**UGL Rail Services Pty Ltd**
**ABN. 58 000 003 136**
Level 7, 40 Miller Street
North Sydney NSW 2060
Australia
Telephone: +61 2 8925 8925
Facsimile: +61 2 8925 8926

www.ugllimited.com

**Ref:** QCAAB231112

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

23 November 2012

Dear Mr Hall

**QR NETWORK'S ELECTRIC TRACTION DRAFT AMENDING ACCESS UNDERTAKING ('DAAU') – RESPONSE TO QUEENSLAND COMPETITION AUTHORITY'S (THE 'AUTHORITY') REQUEST FOR FURTHER COMMENT ON DRAFT DECISION**

We refer to the Authority's draft decision with respect to the DAAU and the subsequent submissions provided by QR Network and other stakeholders in relation to the draft decision.

UGL is a privately owned supplier and maintainer of diesel locomotives to Australian haulage operators and resources companies. UGL supports the Authority's draft decision not to approve the DAAU in its current form.

UGL notes that the Authority has requested further comments by stakeholders by letter dated 8 October 2012. This submission seeks to supplement the information available to the Authority in relation to the issues of 'traction choice,' the 'benefits of electrification' and 'competition in the locomotive supply market.'

**Traction choice (Issue 1)**

UGL supports the Authority's position that traction choice should be left to the competitive market and what is needed is a price that efficiently reflects the costs of providing the electric traction infrastructure.

In relation to this position, the draft decision notes that there has been significant technological change that has apparently reduced the performance gap between diesel and electric trains (please refer to 'Immediate Diesel Technology Advances' below). The draft decision further provides that while technological change could be expected to continue into the future for both diesel and electric locomotive technologies, stakeholders have argued that this is most likely to occur for diesel locomotives (please refer to 'Future Diesel Technology Advances' below).

UGL has provided further general comments for the consideration of the Authority in relation to the issue of traction choice and QR Network's submission dated 25 September 2012 (the '**QR Network Submission**').

**Immediate Diesel Technology Advances**

UGL's PowerHaul diesel electric locomotive product is a contemporary example of technology development in diesel locomotives. Prototypes of the PowerHaul are currently being manufactured. The following are some of the product aspects:

- PowerHaul diesel electric locomotive uses GE Transportation proven traction technology, having first been deployed by GE in the United Kingdom in late 2010.

- The PowerHaul product has been specifically designed for the narrow gauge Queensland bulk haulage market for compliance with the unique Queensland rollingstock outline gauge, Australian Standards, environmental requirements and customer operational requirements.

- The PowerHaul technology represents a step change in diesel efficiency for the rail market through the use of the latest engine technologies such as common rail fuel injection, inverter driven variable speed auxiliary engine and traction motor cooling equipment.

- The diesel engine in PowerHaul achieves class leading fuel consumption of 192g/kW.h (in notch 8) whilst complying with at UIC 3a exhaust emission standards. The maximum efficiency of the diesel engine in converting fuel energy into traction performance is in the order of 44% (This figure is noted against a reference in table 3.5 of section 3.5 of the Siemens submission dated 25 September 2012 indicating maximum diesel engine efficiency of 40%).

- The advances in power and efficiency of the PowerHaul technology can provide significant improvements in cycle time and fuel use for Queensland diesel locomotive based coal haulage operators. UGL route simulations of the Blackwater system have indicated similar cycle time performance between PowerHaul locomotives and existing electric locomotives. It is noted that real world operational constraints will provide greater influence on cycle time performance than simulated, regardless of whether a diesel or electric locomotive is used.

Generally within diesel locomotive technology there are other current advances, including GE's Automatic Engine Stop Start (AESS), Consist Manager and Trip Optimiser. AESS is a control outcome that is currently used in Australia to reduce diesel fuel usage by up to 2%. GE's Consist Manager and Trip Optimiser allows for reductions in fuel usage by up to 10% depending on consist configurations, route alignments, run conditions and network traffic.

**Future Diesel Technology Advances**

UGL notes the following likely performance developments for diesel locomotive technology in the future:

- Dual fuel engine technology allowing the substitution of diesel with natural gas. Dual fuel engine technology can be expected to be realised within the next 5 years. Australia has an abundance of natural gas, especially within dedicated mine to port rail operations, such as Goonyella and Blackwater. Such areas provide the ideal environment to take maximum advantage of the dual fuel engine technology.

- Hybrid locomotives technology, employing the use of battery and other energy storage devices.

- Dual mode technology allowing the interface to electric overhead wire for power and/or power regeneration under dynamic braking.

It is further noted generally that:

- Advances in electric traction technology that apply to electric locomotives will apply equally to diesel locomotives. Electric locomotives use the same or similar traction technology as diesel locomotives.

- There is expected to be a high level of investment in diesel engine technology given the world wide size of the general diesel engine market. Such investment is expected to benefit the development of diesel locomotive technology.

**General comments in relation to traction choice**

The QR Network Submission indicates that the TCO analysis did not take into account the impact of technological advances in locomotive engineering. It further states that it has "taken the simplifying assumption that equivalent technological improvements are likely to be achieved for each traction mode." Given the current and likely technology advances explained above, UGL proposes that the TCO analysis has potentially understated the current and future value of diesel locomotive technology with respect to electric locomotive technology. Consequently, the concluding position in the QR Network Submission that electric locomotive technology should be given preference to diesel locomotive may not be well founded.

In light of the above, UGL reiterates its position that the competitive market (and not the DAAU) should be the primary influence for traction choice. This will ensure that the respective technologies advance in a manner that best responds to the market's needs.

**Benefits of electrification (Issue 2)**

UGL shares the view of other stakeholders (with reference to Asciano, Downer and other submissions) that the cycle time advantage of electric traction locomotives provides no efficiency advantage in terms of haulage throughput due to network and operational constraints such as signalling, scheduling and queuing on the Goonyella and Blackwater networks. QR Network's analysis (based on existing diesel locomotive technology) which finds haulage throughput benefits resulting from an electric traction cycle time advantage becomes less feasible with the introduction of higher powered diesel locomotive technology such as PowerHaul.

It is noted that the cycle times for diesel locomotives as used by QR Network in undertaking the TCO analysis were based on the Callemondah Yard. This yard was originally developed for a much smaller rail network. The provisioning times at this yard may not be indicative of what could be actually achieved. Infrastructure developments on other networks are being undertaken to provide significant provisioning cost and cycle time savings.

**Competition in electric locomotive supply market (Issue 4)**

Although a number of stakeholders have provided submissions which support the view that there is a global market for electric locomotive supply, UGL notes the following barriers to market entry (especially for the rail network in question):

- Difficulty of packaging high performance in restrictive gauge outline. For example, constraints in the size of the traction motor due to narrow gauge width, underframe platform height and cab height (overall gauge height).
- Satisfying Queensland and Australian requirements (for example, toilets, ergonomics, noise, air conditioning).
- Achieving product accreditation.
- Unwillingness of operators to risk a new product as reliability is paramount to meet operational contract commitments.
- Significant investment in spare parts pool and Queensland-based maintenance services and facilities.

The above market barriers are important considerations in assessing the likely effects of the DAAU on competition in the locomotive supply market.

We trust that the information and comments contained in this letter will be of assistance to the Authority in finalising its decision with respect to the DAAU.

For further information in relation to this submission, please contact Matt Plunkett-Cole on Ph: 02 8925 8925.

Yours sincerely,

Alan Beacham
**EXECUTIVE GENERAL MANAGER FREIGHT**
**Engineering – Rail**