Queensland Competition Authority

Decision

Assessment of Aurizon Network's baseline capacity assessment report

July 2018

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EXECUTIVE SUMMARY

The 2016 access undertaking (2016 AU) requires Aurizon Network to submit a baseline capacity assessment report (BCAR) to the Queensland Competition Authority (QCA). The 2016 AU also requires the QCA to assess the BCAR and to agree or disagree with it.

On 21 March 2017, Aurizon Network submitted its BCAR to the QCA, along with its 2016 system operating parameters (SOPs) report. The SOPs report summarised the input assumptions Aurizon Network adopted in its modelling, while the BCAR summarised the outputs. One of the primary outputs is available capacity, which describes the quantum of unused capacity in the central Queensland coal network (CQCN) systems.

As a part of our assessment, we engaged GHD to review Aurizon Network's BCAR. GHD recommended that we agree to the BCAR; while it identified modelling issues, it found these are unlikely to lead to material changes in the outputs.

Stakeholders disagreed with Aurizon Network's modelling approach of adopting input assumptions that reflect contracted performance parameters on the basis that it is overly theoretical. Stakeholders said the BCAR and the SOPs report do not adopt assumptions that align with operational and real life parameters and therefore do not meet their expectations. They also disagreed with GHD's recommendations.

In assessing the BCAR, we have considered the requirements of the 2016 AU, the intent and purpose of the BCAR, and matters listed in section 138(2) of the QCA Act.

The 2016 AU does not specify all of, or the types of, input assumptions to be used. Therefore, both Aurizon Network's modelling approach, and stakeholders' preference of using input assumptions that reflect 'realistic' operational parameters, in our view, satisfy the 2016 AU.

We consider Aurizon Network's modelling approach represents a first step towards establishing a collective understanding of capacity, and there are benefits in agreeing to the BCAR:

- The BCAR represents Aurizon Network's estimate of available capacity, using assumptions that existed at a point in time. GHD assessed these assumptions as being reasonable.
- A BCAR that represents capacity at a point in time is useful, because future annual capacity assessment updates can be compared to it. When Aurizon Network provides its first update, it would be appropriate to reflect the quantum of market and operational changes since 2016, including any changes in planning assumptions and operating and maintenance practices.
- Stakeholders' feedback that the BCAR should be updated for more recent data can be addressed as part of the annual capacity assessment update process.

It is open to argue the BCAR has not fully achieved its intent and purpose. The BCAR is intended to enable stakeholders to gain a comprehensive common understanding of the capacity in each CQCN system; yet, they have generally disagreed with Aurizon Network's modelling approach and conclusions.

The annual capacity assessment update contemplates that a BCAR is in place, which means agreeing on the BCAR would also make it possible for the annual updates to be provided earlier. Additionally, and importantly, Aurizon Network has committed to developing a system capacity assessment to address the shortfalls of the BCAR.

On balance, we consider the benefits of the BCAR outweigh the limitations and concerns raised by stakeholders, and our decision is to agree with Aurizon Network's BCAR. However, we are of the view that the future annual capacity assessment updates can be made more useful, if more data were presented, in a more transparent manner.

THE ROLE OF THE QCA

The QCA is an independent statutory body which promotes competition as the basis for enhancing efficiency and growth in the Queensland economy.

The QCA's primary role is to ensure that monopoly businesses operating in Queensland, particularly in the provision of key infrastructure, do not abuse their market power through unfair pricing or restrictive access arrangements.

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1 INTRODUCTION

1.1 Background

Aurizon Network is the sole owner and operator of the central Queensland coal network (CQCN). The CQCN is used mainly to carry coal to export ports and comprises the following systems: Blackwater, Goonyella, Moura, Newlands and Goonyella to Abbot Point (GAPE).

The CQCN is a natural monopoly. It is considered uneconomic to duplicate the network's physical infrastructure. Businesses can compete to provide 'above-rail' services (i.e. trains carrying freight) but all parties must use Aurizon Network's 'below-rail' infrastructure.

Under section 136 of the *Queensland Competition Authority Act 1997* (QCA Act), Aurizon Network can provide the QCA with an undertaking setting out the terms and conditions of access to the network. We must either approve or reject this undertaking. Since 2001, we have approved four undertakings for the CQCN. The current undertaking, the 2016 AU, was approved on 11 October 2016 and was scheduled to terminate on 30 June 2017. The term of the 2016 AU has since been extended to the earlier of 31 December 2018 or the date of approval of a replacement undertaking (2017 DAU).[1]

Under the 2016 AU, Aurizon Network is required to submit a baseline capacity assessment report (BCAR) to the QCA within six months of the approval date. This is a new requirement that did not exist prior to the 2016 AU.

Aurizon Network submitted its BCAR on 21 March 2017.

1.2 Purpose of the BCAR

In our investigation leading up to the approval of the 2016 AU, it became clear that stakeholders had for a long time been concerned about the lack of transparency regarding the baseline capacity of the CQCN. The QCA considers this to be important, because of the impact it has on the effectiveness of a negotiate–arbitrate model.[2]

As a result, in the 2016 AU we provided for Aurizon Network to undertake a baseline capacity assessment and to consult with access holders, access seekers and supply chain groups. We emphasised that Aurizon Network and stakeholders should be collaborative and cooperative during such a process, so that trust could be rebuilt in relation to capacity-related matters.[3]

At that time, the QCA outlined the purpose of the BCAR, which is 'to gain a comprehensive common understanding across stakeholders and Aurizon Network of the capacity of each CQCN coal system'.[4]

More details regarding the purpose of the BCAR can be found in Chapter 3.

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[1] QCA, *Aurizon Network's April 2018 extension draft amending access undertaking*, decision, May 2018, p. 1.
[2] QCA, *Aurizon Network 2014 draft access undertaking*, final decision, vol. 2—Capacity and expansions, April 2016, p. 14.
[3] QCA, *Aurizon Network 2014 draft access undertaking*, final decision, vol. 2—Capacity and expansions, April 2016, p. 14.
[4] QCA, *Aurizon Network 2014 draft access undertaking*, Vol. 2 capacity and expansions, final decision, April 2016, p. 15.

1.3 Scope of the BCAR

The BCAR contains the outcomes of Aurizon Network's capacity analysis, where capacity analysis in the 2016 AU is defined essentially as:

> a simulation modelling assessment of the Available Capacity of the Rail Infrastructure, based on the Network Management Principles, System Operating Parameters, System Rules, Train Operator's Operating Plans and any requested Access Seeker's Access Rights, to determine as the context requires: (a) Available Capacity; …[5]

Among other things, the BCAR must:

- include consultation with access holders, access seekers and supply chain groups
- consider the terms of access agreements and the interface between the rail infrastructure and other facilities forming part or affecting the supply chain
- set out Aurizon Network's assumptions relied upon for the assessment
- provide a static or dynamic waterfall analysis of train paths or train service entitlements (TSEs) in relation to the following metrics for each coal system:
  - absolute capacity
  - existing capacity
  - planned capacity
  - committed capacity
  - available capacity.[6]

The 2016 AU requires the QCA to assess the BCAR and to agree or disagree with it.[7]

1.4 QCA assessment approach and key dates

In undertaking this assessment, we have considered the matters in the 2016 AU (including cl. 7A.4), the draft and final decisions concerning the 2016 AU[8], and section 138(2) of the QCA Act. These matters include the:

- requirements of the 2016 AU, including what the BCAR should contain, and the appropriateness of the assumptions and inputs used by Aurizon Network in its capacity analysis
- intent and purpose of the BCAR as stated in the 2016 AU decision documents, including stakeholders' submissions to the BCAR as part of this assessment
- matters referred to in section 138(2) of the QCA Act.

Since Aurizon Network's submission of the BCAR on 21 March 2017, we have sought stakeholder feedback on the BCAR, engaged an expert (GHD) to review the BCAR, and then sought stakeholder feedback on GHD's recommendations (Table 1).

[5] Part 12 (Definitions and Interpretation) of the 2016 AU.
[6] Cl. 7A.4.1 of the 2016 AU.
[7] Cl. 7A.4.1(c)(ii) of the 2016 AU.
[8] The 2014 draft access undertaking (2014 DAU), once approved, became the 2016 AU.

Table 1 Key dates

Dates	*Action*
21 March 2017	Aurizon Network submitted its BCAR (and its 2016 SOPs report).
5 April 2017	The QCA published non-confidential versions of the BCAR and SOPs report on our website and invited stakeholder submissions.
5 May 2017	The QCA received stakeholder submissions from the Queensland Resources Council (QRC) and Pacific National.
1 March 2018	The QCA published GHD's report and invited stakeholder submissions.
29 March 2018	The QCA received stakeholder submissions (on the GHD report) from Aurizon Network, the QRC, Pacific National and Glencore.

1.5 2017 draft access undertaking (UT5)

The QCA's investigation into the 2017 DAU is currently underway.

In relation to the BCAR, our draft decision on the 2017 DAU contemplated that the 2017 DAU would:

- contain transitional provisions that allow the BCAR to be completed under the 2016 AU, even if the 2016 AU has terminated[9]
- require Aurizon Network to submit annual capacity assessment updates to the BCAR, in a similar manner as in the 2016 AU[10]
- provide for an additional assessment, the system capacity assessment, to be undertaken. The system capacity assessment was developed as part of the collaborative submission process (and was supported by the QRC and Pacific National) to address the shortfalls of the BCAR.[11]

A final decision by the QCA on the 2017 DAU is yet to be made.

[9] QCA, *Aurizon Network's 2017 draft access undertaking*, draft decision, December 2017, p. 392.
[10] QCA, *Aurizon Network's 2017 draft access undertaking*, draft decision, December 2017, pp. 393–95.
[11] QCA, *Aurizon Network's 2017 draft access undertaking*, draft decision, December 2017, pp. 394–96.

2 AURIZON NETWORK'S BCAR

2.1 Overview

On 21 March 2017, Aurizon Network submitted its BCAR to the QCA for consideration. Aurizon Network's BCAR submission was supported by its 2016 SOPs report. Aurizon Network said the BCAR is intended to be read in conjunction with the SOPs report, which describes the methodology and input assumptions used in its baseline capacity analysis.

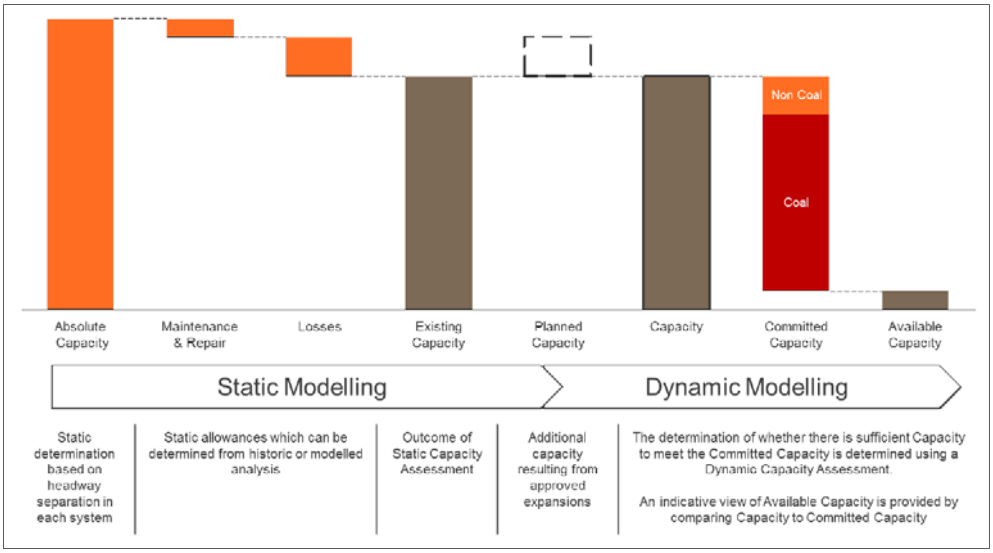
The key outputs from Aurizon Network's capacity assessment are the several measures of capacity defined in the 2016 AU, which are briefly summarised as follows:

- absolute capacity—reflects the number of train paths that could be scheduled assuming no restrictions or reductions, and represents the theoretical upper limit to capacity
- maintenance and repair—reflects the reasonable requirements for possession of rail infrastructure to perform maintenance and repair work
- losses—reflects day of operations losses, speed restrictions, and other operational restrictions on the use of rail infrastructure
- existing capacity—absolute capacity net of maintenance and repair and losses
- planned capacity—any additional expansion in infrastructure that Aurizon Network is contractually required to deliver, but is not yet in place or commissioned
- capacity—the sum of existing and planned capacity
- committed capacity—the capacity required to meet contractual TSEs
- available capacity—the difference between capacity and committed capacity.[12]

To calculate the capacities above, Aurizon Network performed two types of modelling (static and dynamic modelling) for the periods 2017–18 and 2018–19 (Figure 1). We note that the models are forward-looking and use input assumptions from the SOPs report that were developed in 2016.

[12] GHD, *Review of Aurizon Network's baseline capacity assessment report*, report prepared for the QCA, March 2018, pp. 14–16.

Figure 1 The relationship between Aurizon Network's models and capacities



***Source**: Aurizon Network, sub. 2, p. 8.*

Aurizon Network's assessment indicates that with the exception of Moura, the other systems have limited amounts of available capacity (Table 2).

Table 2 Summary of capacity measures by system

	Absolute capacity	***M&R[a]***	***Losses***	***Existing capacity***	***Planned capacity***	***Capacity***	***CC[b]***	***Available capacity***
Newlands/GAP**E**								
TSEs	26,280	3,942	6,701	15,637	–	15,637	14,964	673
mtpa	90.3	13.5	23.0	53.7	–	53.7	51.4	2.31
Goonyella								
TSEs	43,800	6,570	9,308	27,923	–	27,923	27,562	371
mtpa	220	33.0	46.8	140	–	140	139	1.86
Blackwater								
TSEs	70,080	10,512	17,870	41,698	–	41,698	19,242	4,105
mtpa	288	43.2	73.4	171	–	171	78.2	17.9
Moura								
TSEs	17,520	2,628	4,468	10,424	–	10,424	2,540	7,884
mtpa	54.9	8.24	14.0	32.7	–	32.7	7.96	24.7

***a** Maintenance and renewals; **b** Committed capacity.*

Other abbreviations: TSE—train service entitlement; mtpa—million tonnes per annum

***Source**: Aurizon Network, sub. 1, pp. 7–21.*

In addition to these measures of capacities, Aurizon Network also provided the following metrics by coal system:

- key operational information, including contracted capacity and historical throughput
- branch line capacity, in the form of a heat map

- system monthly variance of TSEs arising from multiple simulations.[13]

System operating parameters report

Aurizon Network said it developed the SOPs to align with contractual commitments to its access holders. It also said that these contractual performance parameters provide an objective basis for the development of the SOPs, because Aurizon Network and its access holders are committed to these metrics.[14]

Aurizon Network said that the SOPs were developed following consultation with stakeholders, during which stakeholders said Aurizon Network's analysis should be based on the performance of individual supply chain elements, rather than Aurizon Network's contracted performance parameters.[15]

The components of the SOPs are:

- network configuration—which describes the layout of the CQCN, including the assumptions adopted for travel time, signalling, and interfaces at yards, ports and mines
- maintenance scope—which describes how the scope for maintenance and renewal activities is generated
- network planning—which describes the activities undertaken to plan non-coal traffic, maintenance and renewals, and provide available capacity information for the scheduling of services
- network scheduling—which describes the cycles that coal trains operate and how these are scheduled to meet demand requirements
- network operation—which describes how the capacity assessment replicates the operation of the CQCN through network control, speed of trains (speed restrictions), day of operations losses and force majeure.[16]

The SOPs describe only the assumptions related to Aurizon Network's dynamic modelling.[17]

Table 3 outlines some of the key assumptions in Aurizon Network's SOPs.

Table 3 Some key assumptions in Aurizon Network's SOPs

Category	*Assumption*	*Description*
Network configuration	Travel time	The time taken for trains to traverse sections of the CQCN is based on the times derived from sectional run times (SRTs) contained in access agreements. However, since there is a significant discrepancy between individual access agreements, Aurizon Network has adopted SRTs that are aligned to the majority of access agreements.[18]
Network configuration	Start/stop allowances	The SRTs describes the 'green light' travel time. Aurizon Network has therefore included additional allowances to account for the start/stop nature of vehicles. These values are: • diesel vehicles in Newlands: 4 minutes for start; 2 minutes for stop

[13] Aurizon Network, sub. 1, p. 4.
[14] Aurizon Network, sub. 2, p. 6.
[15] Aurizon Network, sub. 2, p. 6.
[16] Aurizon Network, sub. 2, pp. 11–43.
[17] Aurizon Network, sub. 2, p. 8.
[18] Aurizon Network, sub. 2, p. 12.

Category	*Assumption*	*Description*
		• all vehicles in Goonyella: 5 minutes for start; 4 minutes for stop • diesel vehicles in Blackwater: 2 minutes for start; 3 minutes for stop • electric vehicles in Blackwater: 2 minutes for start; 3 minutes for stop • diesel vehicles in Moura: 3 minutes for start; 0 minutes for stop.[19]
Network configuration	Signalling	Aurizon Network has applied the following time impacts to reflect the different types of signalling: • 0 minutes for remote control signalling • 6 minutes for direct train control • 12 minutes for direct train control with main line point indicators; however, additional time is sometimes added.[20]
Network configuration	Interface at mines and ports	Aurizon Network has assumed that the CQCN interface with mines and ports can be modelled by the time taken to load and unload trains (as defined in access agreements). Aurizon Network said that it did not take into account constraints outside of the CQCN interface points. For example: • Constraints due to belt routes in ports were not included when assessing network capacity. • Availability of mine or port infrastructure was assumed to align with rail network capacity.[21]
Network planning	Non-coal traffic	Aurizon Network compared the non-coal-train figures in its Master Train Plan (MaTP) to the minimum train path it is required to provide under the *Transport Infrastructure Act 1994* (TIA). When the MaTP contained fewer trains than the minimum set out in the TIA, Aurizon Network added trains to its assessment. A total of 16 trains were added to the MaTP (8 northbound and 8 southbound).[22]
Network planning	Interface with supply chain	Aurizon Network has assumed that all port and mine maintenance and renewal activities align with network closures and other network activities; i.e. port and mine maintenance activities do not lead to any capacity losses and coal has been assumed to be available at the mine.[23]
Network scheduling	Demand	Aurizon Network has allowed contracts that end within the simulation period to continue in line with their previous contract. Aurizon Network has entered demand into its dynamic model as TSEs which was then: • converted to a number of train orders required • scaled by the number of days in a month • evenly spaced across the simulation period to align with the 'even railings' mode of operation.[24]
Network operation	Temporary speed restrictions	Aurizon Network's dynamic model adopted the temporary speed restrictions that applied from 1 February 2014 to 31 January 2015. Aurizon Network determined this 12-month block to be a representative period.[25]
Network	Day of	In its dynamic model, Aurizon Network randomly applied cancellation to 10

[19] Aurizon Network, sub. 2, p. 13.
[20] Aurizon Network, sub. 2, pp. 18–20.
[21] Aurizon Network, sub. 2, p. 22.
[22] Aurizon Network, sub. 2, p. 28.
[23] Aurizon Network, sub. 2, p. 30.
[24] Aurizon Network, sub. 2, p. 37.
[25] Aurizon Network, sub. 2, pp. 40–41.

Category	*Assumption*	*Description*
operation	operations losses	per cent of empty train services scheduled to depart the origin.[26]

***Source**: Aurizon Network, sub.2, pp. 11–43.*

2.2 Stakeholder submissions

The QCA received submissions on the BCAR from the QRC and Pacific National.

Queensland Resources Council

The QRC said the BCAR did not provide sufficient detail to allow meaningful review and comment. Instead, the QRC focused its comments on the SOPs report.[27]

The QRC considered that the SOPs have little regard to system impacts and provide for a theoretical calculation of capacity. The QRC also said the input assumptions of rail capability and the supply chain do not reflect reality, which means Aurizon Network has not complied with the definition of SOPs and the supply chain interface requirement of the 2016 AU.[28,29]

The QRC said capacity needs to be assessed in the context of which it exists (i.e. a part of the supply chain) and not just in the context of which portion Aurizon Network has control over.[30]

The QRC's specific issues were:

- The SOPs derive the number of TSEs required to meet existing capacity based on contracted payloads. Planned or actual payloads are generally higher. An increase in payload may affect the load and unload times (because there are more wagons) and the SRTs (due to a reduction in the power to weight ratio), which in turn affects how much capacity is consumed.
- The SOPs assume even railings, even though this is inconsistent with the operating mode of some ports, such as Dalrymple Bay Coal Terminal.
- The SOPs adopt SRTs that differ from those by which trains are scheduled.
- The SOPs assume the availability of mine and port infrastructure aligns with rail network capacity. The QRC would like to better understand whether this assumption is realistic.
- The QRC suggested Aurizon Network seek further input from industry, and port and rail operators. To the QRC's knowledge, this has not been undertaken.[31]

The QRC considered that an assessment of network capacity based on ideal operating conditions would produce a purely theoretical capacity figure. This would lead to misrepresentations of available capacity and the commitment of capacity well above the level that can be delivered. Future planning processes will also be misinformed.[32]

[26] Aurizon Network, sub. 2, p. 41.
[27] QRC, sub. 7, p. i.
[28] Cl. 7A.4.1(b)(iii)(B) of the 2016 AU.
[29] QRC, sub. 7, Attachment 1: 1–2.
[30] QRC, sub. 7, Attachment 1: 3.
[31] QRC, sub. 7, Attachment 1: 2–3.
[32] QRC, sub. 7, Attachment 1: 3.

Pacific National

Pacific National submitted the SOPs are overly theoretical and do not reflect how the CQCN operates in practice. Pacific National said the static nature of the SOPs does not reflect the dynamic nature of the network. It was concerned that the SOPs are inconsistent with the 2016 AU because they do not take into account constraints to the operations outside of the CQCN interface points.[33,34]

Pacific National's specific issues about the SOPs were:

- The SOPs are overstating 'committed capacity' because they are based on the network being available 360 days in a year. In reality it is not available for 360 days, due to maintenance possessions.
- The SRTs set out in the SOPs differ from the SRTs in individual access agreements.
- It is questionable whether the stop allowance for diesel vehicles (zero minutes) in the Moura system is correct.
- The modelled rolling stock may differ from reality.
- The SOPs do not outline the assumed payloads. The modelling should be based on the payloads set out in Schedule F of the 2016 AU.
- Aurizon Network should explain why temporary speed restrictions were based on data from February 2014 to January 2015. Other periods may be more appropriate.
- The day of operations losses, whereby Aurizon Network has applied cancellation to 10 per cent of empty train services, may be too conservative. Further, Aurizon Network should clarify how day of operations losses and temporary speed restrictions impact on each other.[35]

Pacific National said that the following information should be provided in relation to the BCAR:

- further details of the capacity losses arising from the 'losses' and 'maintenance and renewals' components of the waterfall charts
- the time period that each waterfall chart represents—Pacific National suggested the BCAR should extend beyond the two-year assessment period, to four or five years
- further details on the demand profile, including monthly data
- information relating to where the queues and bottlenecks are forming, the daily variation in results for each system, and the daily capacity peaks and whether these are met
- the maximum train speed data for the Newlands/GAPE systems.[36]

Pacific National noted it appears the target TSEs in Goonyella will not be met for the August, September and October 2018 period. Pacific National suggested Aurizon Network shift some maintenance activities.[37]

[33] Cl. 7A.4.1(b)(iii)(B) of the 2016 AU.
[34] Pacific National, sub. 5, pp. 3, 5.
[35] Pacific National, sub. 5, pp. 4–7.
[36] Pacific National, sub. 5, pp. 7–9.
[37] Pacific National, sub. 5, p. 9.

3 QCA ASSESSMENT

3.1 GHD's assessment

GHD assessed Aurizon Network's BCAR and recommended that the QCA agree to the BCAR.[38]

For the Moura and Blackwater systems, GHD concluded there is sufficient capacity to accommodate current TSEs. GHD also said that Aurizon Network's determination of available capacity is a reasonable reflection of actual available capacity, despite Aurizon Network's use of conservative assumptions to come to these figures.[39]

For the GAPE/Newlands and Goonyella systems, GHD also concluded that there is sufficient capacity to accommodate current TSEs. GHD said that while it agrees with Aurizon Network on the congestion points and locations of surplus capacity, it disagrees that the 'bottlenecks' warrant Aurizon Network's calculation of very low available capacities. That is, GHD considers Aurizon Network's calculated available capacities for the GAPE/Newlands system (2.5 per cent) and the Goonyella system (less than 1 per cent) are unrealistically low.[40]

GHD also identified the following modelling issues, which it said are unlikely to materially impact the modelling outputs:

- Aurizon Network's dynamic modelling periods are limited to one-month durations and model runs are halted when monthly TSEs are met and train positions are reset. GHD is concerned that cumulative delays that would extend from one month to the next are not being captured. GHD said that Aurizon Network's dynamic modelling potentially allows for more completed train paths to be achieved than in reality.
- Aurizon Network's seven-day warm-up period is insufficient. GHD considered that there is a level of risk that the system does not reach a 'steady-state' before the modelling period commences. System results could vary for the parameters used and produce incorrect information. GHD recommended a 30-day warm-up period. GHD was unable to verify the accuracy of Aurizon Network's claim that applying a range of warm-up periods, where the range is from 7 to 30 days, to a one-month simulation had a negligible impact on the number of available TSEs.
- Aurizon Network's dynamic modelling at critical supply chain interfaces should reflect what exists in practice. Critical supply chain interfaces are modelled based on contracted positions that do not always align with existing infrastructure or timing of activities in reality. The use of contracted positions rather than actual physical data reduces the value that can be placed on the output of the model.
- Aurizon Network's static modelling assumptions are considered conservative and result in a low existing capacity when compared to industry. GHD noted that the existing capacity of 59.5 or 63.7 per cent of absolute capacity is lower than typically planned in other rail networks, for example, the 65 per cent assumed for Queensland Rail's West Moreton rail

[38] GHD, *Review of Aurizon Network's baseline capacity assessment report*, report prepared for the QCA, March 2018, p. 4.
[39] GHD, *Review of Aurizon Network's baseline capacity assessment report*, report prepared for the QCA, March 2018, pp. 1–2.
[40] GHD, *Review of Aurizon Network's baseline capacity assessment report*, report prepared for the QCA, March 2018, pp. 1–2.

corridor. GHD also considered that Aurizon Network should use information from its maintenance plan to assess track outages rather than applying a conservative 15 per cent flat rate.[41]

3.2 Stakeholder submissions on GHD's assessment

The QCA received four submissions on GHD's assessment, from Aurizon Network, the QRC, Glencore and Pacific National.

Aurizon Network

Aurizon Network noted that its available capacity calculation is for information purposes only, and it should not be used to assess specific access requests. Aurizon Network also noted that GHD confirmed the basis and outcomes of Aurizon Network's capacity assessment.[42]

In spite of this, GHD identified certain modelling issues that Aurizon Network disagreed with.[43] These are:

- Utilisation parameters: Aurizon Network disagreed with GHD's conclusion that the utilisation parameters used to calculate available capacity are conservative when compared to industry and academic sources. Aurizon Network noted that GHD cited references to a practical capacity utilisation of 60 to 75 per cent; however, it is unclear whether maintenance is included. Aurizon Network said that since its planning values (59.5 to 63.75 per cent) include maintenance and renewal activities, it does not agree that its determination of available capacities are conservative.[44]
- Modelling at supply chain interfaces: Aurizon Network disagreed with GHD's conclusion that its modelling at supply chain interfaces should reflect what exists in practice. Aurizon Network submitted that its capacity assessment is forward-looking and includes planned infrastructure enhancements including expansions and private infrastructure to comply with the 2016 AU.[45,46]
- Unloading times at port:
  - Aurizon Network disagreed with GHD's conclusion that it should delink the unloading times specified in access agreements from its capacity assessment. Aurizon Network said that delinking these components is inappropriate and inconsistent with the 2016 AU.[47] Aurizon Network provided some scenarios to describe why it is inappropriate. For example, if Aurizon Network modelled actual unloading times, and these times are greater than contracted times, then this may trigger an unnecessary expansion if the under-performance is later addressed.
  - Aurizon Network said that GHD has incorrectly deduced that its use of contracted unloading times is simulating the worse-case scenario at port interfaces.

[41] GHD, *Review of Aurizon Network's baseline capacity assessment report*, report prepared for the QCA, March 2018, pp. 2–4.
[42] Aurizon Network, sub. 3, pp. 2–3.
[43] Aurizon Network, sub. 3, pp. 2–3.
[44] Aurizon Network, sub. 3, pp. 3–4.
[45] Cl. 7A.4.1(b)(iv)(B)(1) of the 2016 AU.
[46] Aurizon Network, sub. 3, p. 5.
[47] Cl. 7A.4.1(b)(iii) of the 2016 AU.

  - Aurizon Network said that GHD had incorrectly concluded that the use of maximum unloading times at ports would lead to available capacity to be artificially underestimated. Aurizon Network said that the effect of a longer port time (compared to a shorter one) is an increase in train cycle time. This may affect the number of train consists required but it does not affect the calculation of committed capacity, nor existing capacity, and therefore it does not affect the calculation of available capacity.
  - Aurizon Network disagreed with GHD's conclusion that its use of contracted times fails to meet the 2016 AU.[48] Aurizon Network said that the interface metrics specified in access agreements provide an objective basis for capacity assessment, since Aurizon Network and its access holders are committed to these metrics.[49]

- Aurizon Network disagreed with GHD's conclusion that monthly simulations result in a lack of continuity and will not capture ongoing congestion issues. Aurizon Network said that monthly simulations do capture ongoing impacts of maintenance activities, speed restrictions, and day of operations losses. Aurizon Network also said that monthly simulations provide the most accurate means of capacity assessment, as it allows the number of train consists to be varied from month to month.[50]
- Aurizon Network disagreed with GHD's conclusion that a longer warm-up period should be used. Aurizon Network said there was an insignificant change in results for warm-up periods longer than seven days.[51]

Aurizon Network also pointed out that it has worked collaboratively with the QRC and Pacific National to develop a system capacity assessment process for UT5. This system capacity assessment will have regard to reasonable maintenance and repair requirements, reasonable delays or failures in the supply chain, and the supply chain operating mode. Aurizon Network said it would be modelled on reasonable and real life forecast assumptions rather than contractual requirements (as in the BCAR).[52]

Queensland Resources Council

The QRC said it has difficulty accepting GHD's conclusion that there is sufficient capacity to meet contracted capacity.[53]

The QRC also submitted that on 30 January 2018 Aurizon Network announced a substantial change in maintenance regime that would lead to an initial capacity loss of 20 million tonnes per annum (with additional losses likely). It said Aurizon Network indicated the new maintenance regime as permanent. The QRC's view was GHD should be asked to reassess the BCAR in light of the updated and more restrictive maintenance regime.[54]

In particular, the QRC said the new maintenance regime has led to:

- customers in the Blackwater system suffering a loss of contracted train paths through train paths not being scheduled, train paths being cancelled, or train paths not being utilised.

[48] Aurizon Network believes GHD intended to reference cl. 7A.4.1(b)(iii)(B) of the 2016 AU, because cl. 7A.5(b)(iii)(B) does not exist.
[49] Aurizon Network, sub. 3, pp. 6–8.
[50] Aurizon Network, sub. 3, pp. 10–11.
[51] Aurizon Network, sub. 3, p. 12.
[52] Aurizon Network, sub. 3, pp. 8–9.
[53] QRC, sub. 8, p. 2.
[54] QRC, sub. 8, pp. 1–2.

While the availability appears to vary from month to month, the train path availability for some customers, in March 2018, was as low as 40 per cent against contract

- the process of train path planning changing substantially, with far less transparency around the root cause when train paths are lost. As a result, above-rail operators have advised they have limited confidence about future train path plans.[55]

The QRC said it had previously submitted that the purpose of the BCAR is to provide a realistic representation of capacity, and that this is not Aurizon Network's view or intent. It also said GHD's assessment does not have sufficient regard to the whole coal chain, and the scope of GHD's assessment should be broadened to make it more useful for Aurizon Network's customers. The QRC recommended that future access undertakings should also make the intent of the BCAR clearer.[56]

Glencore

Glencore had serious concerns about the reliability of the BCAR, and believed that Aurizon Network may have over-contracted capacity in the Blackwater system.[57]

Glencore also said:

- Capacity modelling should be undertaken by independent experts, rather than simply reviewed by experts with limited access to information.
- GHD had failed to properly assess the methods and assumptions of the BCAR, therefore there is insufficient basis to conclude the BCAR is reasonable or should be accepted. In particular, it appears GHD had not validated base assumptions against actual performance to determine reasonableness, or else had done it on a system-wide level which means it cannot be relied upon for determining actual capacity at specific locations. Glencore said that key assumptions should be tested against actual performance for each system, and provided a list of such assumptions.
- It had previously asked Aurizon Network to provide actual performance data. However, the data has not been provided, with Aurizon Network citing a lack of resources to action the request. Glencore considers Aurizon Network is unable or unwilling to provide the data.
- The calculation of absolute capacity, in the static model, appears to be based on an incorrect number of loaded paths. When corrected, it appears there is a capacity deficit in the Blackwater system.
- The BCAR does not reflect the impact of Aurizon Network's new maintenance regime. As a result, the BCAR is now defunct and requires reassessment.[58]

Pacific National

Pacific National said:

- It has concerns with GHD's conclusion that there is sufficient capacity in the CQCN to meet contracted capacity. It said GHD's conclusion was inconsistent with CQCN's current actual performance, where system availability for the Blackwater, Goonyella and Newlands systems have been consistently below 90 per cent in 2017.

[55] QRC, sub. 8, p. 2.
[56] QRC, sub. 8, pp. 2–3.
[57] Glencore, sub. 4, p. 1.
[58] Glencore, sub. 4, pp. 1–3.

- The BCAR does not reflect actual CQCN performance and this is most likely due to the assumptions underpinning the modelling.
- The BCAR and GHD's review of BCAR are likely to be made redundant by changes to Aurizon Network's maintenance regime.
- If the BCAR is to be accepted by the QCA, then future capacity assessments should, at a minimum, address the modelling issues identified by GHD.[59]

3.3 QCA analysis

As stated earlier, we have considered the following matters in our assessment of Aurizon Network's BCAR:

- the requirements of the 2016 AU, including what the BCAR should contain, and the appropriateness of the assumptions and inputs used by Aurizon Network in its capacity calculations
- the intent and purpose of the BCAR as stated in the 2016 AU decision documents, including stakeholders' feedback to the BCAR as part of this assessment
- the matters referred to in section 138(2) of the QCA Act.

Requirements of the 2016 AU

The requirements of the 2016 AU specify that, among other things, the baseline capacity assessment must:

- include consultation with access holders, access seekers, and supply chain groups[60]
- consider the terms of the access agreements, and interfaces between rail infrastructure and other facilities forming part of, or affecting, the supply chain[61]
- set out Aurizon Network's assumptions affecting capacity, including SOPs[62]
- provide a static or dynamic waterfall analysis, analysing the absolute capacity, existing capacity, planned capacity, committed capacity and available capacity in each coal system.[63]

We note Aurizon Network developed the SOPs and BCAR documents following stakeholder consultation, and the consultation process identified key areas where Aurizon Network's modelling could be improved. Specifically, stakeholders said they were keen to see an analysis based on the performance of individual supply chain elements, rather than an analysis based on Aurizon Network's current approach of adopting contracted performance parameters.[64]

Aurizon Network said it has fulfilled its interface requirement by applying the load and unload times as defined in access agreements, at mines and ports, to its modelling. To be specific, Aurizon Network said that its modelling excludes constraints to the operations outside of the CQCN interface points. For example:

- Modelling excludes constraints due to belt routes in ports.

[59] Pacific National, sub. 6, pp. 1–2.
[60] Cl. 7A.4.1(b)(i) and (ii) of the 2016 AU.
[61] Cls. 7A.4.1(b)(iii)(A) and (B) of the 2016 AU.
[62] Cl. 7A.4.1(b)(iv)(A) of the 2016 AU.
[63] Cl. 7A.4.1(b)(iv)(B)(1) of the 2016 AU.
[64] Aurizon Network, sub. 2, p. 6.

- The availability of mine or port infrastructure is assumed to align with rail network capacity.[65]

The 2016 AU does not specify all of, or the types of, input assumptions to be used—that is, whether the BCAR should reflect contracted performance parameters or 'realistic' operational parameters. The 2016 AU requires that Aurizon Network 'consider' the interfaces between the rail infrastructure and other facilities forming part of or affecting the relevant supply chain.[66] Aurizon Network's BCAR arguably meets this requirement. As a result, both Aurizon Network's modelling approach, and stakeholders' preference of using input assumptions that reflect 'realistic' operational parameters, in our view, satisfy the 2016 AU.

The proposed system capacity assessment process set out in the QCA's draft decision on the 2017 DAU, developed as a consensus position by industry participants, provides a more explicit process for taking interfaces into account.[67]

With respect to the modelling issues that Aurizon Network responded to in its submission to GHD's recommendations, we accept GHD's conclusion that they are unlikely to materially impact the outputs.

We note that GHD recommended that the QCA agrees to Aurizon Network's BCAR.

The intent and purpose of the BCAR

As discussed earlier, stakeholders had for a long time been concerned about the lack of transparency regarding the baseline capacity of the CQCN.[68] As such, the 2016 AU provided for a baseline capacity assessment, and the QCA decision documents said:

> The purpose of the baseline capacity assessment is to gain a comprehensive common understanding across stakeholders and Aurizon Network of the capacity of each CQCN coal system.
>
> The approach of reaching a common understanding can enable Aurizon Network and stakeholders to agree on a way to manage any concerns emerging from the outcomes of that assessment process.[69]

We note stakeholders have generally disagreed with Aurizon Network's BCAR and SOPs submission, and GHD's recommendation that we agree to the BCAR. Stakeholders said the BCAR and SOPs adopt assumptions that do not align with operational and real life parameters and therefore do not meet their expectations.[70]

The QRC said its concerns can be illustrated by the issues in the Blackwater system, where its recent expansion to accommodate the additional capacity required for the Wiggins Island coal terminal (the Wiggins Island Rail Project or WIRP), combined with WIRP's significantly lower than contracted usage, should lead to surplus capacity. However, the QRC said this has not

[65] Aurizon Network, sub. 2, pp. 6, 22.
[66] Cl. 7A.4.1(b)(iii)(B) of the 2016 AU.
[67] QCA, *Aurizon Network's 2017 draft access undertaking*, draft decision, December 2017, pp. 394–96.
[68] QCA, *Aurizon Network 2014 draft access undertaking*, final decision, vol. 2—Capacity and expansions, April 2016, p. 14.
[69] QCA, *Aurizon Network 2014 draft access undertaking*, final decision, vol. 2—Capacity and expansions, April 2016, p. 15.
[70] QRC, sub. 7, Attachment 1: 1–3.

happened, and that the capacity of the Blackwater system is frequently inadequate to meet contracted demand.[71]

Additionally, Glencore said it has serious concerns about the reliability of the BCAR, and believes Aurizon Network may have over-contracted capacity in the Blackwater system.[72] Pacific National said that CQCN's current actual performance is inconsistent with the BCAR outputs showing sufficient capacity to meet contracted capacity.[73]

Stakeholders' feedback suggests that Aurizon Network has not delivered on the intent and purpose of the BCAR. This is important because, as discussed in the QCA's 2016 AU decision document, we consider it is reasonable for CQCN stakeholders to have access to robust capacity-related information, because they do not have an alternative source for below-rail services provided by Aurizon Network. If a competitive below-rail market existed, access holders could change below-rail suppliers if they were dissatisfied with the lack of information and service standards. It is important that Aurizon Network shares robust capacity-related information with those parties.[74]

Notably, however, our 2016 AU decision document stated the BCAR should be the first step Aurizon Network undertakes in collaboration with stakeholders, to establish a collective understanding of capacity.[75]

As a result, we analysed Aurizon Network's BCAR outputs, to see if they represent a first step towards establishing a collective understanding of capacity. Our analysis showed that besides Moura, the available capacities in the other systems are very small. The available capacities in the GAPE/Newlands and Goonyella systems are 2.6 and 0.8 per cent respectively; for Blackwater, it is somewhere between 5.9 and 6.2 per cent (Table 4).

Table 4 QCA-calculated available capacity

System	*Measure of capacity*	*Absolute capacity*	*Available capacity*	*Available capacity (%)*
Newlands/GAPE	TSEs	26,280	673	2.6
	mtpa	90.3	2.31	2.6
Goonyella	TSEs	43,800	371	0.8
	mtpa	220	1.86	0.8
Blackwater	TSEs	70,080	4,105	5.9
	mtpa	288	17.9	6.2
Moura	TSEs	17,520	7,884	45.0
	mtpa	54.9	24.7	45.0

***Source**: Aurizon Network, sub. 1, pp. 7–21; QCA calculations.*

[71] QRC, sub. 8, p. 2.
[72] Glencore, sub. 4, p. 1.
[73] Pacific National, sub. 6, p. 2.
[74] QCA, *Aurizon Network 2014 draft access undertaking*, Vol. 2 capacity and expansions, final decision, April 2016, p. 14.
[75] QCA, *Aurizon Network 2014 draft access undertaking*, Vol. 2 capacity and expansions, final decision, April 2016, p. 15.

Additionally, these outputs were based on 2016 assumptions that are approximately two years old. Many of the comments from stakeholders refer to changes that have occurred since the effective date of the BCAR. It is acknowledged that some things have changed since 2016, including:

- the price of coal has increased
- more mines have opened, or re-entered the market, in the CQCN
- since January 2018, Aurizon Network has implemented a change in maintenance regime which has potentially changed allowances for planned and unplanned maintenance, and day of operations losses.

Based on the changes that have occurred over the last two years, there appears to be some support for the view that the available capacities provided by Aurizon Network have further decreased. This may be consistent with the way stakeholders have recently come to view capacity. However, we cannot be certain, and we cannot determine whether or not there is a capacity deficit.

Based on our analysis above, we consider Aurizon Network's BCAR is a first step towards establishing a collective understanding of capacity. We note the BCAR used input assumptions that are approximately two years old, and some stakeholders have argued for it to be updated to reflect more recent data. We consider the role of the BCAR is to establish the capacity-related information at a particular point in time, and that stakeholders' concerns regarding it being out of date can be addressed by the annual capacity assessment update requirement under the 2016 AU. The QCA's draft decision on the 2017 DAU also contemplates this requirement, but we note a final decision is yet to be made.

In response to the general comments from stakeholders that the BCAR is not reliable and that there is some risk that Aurizon Network has over-contracted, we note:

- The available capacities in each system using 2016 assumptions are small in relative terms. Hence small market movements since 2016 may be sufficient to trigger a capacity deficit. We do not have the information in this BCAR process to confirm or refute the claims made in submissions. This may be revealed in subsequent capacity assessment updates.
- The BCAR adopted a contract-based approach to the interfaces, which is not necessarily inconsistent with the requirements of the 2016 AU.

We do not consider the effect of Aurizon Network's changed maintenance practices should be taken into account, given the BCAR is reflective of 2016 input assumptions and given the uncertainty about which maintenance regime will apply once UT5 is in place.

As noted above, our draft decision for the 2017 DAU contemplates a system capacity assessment being included in the 2017 DAU, but we note a final decision is yet to be made. The system capacity assessment was developed as part of the collaborative submission process and was supported by the QRC and Pacific National as a way to address the shortcomings of the BCAR.[76] The BCAR could be regarded as an essential step towards a more fulsome and realistic system capacity assessment.

[76] QCA, *Aurizon Network's 2017 draft access undertaking*, draft decision, December 2017, pp. 394–96.

Matters in the QCA Act

The 2016 AU requires the QCA to consider matters listed in section 138(2) of the QCA Act, where we have determined the following as being relevant to this assessment:

- the object of part 5 of the QCA Act, which is to promote the economically efficient operation of, use of and investment in, significant infrastructure
- the legitimate business interest of Aurizon Network
- the public interest of having competition in markets
- the interest of persons who may seek access to the service
- any other issues that the authority considers relevant.

We note the annual capacity assessment updates can only be triggered once there is a BCAR in place.[77] Similarly, the system capacity assessments can only be triggered once there is an annual capacity assessment in place.[78] This means agreeing on the BCAR would make it possible for the annual updates and system capacity assessments to be provided earlier. We consider this to be in the interest of access seekers and access holders (ss. 138(2)(e) and (h)).

Additionally, increased transparency in the capacity of the CQCN reduces information asymmetry. We consider increased transparency is in the public interest, as it promotes competition in markets, and consistent with the promotion of economically efficient operation of, use of and investment in, the CQCN (ss. 138(2)(a) and (d)).

We consider it is appropriate for the BCAR to reflect input assumptions that existed at a point in time. We consider a moving target where it is updated for more recent data to be inconsistent with the legitimate business interest of Aurizon Network, especially when it is already obliged to undertake annual updates (s. 138(2)(b)). The first annual update is due on the BCAR's anniversary date.

Lastly, a baseline that excludes external events, such as the change in maintenance regime, means that annual updates should show the quantum of such changes, which we consider to be useful information to existing access holders (s. 138(2)(h)).

The QCA decision

The 2016 AU does not specify all of, or the types of, input assumptions to be used. Therefore, both Aurizon Network's modelling approach, and stakeholders' preference of using input assumptions that reflect 'realistic' operational parameters, in our view, satisfy the 2016 AU.

We consider Aurizon Network's modelling approach represents a first step towards establishing a collective understanding of capacity, and there are benefits to agreeing to the BCAR:

- It represents Aurizon Network's estimate of available capacity using assumptions that existed at a point in time. GHD has assessed these assumptions as being reasonable.
- A BCAR that represents capacity at a point in time is useful, because future annual capacity assessment updates can be compared to it. When Aurizon Network provides its first update, it would be appropriate to reflect the quantum of market and operational changes since 2016, including any changes in planning assumptions and operating and maintenance practices.

[77] Cl. 7A.4.2(a)(i) of the 2016 AU.
[78] QCA, *Aurizon Network's 2017 draft access undertaking*, draft decision, December 2017, Appendix K: 506.

- Stakeholders' feedback that the BCAR should be updated for more recent data can be addressed as part of the annual capacity assessment update process.

It is open to argue the BCAR has not fully achieved its intent and purpose. The BCAR is intended to enable stakeholders to gain a comprehensive common understanding of the capacity in each CQCN system; yet, they have generally disagreed with Aurizon Network's modelling approach and conclusions.

The annual capacity assessment update contemplates that a BCAR in place[79], which means agreeing on the BCAR would also make it possible for the annual updates to be provided earlier. Additionally, and importantly, Aurizon Network has committed to developing a system capacity assessment to address the shortfalls of BCAR.

The QCA considered and weighed up these matters. Our considerations are summarised below. In this regard, we note that a consideration of the section 138(2) matters requires a balance of relevant factors that are at times conflicting.

In the current circumstances, it appears that the BCAR is in the interest of Aurizon Network (s. 138(2)(b)). However, there are clear concerns that the BCAR is not in the interests of access seekers, access holders and other stakeholders. It may also be argued that agreeing to the BCAR is not consistent with the objects of part 5 or in the public interest (ss. 138(2)(a) and (d)), given the issues which have been raised by stakeholders as outlined above.

However, having regard to the benefits of agreeing to the BCAR, as discussed above, the QCA is of the view, that on balance, the object of part 5 and the public interest are best serviced by agreeing to the BCAR. It is considered that agreeing to the BCAR will provide greater regulatory certainty, including by providing a starting point for ongoing annual review. It is considered that this step will provide some benefit for both Aurizon Network and other stakeholders. The QCA also considers it relevant that, overall, the independent expert has recommended that the QCA agree to the BCAR (s. 138(2)(h)).

The QCA has considered whether the BCAR should be amended to reflect more recent announcements by Aurizon Network to change its maintenance practices. As mentioned above, the QCA notes that discussions between stakeholders are ongoing and considers that relevant matters should be addressed in subsequent annual review processes. Again, we understand that stakeholders have genuine concerns. However, for reasons similar to those noted above, the QCA considers (having regard to s. 138(2), including the objects of part 5 and the public interest), that the QCA should agree to the BCAR.

Accordingly, whilst there are clearly factors which would weigh against agreeing to the BCAR, the QCA considers, on balance, having regard to relevant matters, including the 2016 AU and the matters referred to in section 138(2) of the QCA Act, that the benefits of agreeing to the BCAR outweigh those factors and the QCA agrees to the BCAR.[80]

However, we consider the future annual capacity assessment updates can be made more useful, if more data were presented, and in a more transparent manner, as explained below.

The way forward for annual capacity assessment updates

To increase transparency, the QCA believes it would be appropriate that future annual capacity assessment updates should provide:

[79] Cl. 7A.4.2(a)(i) of the 2016 AU.
[80] Cl. 7A.4.1(d) of the 2016 AU.

- for each system, separate waterfall charts for each year of the assessment period
- capacity assessments that reflect, at minimum, the:
  - current year of the assessment
  - the next two years after the current year of the assessment
- an updated capacity assessment for 2017–18 and 2018–19, in separate waterfall charts, to allow it to be compared against the outputs of BCAR
- comparisons of all future capacity assessments against the outputs of the BCAR, and where relevant, the outputs of all previous capacity assessments.

REFERENCES AND SUBMISSIONS

Submissions

The QCA received the following submissions during its assessment of Aurizon Network's baseline capacity assessment report. The submission numbers below are used in this decision for referencing purposes. The submissions are available on the QCA website.

Aurizon Network

	Sub. no.	*Type of submission*	*Date*
Aurizon Network	1	Baseline capacity assessment report (BCAR)	March 2017
	2	System operating parameters	March 2017
	3	Submission on GHD's review of Aurizon Network's BCAR	March 2018

Other stakeholders

	Sub. no.	*Type of submission*	*Date*
Glencore	4	Submission on GHD's review of Aurizon Network's BCAR	March 2018
Pacific National	5	Submission on Aurizon Network's BCAR	May 2017
Pacific National	6	Submission on GHD's review of Aurizon Network's BCAR	March 2018
Queensland Resources Council	7	Submission on Aurizon Network's BBCAR	May 2017
Queensland Resources Council	8	Submission on GHD's review of Aurizon Network's BCAR	March 2018

References

Queensland Competition Authority (QCA), *Aurizon Network 2014 draft access undertaking*, final decision, vol. 2—Capacity and expansions, April 2016.

——*Aurizon Network's 2017 draft access undertaking*, draft decision, December 2017.

——*Aurizon Network's April 2018 extension draft amending access undertaking*, decision, May 2018.

GHD, *Review of Aurizon Network's baseline capacity assessment report*, report prepared for the QCA, March 2018.