utilisation and nominal capacity. For a system operating with limited train storage capacity ahead of the unload pits and limited ability to handle out of sequence trains, the utilisation is approaching the maximum that could be realistically expected.



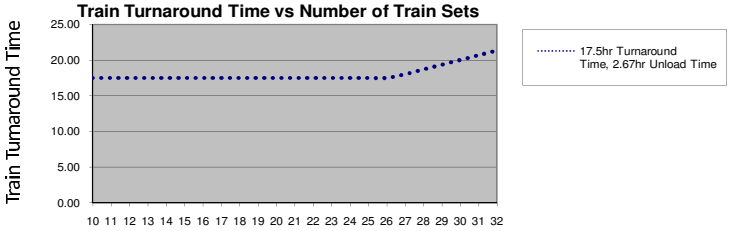


The charts below demonstrate the impact of train turnaround time, unloading time and train numbers on unload station capacity.

Unload station turnaround time sets the maximum number of train consists – beyond full utilisation there in no gain in adding additional train consists.

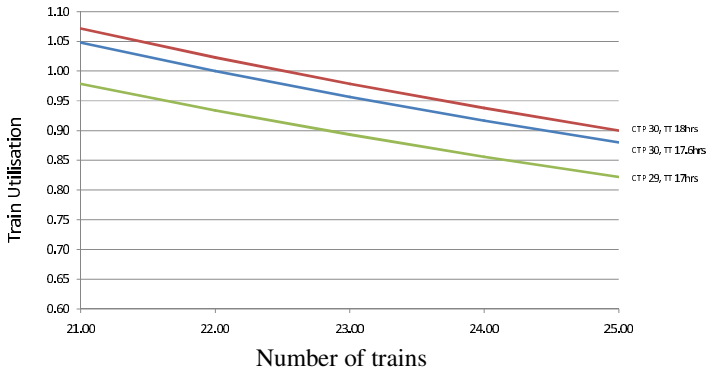


Increasing the number of train consists beyond the unload station capacity slows the system down with no increase in tonnes railed.



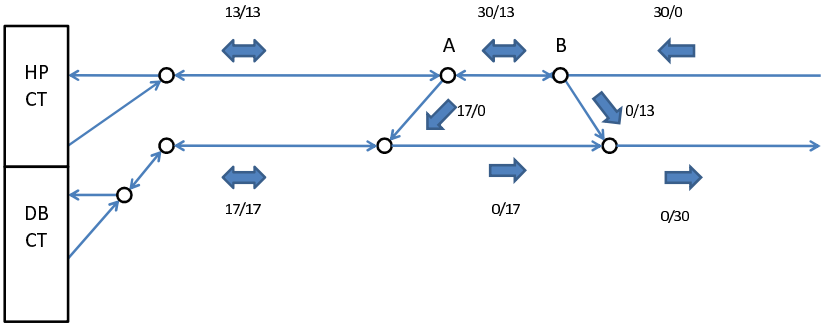
This chart shows the utilisation of train sets for a given system design (Coal train paths, train turnaround times). Demonstrates that 24 train sets are required to achieve target conditions (CTP 30, train T/T of 17.6hrs) with a utilisation of approximately 92%.

- Weighted average cycle time is 16.4hrs (Jilalan/load point/unload point/Jilalan)
- Additional time is required for train examinations, provisioning, driver changes etc.
  - This approximately 1hr 10mins, design train turnaround is 17.6hrs

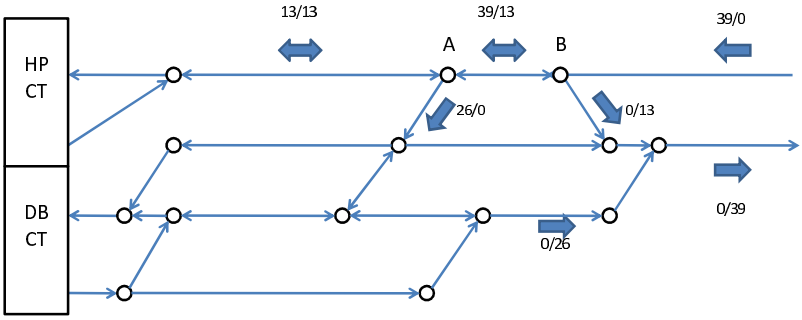


Appendix 2 – Infrastructure Example

Present Port/Rail Connection



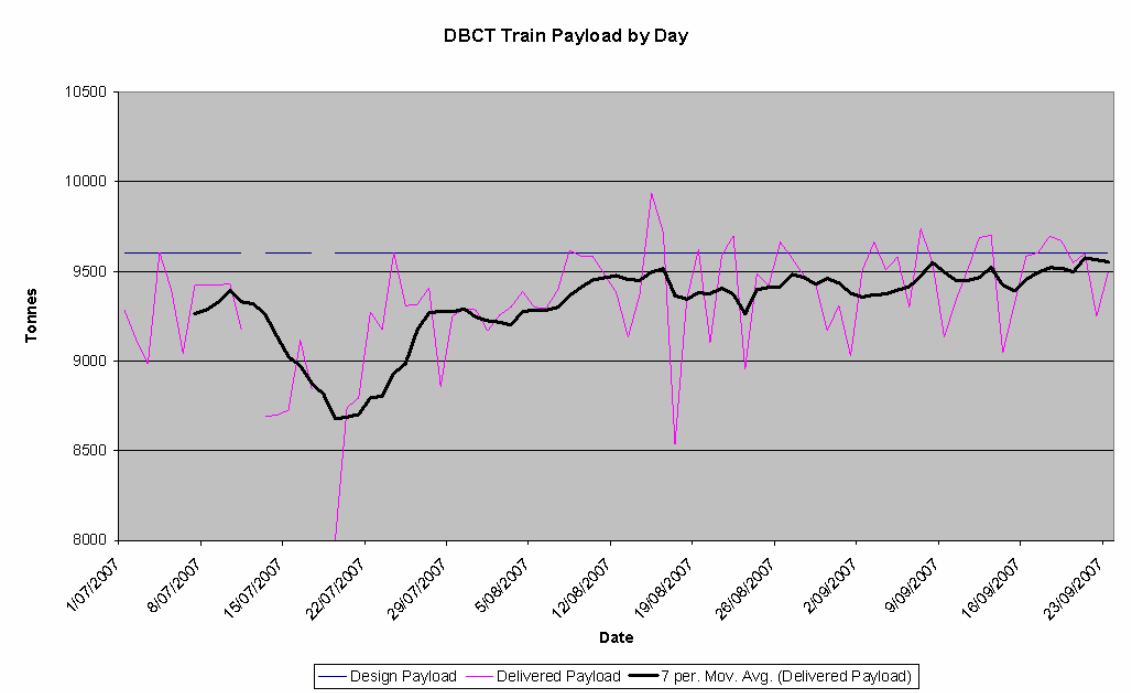
Proposed Port/Rail Connection

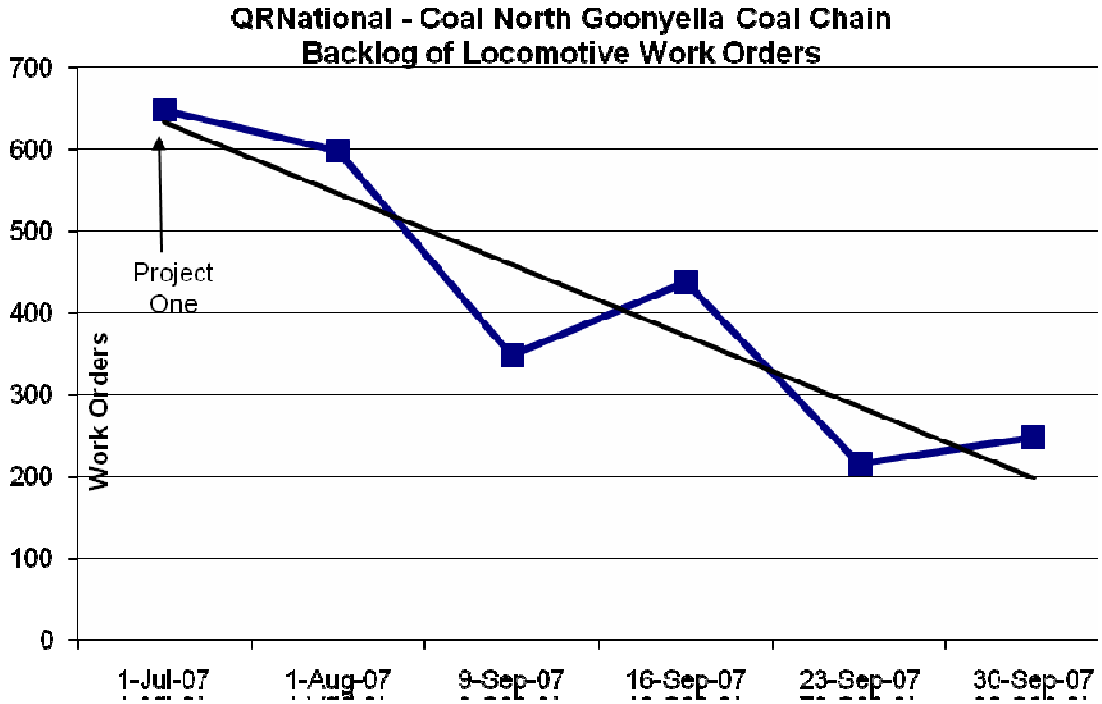


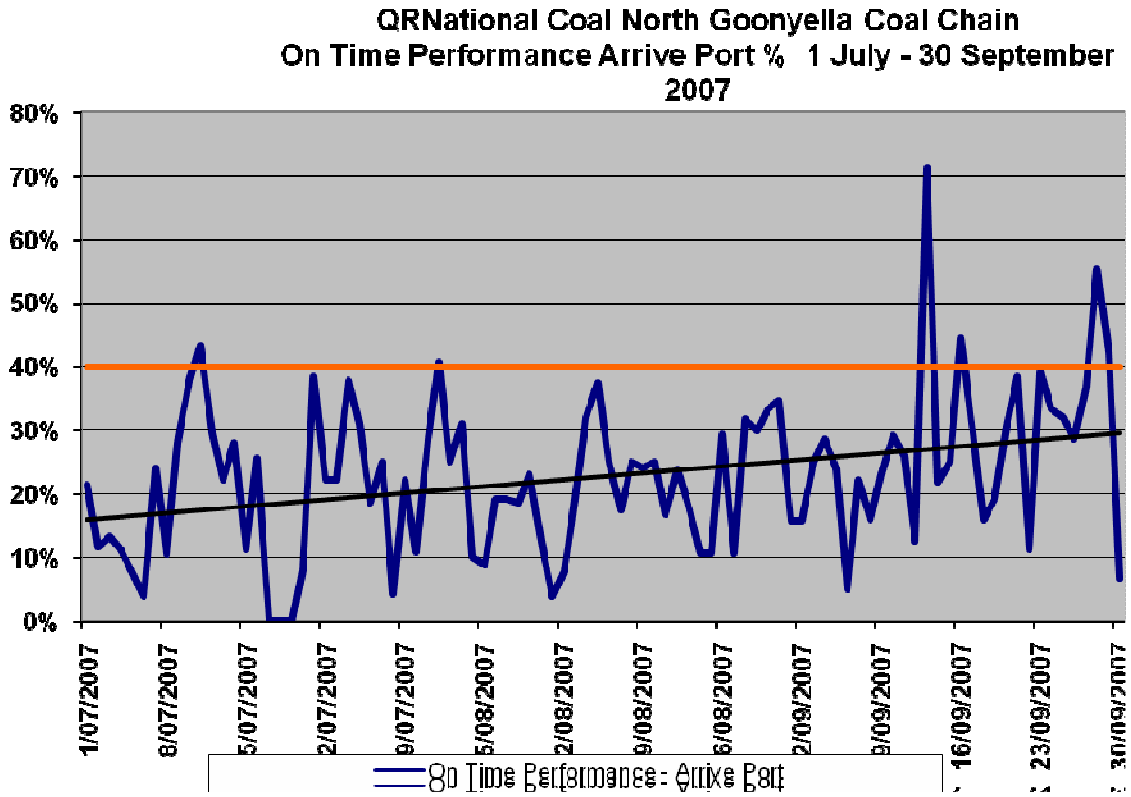
These charts show the current and proposed rail infrastructure feeding the two ports. Data above each arrow indicates the daily up and down train movements. Every two hours a train from Hay Point has to cross incoming trains into DBCT. There are two more crossover points between the port and Jilalan Yard.

Appendix 3 - Business Improvement Program

A selection of charts from the BIP currently underway in QRN.






QRNational Coal North Goonyella Coal Chain
On Time Performance Arrive Port % 1 July - 30 September 2007
80%
70%
60%
50%
40%
30%
20%
10%
0%
1/07/2007
8/07/2007
5/07/2007
2/07/2007
9/07/2007
5/08/2007
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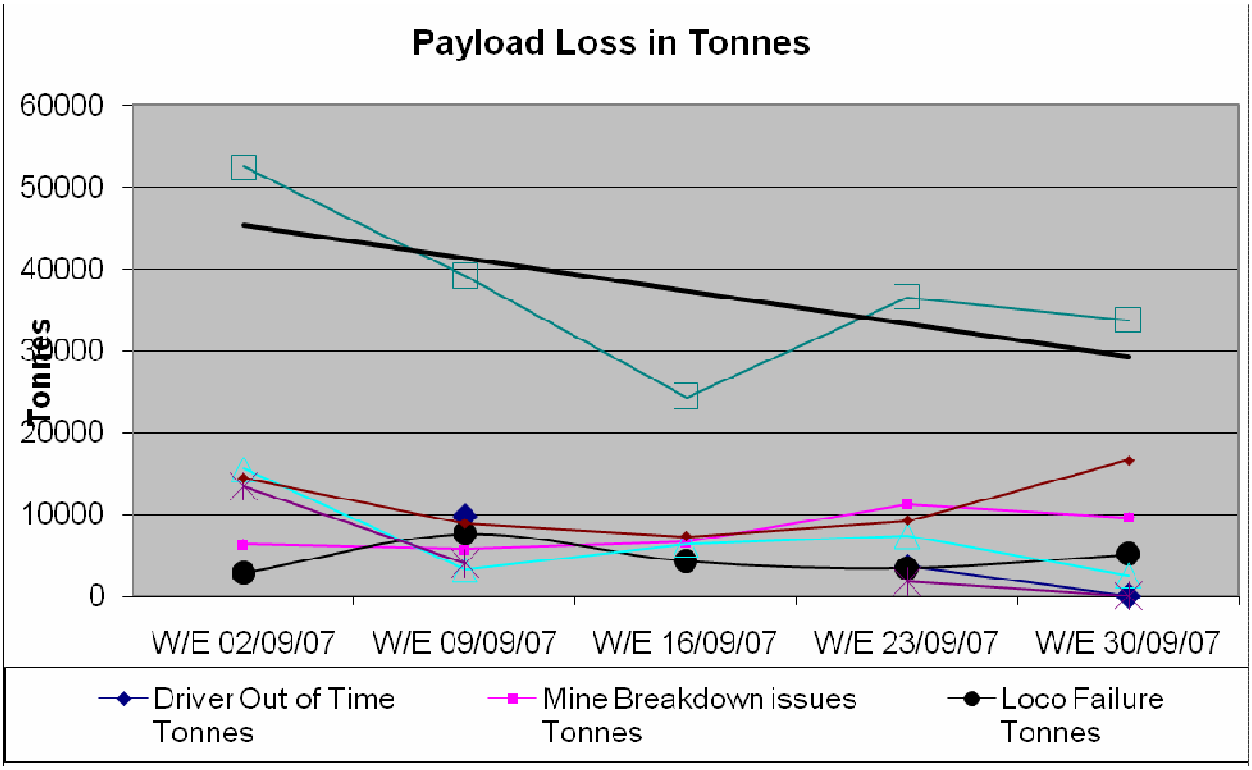
6/08/2007
2/09/2007
9/09/2007
16/09/2007
23/09/2007
On Time Performance - Arrive Port


Payload Loss in Tonnes
60000
50000
40000
30000
20000
10000
0
Tonnes
W/E 02/09/07
W/E 09/09/07
W/E 16/09/07
W/E 23/09/07
W/E 30/09/07
Driver Out of Time Tonnes
Mine Breakdown issues Tonnes
Loco Failure Tonnes