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Aurizon Network Submission to QCA Request for Comments on Approach to Climate Change Related Expenditure Discussion Paper

16 December 2022

Dear Charles,

Aurizon Network welcomes the opportunity to respond to the Queensland Competition Authority's (**QCA**) Request for Comments on the Approach to Climate Change Related Expenditure discussion paper (**QCA Discussion Paper**).

The QCA Discussion Paper has a primary emphasis on the assessment of adaptation and mitigation expenditure in response to elevated climate change related risks. Notwithstanding, the QCA has also indicated a willingness for stakeholder submissions to expand into transitional risks (whilst not going into specific details on the mechanics that might be necessary to mitigate those transitional risks). The willingness to pay of current users for adaptation and mitigation expenditure is not independent of the ability to pay of future users for that expenditure. Therefore, identifying transitional risks and assessing how to efficiently address them should be an important consideration in how the regulatory framework responds to climate change more broadly.

As Australia's largest rail freight operator, Aurizon acknowledges the importance of building a more sustainable future for our communities, customers and stakeholders. As detailed in our recently released ninth annual Sustainability Report (**2022 Sustainability Report**), Aurizon's climate response strategy prioritises the decarbonisation of our operations and achieving net-zero operational emissions by 2050 through a range of initiatives and investments, including:

- Leveraging our existing energy efficiency capabilities and assets, such as electrified rail in the Central Queensland Coal Network (**CQCN**);
- Investing in the development and adoption of low-carbon technologies through our $50 million Future Fleet Fund;
- Integrating renewable energy into our current energy mix; and
- Using carbon offsets through project development/investment and/or purchase where required to meet our decarbonisation goals.

Aurizon faces both indirect and direct impacts from climate change. The 2022 Sustainability Report identifies indirect transitional risk in relation to a wide set of changes in policy, law, markets, technology and prices in the pursuit of a low-carbon economy that will affect the demand for the commodities that are railed across the CQCN. Comparatively, direct physical risks related to extreme weather events are expected to continue to affect the CQCN through supply chain disruptions.

Whilst Aurizon is exposed to such transitional and physical risks, it is also well positioned to take advantage of climate-related opportunities. Accordingly, Aurizon's Climate Strategy and Action Plan (**CSAP**) is built on three key pillars discussed throughout the paper:

- Deliver decarbonisation
- Create carbon abatement opportunities
- Manage risk and build resilience

Since 2017, Aurizon has aligned its climate-related disclosures to the Task Force on Climate-related Financial Disclosures (**TCFD**) as recommended by the Financial Stability Board. This framework enables consistent climate-related financial risk disclosures for use by companies in providing information to investors, lenders, insurers, and other stakeholders.

1. Mitigating Climate Change Risks

Aurizon has committed to achieving net-zero operational emissions by 2050. The 2022 Sustainability Report identifies short and near-term solutions for emissions reduction, including:

› Reduced locomotive idling (achieved through the deployment of Auto Engine Start Stop systems)
› Zero carbon drop-in fuels (achieved through the use of fuels containing renewable diesel or synthetic diesel); and
› Train Energy management solutions

Fleet decarbonisation represents Aurizon's primary decarbonisation lever. Aurizon has developed its future fleet strategy, presenting a view of the proposed zero-emissions vehicles that will enable modular application across each of our hauls by 2050. This includes:

› a Battery Electric Locomotive;
› a Battery Electric Tender; and
› a Hydrogen Electric Tender.

Aurizon intends to develop, build and trial prototypes of each of these zero emissions vehicles and will pursue a corridor by corridor (depot by depot) rollout as the refurbishment of locomotives are required. This will require the installation of suitable infrastructure for charging and hydrogen refuelling stations, which may necessitate future capital investment for Aurizon Network should other Train Operators require the same infrastructure within the CQCN.

Aurizon has also entered into an Energy Supply Agreement (**ESA**) with a clean energy generator and retailer. Under the ESA, Aurizon Network's electricity will be sourced from a low-emissions portfolio, which includes large-scale solar and wind generation and hydroelectricity.

2. Adapting to Climate Change Risks

2.1 Asset Resilience

Aurizon engaged an external consultant in FY21 to complete a review of publicly available climate modelling to understand the future climate conditions expected across the CQCN, the resilience of the existing CQCN assets and to quantify the effect of climate change on the need for asset augmentation.

This analysis provided a range of outcomes, anticipating a hotter and dryer climate in both 2030 and 2050 with more intense (albeit less) rainfall events. Aurizon analysed the effect of this climate future and determined that the effect on the CQCN was expected to be minimal given the condition of the infrastructure, the existing asset protection systems and robust asset management processes. Positively, there was no significant increase in risk to the CQCN within the forecast period (2030 and 2050) from tropical cyclones, bushfires or sea level rise.

The operational and capacity risk identified to the CQCN was the exposure of track assets to more frequent heat related Temporary Speed Restrictions (**TSR**) which are put in place to reduce the likelihood of a heat related track misalignment or buckle that could derail a train. TSRs have an eroding effect on section run times and consequently, system capacity. The magnitude of any overall impact is expected to be relatively small however given the options available to Aurizon Network to manage the impacts of heat related TSRs within the day of operations.

Aurizon has experienced several significant weather events that have had an impact on the CQCN, these have predominately been flood events following ex-tropical cyclone rain events or localised storm activity. Given this experience, Aurizon Network has developed and refined its physical assets and management processes to prepare for, react to and recover from such weather events.

Figure 1: CQCN Physical and Process Controls

Physical	Temperature sensors	Rail mounted temperature sensors that provide rail and ambient temperatures across the CQCN. Utilised as the trigger for the application and removal of heat related TSRs.	**Process**	Hazard identification register	Known locations that attract a higher number of defects and/or require asset inspection after a weather event (i.e. hot weather, heavy rain).
	Flood height monitors	Flood warning sensors at known river areas susceptible to flooding. Also used in electronic huts to cut power if water reaches a certain height to protect the equipment and reduce recovery time.		NETCON	NETCON represents the status of a track section, i.e. NETCON 1: normal operating mode NETCON 2: annual preparation and readiness period for the summer wet season NETCON 3: notifying a potential threat, such as a cyclone NETCON 4: notifying an imminent threat NETCON 5: threat has stopped system operations

	Flood rock	Rock placed on the downstream side of known flood locations to reduce the impact of track scour in flood events, strengthen the track and reduce damage (and in turn, recovery time) post flooding.		Incident response standards	Organisational standard for the response to incidents including weather events such as floods and cyclones. Standards detail management response, communication requirements and safety considerations during both the event and recovery.
	All weather access roads	Sections of access road in hard to access locations have been upgraded to “all weather” to aid with inspection and recovery from rain events.		Hot weather precaution standard	A module in the Civil Engineering Track Standards dealing with the precautions taken during periods of heat above 38 degrees to manage track alignment risk through TSRs and railway inspections. Module also details preparations for hot weather.
	Slip detection and rock fall detection systems	These devices monitor for land slips and rock falls on the upslope of the railway that may influence track condition. Rock fall fencing is also present at known locations on sleeper banks		Hydrological assessment	A hydrology assessment is undertaken of existing culverts at each maintenance location to calculate flood immunity and verify compliance with flood immunity criteria.

In addition, Aurizon Network performs an annual preparation of the below rail infrastructure prior to the wet weather season. This includes the placement of adequate supplies of material to aid restoration works should a major event occur (e.g. scouring and washouts from flood waters or damage from cyclonic winds).

Whilst Aurizon Network has implemented the above physical and process protections in light of climate events, Aurizon’s Asset Maintenance and Renewal Policy (**AMRP**) and Design and Construction Asset Strategy Policy continue to be informed by contemporary standards.

The AMRP acknowledges that the management of physical CQCN assets is a balance between cost, risk and performance. For example, culverts are now designed to a flood immunity standard of Q50 (meaning a flood level which is likely to be exceeded, on average, only once every 50 years). Following Tropical Cyclone Debbie (which caused significant landslides on Black Mountain in the Goonyella system), Aurizon Network investigated how culverts within Black Mountain could be designed beyond the Q50 standard to improve overall asset resilience. The analysis deemed this investment largely cost prohibitive.

Aurizon Network’s approach towards improving asset resilience in response to climate change will continue to develop as relevant international and domestic standards evolve. The adoption of these improved standards into the ARMP must also consider customers’ appetite to pay for improved asset resilience.

2.2 Access to Insurance for Australia's Resources Industry

2.2.1 Current State of the Insurance Market

The insurance market has experienced a tightening over the last four years. Insurers have focused on detailed underwriting with an emphasis on technical and disciplined underwriting practices which has resulted in reduced capacity and coverage and increased premiums. Given claims incurred by the industry in recent years, it is anticipated that the hardening of the insurance market will continue into the mid-term.

Entities looking to place insurance are essentially competing for insurance market capacity. Establishing long-term relationships with underwriters is important, as is articulating and differentiating a customer's risk profile from its competitors'. The customer who can best demonstrate that they have an embedded risk management and risk prevention strategy will achieve favourable results.

Aurizon has a strong reputation and is respected within the insurance market as being well-managed with a sophisticated risk-management approach. In recent years, Aurizon has been able to successfully articulate its risk-management journey with a particular emphasis on investments in technology (such as track protection equipment and condition monitoring) and how this has had a direct and positive impact on reducing the frequency of derailments.

This is not only beneficial for Aurizon but also for our customers. Sustaining less derailments with less potential for personal injury and/or property damage may provide additional benefits to customers through obtaining better insurance outcomes for themselves.

2.2.2 Availability of Cover and Impact of ESG Issues

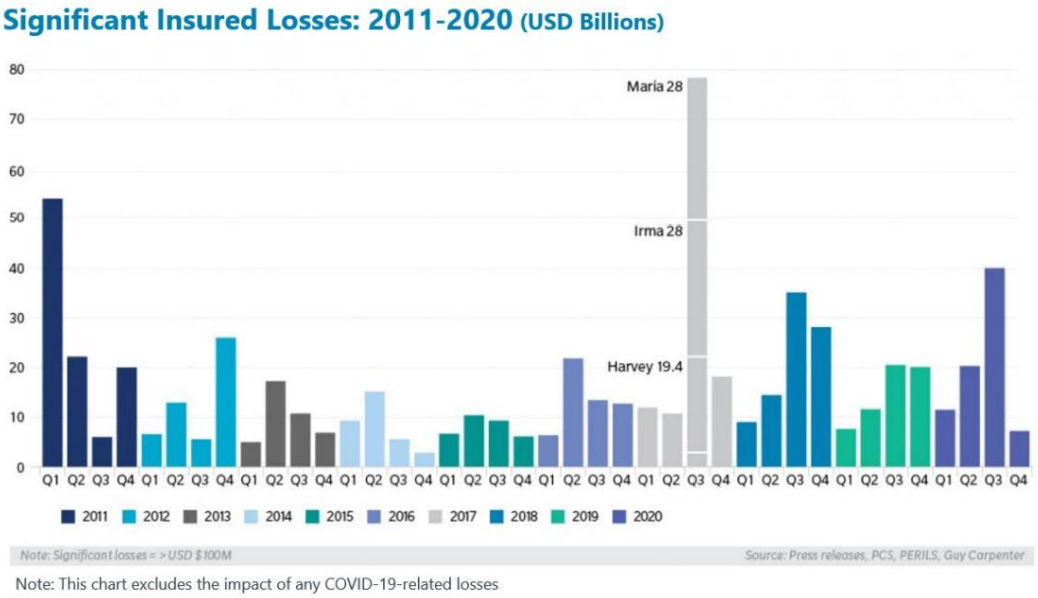
In addition to current market conditions, availability of cover has also been impacted by insurer approaches to ESG. The insurance market globally has been reviewing its investment and underwriting strategies in certain sectors (particularly mining and associated industries such as oil and gas) in alignment with the Paris Agreement and in response to pressure from activist shareholders. Accordingly, the market globally has been imposing significant restrictions on the thermal coal mining sector, seeing most insurers withdrawing their capacity where thermal coal related revenue exceeds 30%.

2.2.3 Market Exposure to Natural Catastrophes

The insurance market is being impacted by the increased frequency and severity of natural catastrophes such as bushfire, flood, cyclones and other weather events. The insurance industry is wary of any risks of exposure to natural catastrophes as they have suffered significant losses in recent years. For example, flooding in Queensland and New South Wales in early 2022 will create further uncertainty, with 200,000 claims having been lodged with insurers with loss reserves of an estimated $5 billion. In 2021, the Australian insurance market was impacted by catastrophic bushfire losses along the east coast of Australia with more than 14,000 claims lodged with losses estimated at $1.9 billion.

The following graph from Marsh[1] shows the significant global losses from natural catastrophes (**NAT CAT**) over the last decade with Marsh noting 'more frequent and higher value NAT CAT losses'.

Figure 2: Significant Global Losses from NAT CAT



Note: This chart excludes the impact of any COVID-19-related losses

To limit their exposure, Australian insurers procure reinsurance from global insurers such as Swiss Re and Munich Re. In addition to events that occur in Australia, natural catastrophes around the globe will also impact on local insurance availability and pricing. For example, hurricanes in the USA create significant insurance market volatility.

For insurers, there will be a heightened and ongoing focus on establishing sophisticated risk modelling. Insurers will need to consider greater geographic diversification (including the spread of urbanisation) and cost escalation (as insurers are incurring much greater claim costs). Climate change is likely to increase the frequency and severity of losses, with a future assumption being that insurers may cease offering insurance coverage for regions that are highly susceptible to natural catastrophes.

2.2.4 Insurers Attitude to Rail Infrastructure

Aurizon has opted to not insure the CQCN. Accordingly, there is no insurance coverage for damage to the rail network (i.e. track, sleepers, ballast) or loss in revenue from factors such as weather events.[2] The insurance industry is wary of any infrastructure that is exposed to natural catastrophes as they have suffered significant losses in recent years due to natural events such as cyclones, flooding and bushfires.

[1] Marsh (2021) Insurance Market Update and Projections - ElectraNet Revenue Proposal, https://www.aer.gov.au/system/files/ENET027%20-%20ElectraNet%20-%20Marsh%20-%20Insurance%20Cost%20Forecasts%202024-28%20-%2031%20January%202022.pdf

[2] Aurizon Network self-insures for certain events up to $1 million

Whilst other entities in the rail sector may insure their rail network, the insurance market will consider each entity on its merits as each entity will have a different risk profile. Aurion's risk profile is different to its southern peers due to significant events seen in central and northern Queensland in recent years.

Insurers are mindful of their accumulation exposure geographically. Insurers are regularly considering the underwriting risk exposure they have to port, rail, mine, manufacturing and other property in a particular region. For that reason, insurers will likely have a different view to the risk profile of a rail network in the southern states, when compared to the CQCN where there is almost no appetite to insure the network.

2.2.5 Treatment of Insurance Within the Regulatory Framework

The combined effects of cumulative losses from NAT CAT and the reduction of capacity in the market for certain climate risk exposed insurance products can result in uncertain and unpredictable movements in insurance pricing and costs. The following table from ElectraNet's[3] application for insurance cost pass-through shows the problem of these combined effects against the ex-ante determined insurance allowance.

Table 1: ElectraNet's Insurance Premiums: Allowance and Actual Costs ($M Nominal)

Component	2018-19	2019-20	2020-21	2021-22	2022-23
Insurance allowance	2.78	2.85	2.92	3.15	3.45[a]
Actual or expected costs	2.82	3.75	4.8	6.53	8.78
Overspend	0.10	0.90	1.9	3.38	5.32

[a] This forecast of our insurance allowance was prepared based on the Reserve Bank of Australia's August 2022 forecast of inflation in the year to December 2022. Our revenue allowance will be updated for actual inflation in due course.

These movements in actual insurance premiums relative to CPI-indexed cost allowances suggest upfront estimates of insurance costs may be increasingly unreliable as the cost and frequency of weather-related insurance losses increase. While ex-ante allowances provide appropriate incentives for regulated businesses to efficiently manage risks to lower insurance premiums, regulated business may be exposed to losses associated with the market conditions for insurance for which they are not compensated.

Aurizon Network recommends the QCA also consider approaches to how the regulatory framework should fund the efficient costs of insurance to account for volatility and uncertainty in the insurance market and how these cost risks should be allocated between the regulated business and its customers.

2.3 Efficient Management of Physical Risks

Aurizon currently manages physical risks to the CQCN through the following mechanisms:

[3] ElectraNet (2022) Insurance Costs 2022-23: Cost Pass-through Application, p.12, https://www.aer.gov.au/system/files/ElectraNet%20-%20cost%20pass%20through%20application%20-%202022-23%20insurance%20costs%20-%2028%20October%202022.pdf

- Asset Resilience Expenditure - can effectively reduce the impact of weather events and in turn both the cost of remediation and the length of CQCN outages. However, a key component of Aurizon Network's current Maintenance and Renewals Strategy and Budget is to deliver maintenance activity and asset renewal at a cost which is "efficient and prudent".
- External Insurance - as detailed in section 2.2 of this submission, securing external insurance is becomingly increasingly challenging and expensive for Australia's resources industry.
- Self-Insurance - Aurizon currently self-insures for uninsured property risks including weather-related events with claims below the pass-through threshold of $1 million.
- Cost Pass-Through (via the Review Event mechanism) - Aurizon Network's 2017 Access Undertaking (**UT5**) contains a cost pass-through mechanism to recover from force majeure events that have or will incur incremental costs above $1 million.

As detailed in the Asset Resilience section of this submission, consideration must be given to CQCN customers' appetite to pay for improved asset resilience which may in turn require a rethink of how maintenance activity and asset renewals are assessed going forward. Consideration must also be given to CQCN customers' willingness and ability to pay for remediation works following major weather events under the current arrangements.

Where the frequency and severity of weather-related events (particularly tropical cyclones and flooding) increase because of climate change, the current approach to managing physical risks may not match customer risk preferences in terms of the economic balance between investment in network resilience and network remediation.

Importantly, current users of regulated services may have a high willingness to pay for investment in network resilience to avoid the indirect costs associated with loss of network capacity or availability (predominantly loss of output, demurrage etc). Notwithstanding, this willingness to pay may not be supported by an ability to pay from future users due to the impact of transitional risks. Ultimately, the willingness to pay will be largely dependent on the extent to which network availability is correlated with mine production disruptions from the same event or whether the impact is localised and can be mitigated through other mechanisms such as deferred railings (assuming excess supply chain capacity) or rerouting.

Determining the appropriate balance between resilience and remediation in response to physical risks is best determined between the access provider and its customers subject to the effective mitigation of transitional risks. Consequently, the consideration of capital expenditure in response to physical risks cannot be considered independently on the network owner's willingness and ability to fund that expenditure due to transitional risks.

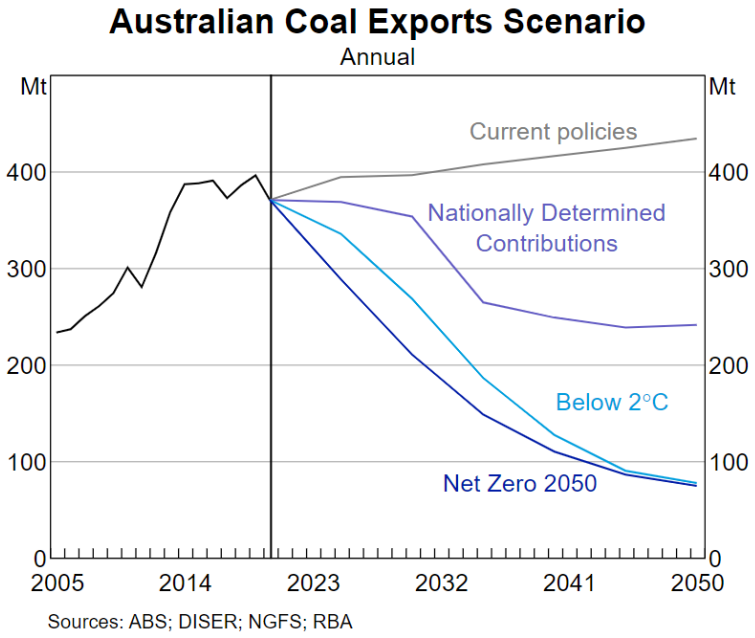
These issues are explored in further detail within the attached Frontier Economics report.

3. Responding to Climate Change Transitional Risks

Aurizon Network notes that the key climate change transitional risks relevant to the CQCN is the uncertainty of long-term demand arising from changes in policy and technology. Aurizon Network observes that the current approach to managing long-term demand uncertainty within its regulatory framework is consistent with the long-term demand risks as they were known at the time of the QCA's 2019 Final Decision on UT5.

However, this long-term demand risk is subject to a wide range of potential scenarios and demand outcomes as discussed by the Reserve Bank of Australia[4] and shown in the figure below.

Figure 3: Australian Coal Exports Scenario



While the QCA Discussion Paper states the transitional risks are *'not the focus of this discussion paper given our initial view that these matters can be accommodated within our existing frameworks*', as noted above the consideration of these risks is not independent from the expenditure review process. The QCA Discussion Paper also states:

> *One matter that stakeholders may wish to consider is whether our regulatory frameworks' procedural mechanisms (described earlier) are sufficiently flexible and nimble to deal with occurrences like suddenly arising economic shocks.*

In this regard the change in medium and long-term demand uncertainty arising from transitional risk necessarily requires that the QCA consider how the regulatory framework should address these risks before one or more of those risks are realised.

Aurizon Network notes that transitional risks can affect medium and long-term demand risks in the following ways:

- the demand for outputs produced by Aurizon Network's customers;
- Aurizon Network's customers' ability to attract capital to finance development of new mines or mine expansions;
- the costs of obtaining finance at the benchmark cost of capital; and
- changes in counterparty credit risks.

[4] Kemp, J., McCowage, M and Wang, F (2021) Towards Net Zero: Implications for Australia of Energy Policies in East Asia, Reserve Bank of Australia Bulletin, 16 September, https://www.rba.gov.au/publications/bulletin/2021/sep/towards-net-zero-implications-for-australia-of-energy-policies-in-east-asia.html

These matters are discussed in further detail within the attached Frontier Economics report.

3.1 Uncertainty of Long-Term Demand

The QCA Discussion Paper references the recent QCA commissioned work by Resource Management International (**RMI**) which concluded that the Bowen Basin, and in particular the Goonyella rail system corridor, is in a very strong competitive position to maintain a dominant metallurgical coal market share in the medium to long term. Aurizon Network considers the QCA's current approach to assessing medium to long-term demand risk for coal export infrastructure will no longer be fit for purpose as:

- it is primarily a supply side analysis of a single coal system;
- it does not involve a formal assessment of the distinction between demand for hard coking coal, soft coking coal and thermal coal; and
- it does not effectively model long-term price path and policy/demand scenarios.

The problem with continuing to assess economic life with reference to coal reserves is emphasised by Kemp et. al. who observe:

> *Current coal reserves at operating Australian mines notably exceed projected export demand to 2050 under the Net Zero and Below 2°C scenarios; this suggests there is potential for 'stranding' even if there is no investment into new mines*

The robustness of reserve estimates is also identified in the current review of the Joint Ore Reserves Committee (**JORC**) Code[5] where '*respondents would like greater clarity concerning several areas including the Reasonable Prospects of Eventual Economic Extraction test (RPEEE), definition of a Competent Person and Additional information on Environment, Social, Technology and Governance on Ore Reserves'*.

In respect to the long-term demand for thermal coal, Queensland Treasury's updated report on the Queensland's Coal Industry and Long-Term Global Coal Demand concludes:

> *Given these range of factors, the IEA's projections and the further analysis undertaken by Treasury both highlight that the long-term global demand for thermal coal remains challenging and is likely to decline more substantially over coming decades than the demand for metallurgical coal.*

It is generally accepted that the long-term demand risks for metallurgical coal differ substantially than that of thermal coal due to the lack of financially viable technical substitutes in the steel making process. While the coal exports from the CQCN are predominantly metallurgical coal, parts of the CQCN may be at greater risk of physical stranding[6] due to predominant use by thermal coal under the current regulatory settings.

Therefore, Aurizon Network agrees with Frontier Economics' conclusion that:

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[5] Australasian Joint Ore Reserves Committee (2021) JORC Summary Paper of Key Issues and Work Plan, June, https://www.jorc.org/docs/JORC_Summary_Paper_of_Key_Issues_and_Work_Plan.pdf

[6] The current network wide approach to establishing the economic life of the RAB and the foreseeable demand estimate for the declaration of services provided by the CQCN implicitly assumes economic stranding is assessed at a network level.

Given the high degree of uncertainty over future coal demand and government climate change policies, the QCA should consider scenario analysis informed by plausible and reputable projections of:

- *future coal demand; and*
- *future coal production, taking into account government climate change policies targeted at the coal mining industry.*

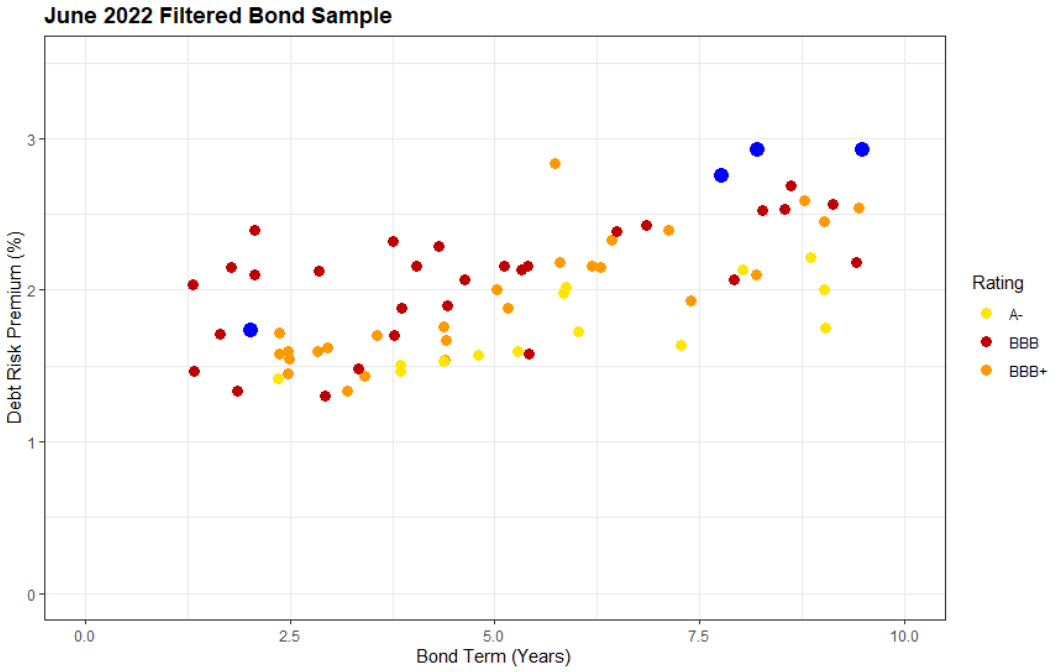
Importantly, the QCA's climate change review should provide appropriate guidance to climate-exposed regulated businesses and its customers on how transitional risks will be assessed by the QCA in subsequent regulatory reviews.

3.2 Access and Cost of Debt Financing

The attached report by Frontier Economics summarises the current issues with access to finance for fossil fuel exposed businesses and that an increasing number of financial institutions are withdrawing capital or reducing their exposure to those sectors. As discussed above this will have implications on medium to long-term demand resulting from the ability to efficiently finance mine extensions and mining projects.

Aurizon Network notes that much of the evidence for the existence of ESG premium is largely anecdotal; there is an increasing body of empirical analysis which has not established a consensus for an ESG premium at this stage. Aurizon Network anticipates that as transitional risks associated with climate change policies increase over time there will be growing economic evidence for an ESG premium. In the interim, the strength of the anecdotal evidence is becoming more pronounced as shown in the following graph which has been reproduced from Aurizon Network's UT5 Preliminary Reset Values submission for the debt risk premium. The highlighted blue bonds are the Aurizon Network corporate bonds within the sample which are trading at a yield premium to the BBB+ rating at the long end of the curve.

Figure 4: Filtered Bonds Sample – June 2022



The practical effect of reduced access or increasing cost of debt to Aurizon Network's customers is a potential deterioration in credit ratings and an increase in counterparty risk. This has been identified as an emergent risk by the Scheme Manager of the Financial Provisioning Scheme for mine rehabilitation which notes[7]:

> *A trend has emerged where resource sites are being transferred from stronger, more financially sound entities to entities either with a lower level of financial soundness or lower recourse potential for government being either private equity or foreign entity acquired.*

In conducting the post transition review of the Financial Provisioning Scheme, Queensland Treasury also observes that[8]:

> *Energy transformation policy outcomes and market forces could result in fossil fuel related environmental authorities having reduced market appetite for their product, and therefore reduced economic lives. This may also impact their financial viability in the medium to long term, although we note there are likely to be winners and losers from the likely range of global decarbonisation scenarios.*

Counterparty credit risk associated with climate change risk is not identified or addressed in the QCA Discussion Paper. Aurizon Network considers a degradation in counterparty risk has implications for pricing and risk allocation between Aurizon Network's customers. Similarly, conventional measures of addressing counterparty risk, such as bank guarantees, may not be available to those parties where banks withdraw funding from fossil fuel exposed sectors and the regulatory framework will need to respond appropriately to these developments in a timely manner.

Aurizon Network appreciates the opportunity to respond to the QCA Discussion Paper and looks forward to further contributing to the QCA's framework development in 2023.

Should you have any questions in relation to this submission please contact Lauren Dixon, Principal Regulation Adviser.

Kind regards,

Jon Windle
Manager Regulation

Appendix A: Report by Frontier Economics: Climate related expenditure and frameworks

[7] Queensland Treasury (2022) Financial Provisioning Scheme: 2021-22 Annual Report, https://s3.treasury.qld.gov.au/files/2021-22-Financial-Provisioning-Scheme-Annual-Report.pdf

[8] Queensland Treasury (2022) Financial Provisioning Scheme: Post Transition Review Discussion Paper, https://s3.treasury.qld.gov.au/files/July-2022-Financial-Provisioning-Scheme-Discussion-Paper.pdf