Goldfields Gas Pipeline

2025-29 Access Arrangement

Attachment 5.1

Demand Forecast Report (revised proposal)

September 5, 2024

Contents

1. Introduction

1.1. About Goldfields Gas Pipeline

Goldfields Gas Transmission (GGT) Pty Ltd is revising the Goldfields Gas Pipeline (GGP) access arrangement for the regulated (covered) parts of the GGP (covered GGP) as required under the national gas legislative framework. The proposed revisions to the covered GGP access arrangement are to apply from 1 January 2025 to 31 December 2029.

GGP is owned by the Goldfields Gas Transmission Joint Venture (GGT JV) participants, Southern Cross Pipelines Australia Pty Ltd, Southern Cross Pipelines (NPL) Australia Pty Ltd and APA GGT Pty Ltd[1]. The pipeline manager is Goldfields Gas Transmission Pty Ltd (GGT).

The purpose of the GGP Demand Forecast Report is to present:

- actual demand for services in the current 2020-24 period
- set out the preferred forecasting methodology for the 2025-29 access arrangement period, and
- present demand forecasts based on the preferred methodology.

Summarised information about the GGP demand forecasts is provided in the GGP 2025-29 Access Arrangement Information document published as part of the GGP access arrangement proposal.

This Report complies with the requirements of National Gas Rules 72 and 74.

1.2. Proposed demand forecasts

The proposed demand forecasts for GGP include forecasts from Yarraloola receipt point and the new receipt point at the recently commissioned Northern Goldfields Interconnect (NGI).

Table 1-1 Proposed demand forecasts

Demand forecasts (capacity and throughput) for pipeline services						
AA5 forecasts - Yarraloola	**Unit**	**2025**	**2026**	**2027**	**2028**	**2029**
Maximum contracted capacity	TJ/day	110.4	110.4	110.4	110.4	110.4
Average contracted capacity	TJ/day	110.4	110.4	110.4	110.4	110.4
Average throughput	TJ/day	94.2	94.2	94.2	94.2	94.2

AA5 forecasts - NGI	**Unit**	**2025**	**2026**	**2027**	**2028**	**2029**
Maximum contracted capacity	TJ/day	12.9	14.3	14.3	14.3	14.3
Average contracted capacity	TJ/day	12.9	14.3	14.3	14.3	14.3
Average throughput	TJ/day	11.4	12.6	12.6	12.6	12.6

[1] On 1 November 2023, APA acquired Alinta Energy Pilbara Holdings Pty Ltd including Alinta's share of the GGP. APA Group now owns 100 per cent of GGP.

AA5 forecasts - Total	Unit	2025	2026	2027	2028	2029
Maximum contracted capacity	TJ/day	123.3	124.7	124.7	124.7	124.7
Average throughput	TJ/day	105.6	106.9	106.9	106.9	106.9

Further supporting information can be found in the following attachments:

- GGP AA5 Attachment 3.2 – Demand forecast supplementary information - Confidential
- GGP AA5 Attachment 3.3 - Demand forecast model – revised - Public
- GGP AA5 Attachment 3.3 - Demand forecast model – revised - Confidential

2. Regulatory framework

2.1. Covered GGP

Parts of GGP are 'covered' ("covered GGP') and fully regulated under the National Gas Law and National Gas Rules.[2] An access arrangement for covered GGP is required under the regulatory framework.

The access arrangement for a fully regulated pipeline sets out, among other things, the reference services that can be provided using the pipeline, the terms and conditions on which those services will be provided, and the reference tariffs for the services. The access arrangement serves as a benchmark for negotiating access to pipeline services that are offered by means of the regulated pipeline.

As the service provider of a regulated pipeline, GGT is responsible for developing and proposing a relevant access arrangement for the pipeline. The access arrangement is subject to regulatory oversight by the Economic Regulation Authority (ERA). The ERA is responsible for assessing the proposed access arrangement against the legislative requirements set out in the National Gas Law (NGL) and National Gas Rules (NGR) and approving a compliant access arrangement.

The provisions of the access arrangement must be consistent with the national gas objective. Access arrangement revision, and the approval of revisions by the ERA are, therefore, guided by that objective. The national gas objective is:

> *"The promotion of efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas".*

The current access arrangement ends on 31 December 2024 and a revised access arrangement will apply from 1 January 2025 to 31 December 2029.

2.2. Access Arrangement Information

This paper sets out information that meets the access arrangement information requirements in the NGR.

The requirements are that the access arrangement information for a transmission pipeline access arrangement proposal (such as GGP) must include: [3]

- the usage of the pipeline over the earlier access arrangement period showing:
  - minimum, maximum, and average demand for each receipt or delivery point; and
  - user numbers for each receipt or delivery point.

And

- a forecast of pipeline capacity and utilisation of pipeline capacity over that period and the basis on which the forecast has been derived (to the extent it is practicable to forecast) pipeline capacity and utilisation of pipeline capacity over the access arrangement period).

[2] The National Gas Access (WA) Act 2009 implements the NGL and NGR in Western Australia.
[3] National Gas Rules, rule 72(1)(iii)(A) and (B)

Also, in accordance with NGR Rule 74, the forecasts and estimates must be arrived at on a reasonable basis and represents the best forecasts and estimates possible in the current circumstances.

This paper sets out the basis for the forecasts and estimates of the pipeline usage in accordance with Rule requirements.

3. Demand for firm transportation service

3.1. Reference service

Demand forecasts reflect expectations about future use of the pipeline services by customers. Expectations about future demand for pipeline services are important for determining future investment decisions for the pipeline and whether augmentation of the pipeline may be needed. The demand forecasts are also an input into the calculation of the reference service tariff.

In December 2022, GGT submitted a reference service proposal for the GGP 2025-2029 access arrangement to the ERA. The ERA assessed GGT's proposal and in June 2023, the ERA's decision was to approve GGT's proposal to specify the firm transportation service as the single reference service for the GGP.[4] The firm transportation service is defined as the firm delivery of gas from a delivery to a receipt point.[5]

3.2. GGP customers

Covered GGP provides firm transportation services to mining and mineral processing operations in the Pilbara, Mid-West, and Goldfields-Esperance regions of Western Australia (WA). These operations predominantly produce iron ore, gold, and nickel for export to international markets.

GGP also transports gas for gas powered generation for electricity supply in regional communities. A small quantity of gas is transported into the Kalgoorlie gas distribution system (via the Parkeston Lateral) for residential and commercial use.

NGI is a separate pipeline but does connect into the GGP. The capacity flowing from NGI to GGP has been treated as covered capacity in accordance with Clause 7.2(b) of the GGP Access Arrangement. The approach to forecasting demand from the NGI to GGP and proposed demand forecasts are discussed in this paper.

3.3. Calculating the reference service tariff

The demand for the firm transportation service refers to capacity of the pipeline reserved to deliver gas from a delivery to a receipt point and the volume of gas throughput:

- Capacity is defined as the measure of the potential of the covered pipeline as currently configured from time to time during the life of the access arrangement to deliver a particular service between a receipt point and a delivery point at a point in time.[6] Capacity is measured as maximum daily quantity (MDQ).
- Throughput refers to the volume of gas transported from a receipt point and a delivery point. Throughput is measured as TJ/day.

The proposed demand forecasts discussed in this paper are inputs into calculating the tariff for the reference service – the firm transportation service.

The proposed tariff is calculated using the proposed revenue (based on the proposed regulatory building block revenue) necessary to provide the reference service and from a forecast of the demand for those pipeline services.

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[4] Economic Regulation Authority, Reference service proposal decision Proposed reference service for the Goldfields Gas Pipeline submitted by Goldfields Gas Transmission, 21 June 2023.

[5] Goldfields Gas Pipeline Access Arrangement (ERA approved 19 December 2019), (GGP 2020 AA), 1 January 2020, section 2.2.1

[6] GGP Access Arrangement (Definitions)

At the simplest level, the reference tariffs are calculated as revenue divided by the forecast:

$$Tariff = \frac{Revenue\ (regulatory\ building\ block)}{Demand\ forecast}$$

ERA approved allowed revenue for the provision of the reference service is converted into a tariff for the service. The allowed revenue is based on cost of service and for covered GGP. The costs of the covered pipeline are mostly fixed and sunk costs. The costs do not vary with use.

The covered GGP reference service tariff is structured into three tariff components.[7] Each tariff component is allocated a portion of the allowed revenues. The allocation of revenue is based on the underlying cost structure of the GGP.

The three tariff components recover the revenue/ cost of service in a way that signals the amount of the pipeline that the customer uses of the pipeline. The tariff structure aims to make the tariff reflective of the costs of the resources used to provide the firm transportation service. Further information about the tariff structure and tariffs are discussed in GGP AA5 Proposal Overview, section 9.

The three tariff components are described in Table 3-1.

Table 3-2 Description of firm transportation service tariff components

Tariff component	Unit	Description
Toll charge	$/GJ MDQ	Capacity-based (measured in GJs) for the delivery point.
Capacity reservation charge	$/GJ MDQ km	Combination of capacity (expressed in GJs) and distance-based charge. The distance measured in kilometres from receipt point to delivery point.
Throughput charge	$GJ/km	Combination of volume and distance. Volume of gas delivered (measured in GJs) and distance measured in kilometres from receipt point to delivery point

The tariff components are calculated assuming the allocation of GGT's total revenue requirement in relative proportions to cost structures. The assumptions in the tariffs are as follows:

- The toll tariff allocated 11.3 per cent of the present value of total allowed revenue.
- The capacity reservation tariff allocated 72.2 per cent of the present value of total allowed revenue.
- The throughput tariff allocated 16.5 per cent of the present value of total allowed revenue.

We are proposing to continue applying these allocations to the reference service tariff in the 2025-29 period. The revenue allocated to the tariff components is divided by the unit measure relating to each of the tariff components (as shown in Table 3-1).

[7] GJ = gigajoule, MDQ = maximum daily quantity, km = kilometre

4. Demand in the current period

At the time the demand forecasts were prepared for the 2020-24 access arrangement period, all the existing capacity of the GGP available for firm service provision was contracted by users (the GGT JV participants and third parties). No spare capacity was expected to be available.[8]

During the current period, GGP customers have indicated that they have plans to decarbonise energy sources in the medium to longer term. Despite the gradual shift to renewable energy sources, we are continuing to see strong demand for firm capacity. Covered GGP is fully contracted for capacity from the Yarraloola receipt point. Utilisation of the covered pipeline continues to be strong.

On 26 June 2023, the APA owned NGI was commissioned into service. The NGI connects with the GGP approximately 40 kilometres south of Leinster. Further information about the NGI is presented in Section 4.3. To date, the impact of gas flow from the NGI to the GGP has been minimal, but this is forecast to change for the 2025-29 period.

4.1. Forecast demand for 2020-24 (historic forecasts)

In 2019, the demand forecast for the 2020-24 access arrangement period for pipeline services (capacity and throughput) was derived on the following basis.[9]

- Forecast demand for pipeline services was expected to be consistent with existing gas transportation agreements
- The GGP was forecast to be fully contracted over the access arrangement period
- Throughput forecasts were based on a three-year average of actual load factors
- Forecast gas usage by major users of the GGP was expected to be consistent with the commodity forecasts for gold, nickel, and iron ore.

4.2. Actual demand for 2020-24 period

The actual demand for the three years 2020-22 is the same information provided by GGT to the ERA as part of the Regulatory Information Notice (RIN) process.

[8] Goldfields Gas Transmission, Goldfields Gas Pipeline, Access Arrangement Revision Proposal Supporting Information, January 2019, p. 11
[9] Ibid.

Table 4-3 2020-24 Comparison of ERA-approved demand forecasts and actuals

Demand forecasts - Contracted capacity for pipeline services						
AA4 ERA approved forecasts	**Unit**	**2020**	**2021**	**2022**	**2023**	**2024**
Maximum contracted capacity	TJ/day	110.5	110.5	110.5	110.5	110.5
Average contracted capacity	TJ/day	110.5	110.5	110.5	110.5	110.5
Minimum capacity	TJ/day	N/A	N/A	N/A	N/A	N/A
Actual demand	**Unit**	**2020**	**2021**	**2022**	**2023**	**2024f**
Maximum contracted capacity	TJ/day	108.5	111.4	115.7	120.1	113.9
Average contracted capacity	TJ/day	108.5	109.5	110.8	112.9	123.9
Minimum capacity	TJ/day	108.5	108.5	108.5	108.2	108.4
Variance	**Unit**	**2020**	**2021**	**2022**	**2023**	**2024f**
Average capacity	TJ/day	-2.0	-1.0	0.2	2.4	13.3
Average capacity	%	-2	-1	-0	2	12

Demand forecasts - Throughput for pipeline services						
AA4 ERA approved forecasts	**Unit**	**2020**	**2021**	**2022**	**2023**	**2024f**
Maximum	TJ/day	N/A	N/A	N/A	N/A	N/A
Average	TJ/day	90.7	90.7	90.7	90.7	90.7
Minimum	TJ/day	N/A	N/A	N/A	N/A	N/A
Actual demand	**Unit**	**2020**	**2021**	**2022**	**2023**	**2024f**
Maximum	TJ/day	112.2	107.9	112.8	116.1	112.3
Average	TJ/day	96.8	94.6	97.2	101.8	106.2
Minimum	xday	78.4	76.3	77.0	72.6	76.1
Variance	**Unit**	**2020**	**2021**	**2022**	**2023**	**2024f**
Average contracted capacity	TJ/day	6.1	3.9	6.5	11.1	15.5
Average capacity	%	7	4	7	12	17

Source: GGT

4.3. Northern Goldfields Interconnect

The NGI is a new buried gas pipeline, approximately 580 km long. The NGI connects to the Dampier to Bunbury Natural Gas Pipeline (DBNGP) at Ambania, about 50 km east of Geraldton, and connects into the GGP approximately 40 kilometres south of Leinster. The NGI conveys gas in one direction from west to east. The primary function of the NGI is to convey gas to industrial customers located in the mid-west and Goldfields regions.

APA owns and operates the new pipeline. The NGI was commissioned at the end of June 2023.

Gas conveyed along the NGI will flow into the GGP. Additional capacity may be created on certain sections of the GGP because of the connection of the NGI to GGP.

GGT has been information from APA on the likely impact of NGI on GGP demand forecasts. APA's forecasts have been incorporated into GGP's demand forecasts. The method for forecasting demand has been outlined in section 6.

5. Drivers for demand in 2025-29

Demand for gas and its transportation along the GGP is dominated by mining, mineral resources, and gas powered generation for electricity.

This section considers the key demand drivers for GGP in the 2025-29 period. Information relevant to understand the demand drivers includes:

1. Demand & supply outlook for Western Australia
2. Outlook for exports of mining products

There are no expansions or extensions planned for the 2025-29 period. As such, demand forecasts are based on gas from Yarraloola and NGI only.

5.1. Demand & supply outlook for WA

In December 2022, AEMO published the Western Australia Gas Statement of Opportunities (GSOO) covering the ten-year period 2023 to 2032. The GSOO provides information about the supply and demand conditions in WA which is to be taken into consideration in preparing demand forecasts for GGP access arrangement proposal.[10]

AEMO forecasts that domestic gas demand in WA will grow by 1.7% per annum to 2032. This growth rate is attributed to six committed resource projects that are expected to add a net 43 TJ/day to gas demand by 2026, including four mining projects (gold, iron ore, lithium, nickel) and two lithium processing projects.[11] Gas demand for gas powered generation in the South West Interconnected System (SWIS), is forecast by AEMO to grow at 10% per annum due to the planned closure of all remaining coal-fired generators by 2029.

AEMO expressed that renewables projects will only partly replace coal plant closures, thus requiring gas generation for baseload power and system security.[12]

Decarbonisation targets in the iron ore sector are forecast by AEMO to reduce demand for gas. Gas use in iron ore mining is expected to drop from 157 TJ/day in 2023 to 107 TJ/day in 2032.[13]

AEMO expects that the WA domestic gas market will face a tight supply demand balance between 2023 and 2029.[14] In every year to 2026, gas supply is forecast to be insufficient to meet domestic demand. The deficit is expected to be small at 45 petajoules (PJ) over four years peaking in 2024 at 49 terajoules (TJ)/day. Between 2027 and 2029, supply is forecast to slightly exceed demand with the projected surplus 38 PJ over three years at a maximum rate of 48 TJ/day, or from 1.3% of demand in 2027 up to 4.1% in 2029. Supply is coming from Scarborough which is expected to be brought onstream at 180 TJ/day from mid-2027.

AEMO suggests the supply gaps could be alleviated by withdrawals from storage or additional supply from gas production facilities, but in the longer term it would require the development of gas fields or a transition from large gas users to lower emission energy sources.

[10] Australian Energy Market Operator (AEMO), 2022 Western Australia Gas Statement of Opportunities (December 2022) (AEMO 2022 WA GSOO). Available here wa-gsoo-five-year-review.pdf (aemo.com.au)
[11] AEMO 2022 WA GSOO at p.6.
[12] Ibid.
[13] Ibid at p.7.
[14] Ibid at p.19.

5.2. Outlook for WA mining and exports

GGP customers are mostly companies with mining and mineral processing operations in the Pilbara, Mid-West, and Goldfields-Esperance regions of WA. Covered GGP also provides some gas for power generation in regional communities, and the Kalgoorlie distribution network for commercial and residential users.

The mining and mineral processing operations extract iron ore, gold, and nickel for sale in international markets. Demand for GGP services is strongly correlated to the demand by mining and mineral processing operations. The outlook for exports of iron ore, gold and nickel are largely positive.

Iron ore

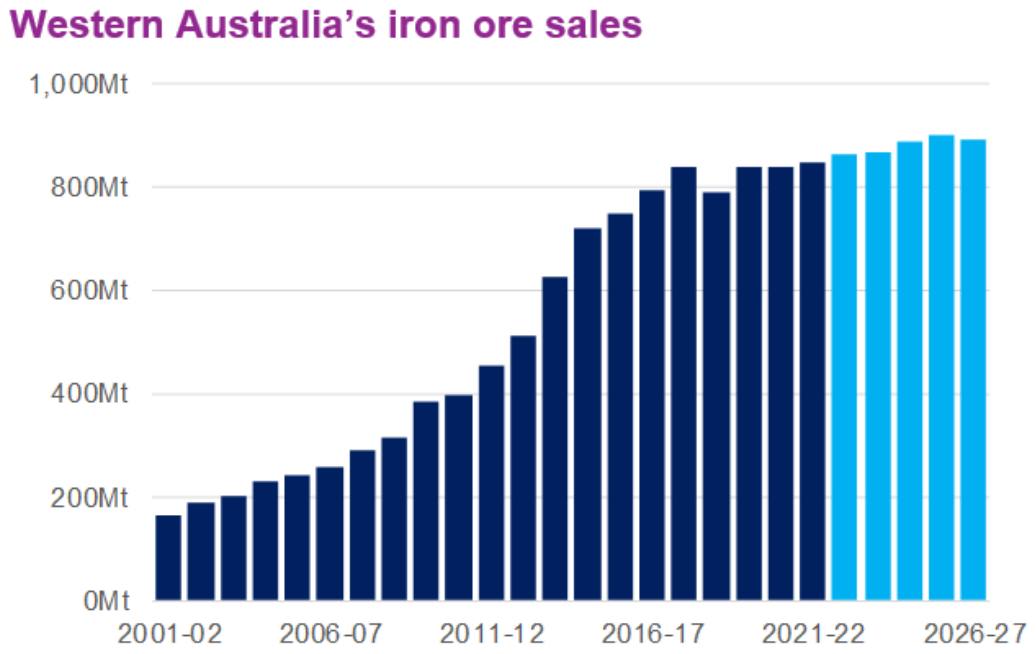
Australia has massive reserves of iron ore in WA. Australia has 29% of world reserves and is ranked number one in the world. Australia's Economic Demonstrated Resources (EDR) were 27,440 million tonnes in 2020 implying, at current production rates, 30 years of supply.[15] The outlook beyond 2022 remains strong for iron ore production with several new projects expected to come online.[16]

The Resources and Energy Quarterly Report published by the Commonwealth Department of Industry, Science and Resources,[17] indicates that global iron ore trade is expected to grow by 3.1% over the outlook period to 2028.

Australian iron ore exports are projected to increase 'at an average annual rate of 1.9% to reach just under 1 billion tonnes by 2028'.[18] Most of this volume is expected to come from WA. Iron ore sales volumes are expected to rise to 898 million tonnes in financial year 2025-2026, and then have a slight decrease to 890 million tonnes in financial year 2026-2027.[19]

[15] The National Institute of Economic and Industry Research (NIEIR) was engaged by the Australian Energy Market Operator (AEMO) to provide supporting forecasts for the Western Australian annual GSOO. These forecasts include economic indicators for Western Australia and commodity production forecasts for key Western Australian minerals. This information has been incorporated into the AEMO GSOO.
[16] AEMO 2022 WA GSOO at p.60.
[17] Commonwealth Department of Industry, Science and Resources, *Resources and Energy Quarterly March 2023 Report* (Report, March 2023).
[18] Ibid 43.
[19] Western Australia Department of Jobs, Tourism, Science and Innovation (WA JTSI), *Western Australia Iron Ore Profile – July 2023* (Report, July 2023) 2 < waironorejuly2023.docx (live.com)>.

Figure 5-1 WA Iron ore sales forecast



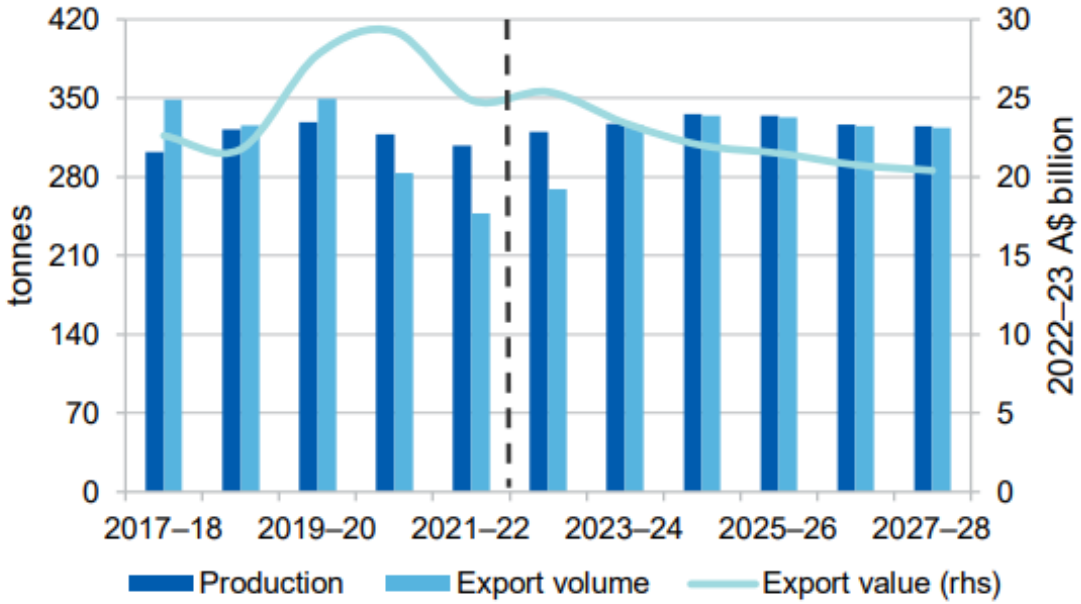
Mt = Million tonnes.
Source: WA Department of Mines, Industry Regulation and Safety, Resource Data Files (Bi-Annual); and WA State Budget 2023-24 (May 2023).

Gold

A significant portion of Australia's gold reserves are in WA. In 2022, WA was responsible for 72% of Australia's total gold expenditure.

While Australian gold exports are steady and in the medium-term (out to financial year 2027-2028). (Refer to Figure 5-2)

Figure 5-2 Australian Gold exports forecast



Sources: ABS (2023); Department of Industry, Science and Resources (2023).

In WA, production will continue to increase for projects that have recently commenced operations (i.e., King of the Hills, the Norseman project, and the Warrawong Gold Project).[20]

Additionally, a few new mines are expected to come online over the next few years such as the Bellevue gold mine in 2023, the Newcrest and Greatland Gold - Haverion project in 2024, and Northern Star Resources will begin long-term expansion of their Super Pit gold operation from 2024 to financial year 2027-2028.[21]

Nickel

Western Australia holds approximately 18 per cent of global nickel reserves,[22] and in 2022 was responsible for 100% of Australia's nickel production.[23]

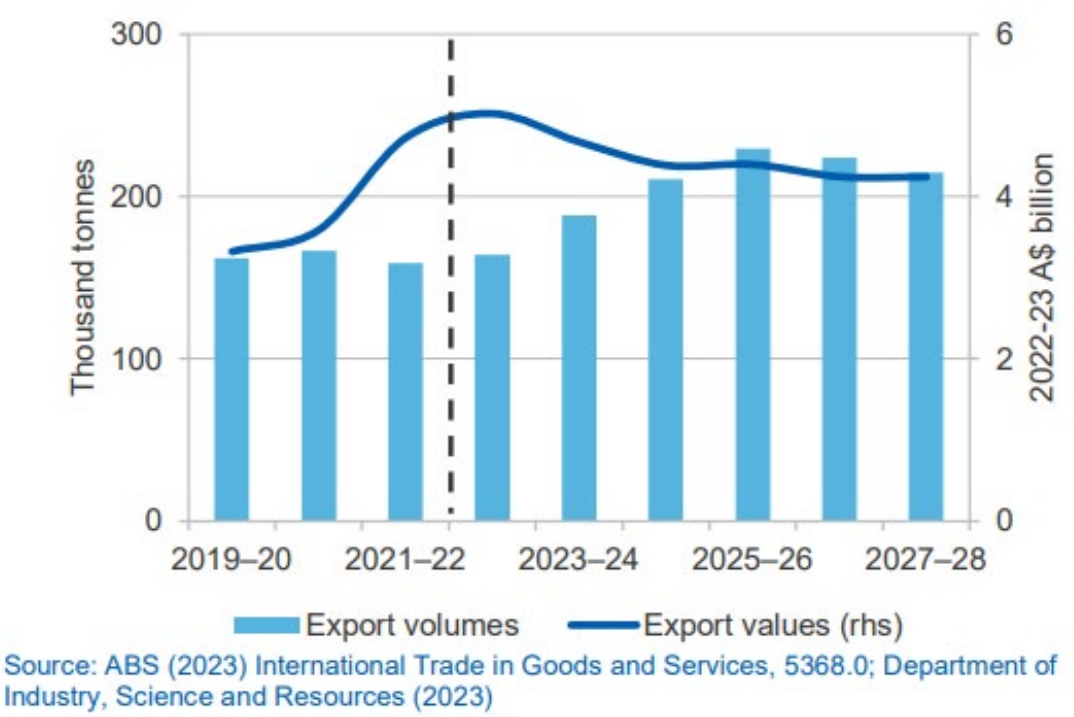
Nickel is primarily used in the production of stainless steel (approximately 65% of global nickel consumption)[24], as such, demand is expected to remain robust considering global trends and urbanisation.

Furthermore, nickel is used to make EV batteries (approximately 15% of global nickel consumption)[25], demand for these is also growing as decarbonisation efforts intensify globally. The March 2023

[20] Ibid 107.
[21] Ibid.
[22] WA JTSI , *WA Battery and Critical Minerals Profile* (Report, July 2023) 6 < wabatterymineralsprofilejuly2023.docx (live.com)>.
[23] Ibid 5.
[24] Ibid.
[25] Ibid.

Resources and Energy Quarterly report[26] echoes this sentiment and projects that Australia's nickel exports will grow to above 200,000 tonnes in the medium-term (out to financial year 2027-2028).[27]

Figure 5-3 Australian Nickel export forecast[28]



Source: ABS (2023) International Trade in Goods and Services, 5368.0; Department of Industry, Science and Resources (2023)

Despite the relatively high production costs, WA's nickel is competitive due to its low impurities, this is a key advantage as battery manufacturing requires nickel that is almost 100% pure.[29]

However, during 2024 new supplies from Indonesia entering the global market have impacted world Nickel prices. BHP recently announced that it will temporarily suspend its Western Australian nickel operations from October 2024, with an intention to review this suspension decision by February 2027.[30]

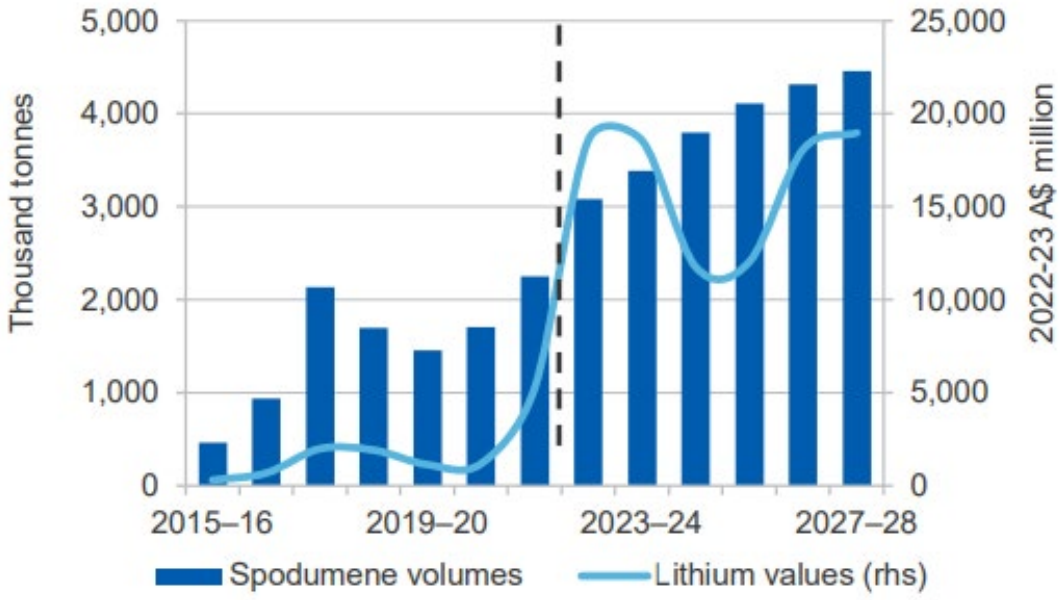
Lithium

In 2022 WA was the largest supplier of lithium globally accounting for 47% of all supply. Lithium is a vital resource for the energy transition and future energy storage systems, and it is a key component of EV batteries, as such, demand is expected to increase significantly in the medium to long term.

[26] Commonwealth Department of Industry, Science and Resources, *Resources and Energy Quarterly March 2023 Report* (Report, March 2023).
[27] Ibid 138.
[28] Ibid.
[29] WA JTSI , *WA Battery and Critical Minerals Profile* (Report, July 2023) 6 < wabatterymineralsprofilejuly2023.docx (live.com)>.
[30] As viewed 12 August 2024 at Western Australia Nickel to temporarily suspend operations (bhp.com)

Export volumes of spodumene concentrate is forecast to double over the next 5 years going from 2.2 million tonnes in financial year 2021-22 to 4.5 million tonnes in financial year 2027-2028.[31]

Figure 5-4 Australian Lithium export forecast[32]



Notes: Export values include revenue from spodumene concentrate and lithium hydroxide. Lithium volumes include total exports of spodumene concentrate and lithium hydroxide.

Source: Company reports; Wood Mackenzie (2023); Department of Industry, Science and Resources (2023), WA Department of Mines, Industry Regulation and Safety (2022),

In support of this anticipated increase in demand WA's production capacity is also forecast to grow strongly.[33] The annual average growth is forecast to be over 12% a year 'which will see production rise from 333,000 tonnes of Lithium Carbonate Equivalent in 2021–22 to 431,000 tonnes in 2022–23 and 661,000 tonnes in 2027–28'.[34]

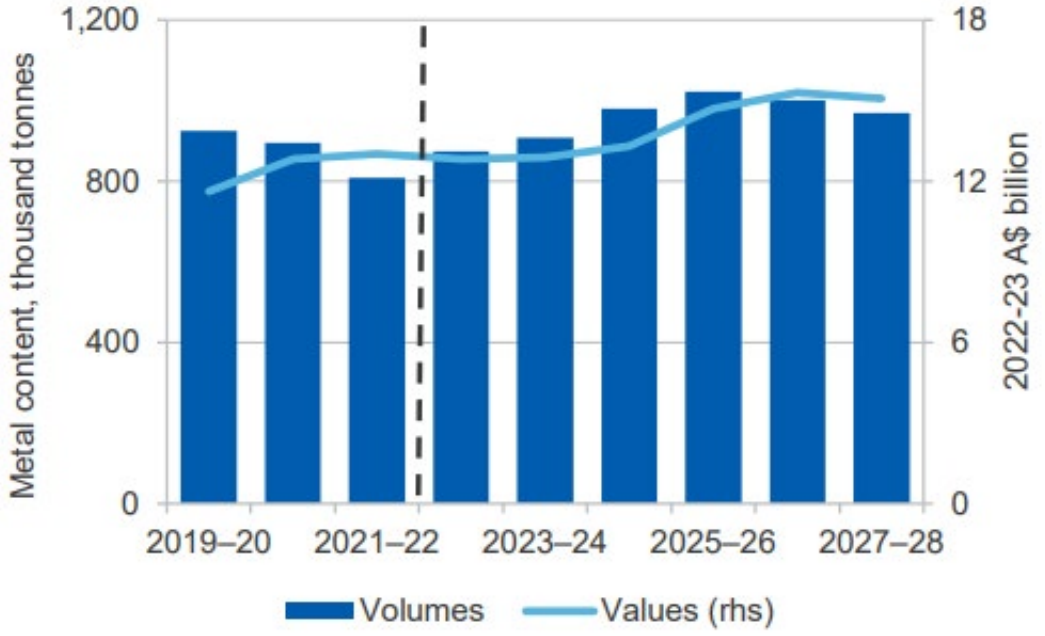
In addition to increased exports of spodumene concentrate, it is anticipated that Australia's lithium hydroxide industry will accelerate over the next few years contributing to a further rise in demand for lithium.[35] There are several projects currently underway in WA looking to increase the State's production capacity. The March 2023 Resources and Energy Quarterly Report states that 'by the end of 2024, Australia could have up to 10% of global lithium hydroxide refining capacity, rising to over 20% of global lithium refining by 2028'[36], noting, that there is a risk of delays in approvals, construction, and some technical challenges to ensure that the output achieves the required product grade.[37]

[31] Commonwealth Department of Industry, Science and Resources, *Resources and Energy Quarterly March 2023 Report* (Report, March 2023) 153.
[32] Ibid.
[33] Ibid 154.
[34] Ibid.
[35] Ibid 156.
[36] Ibid
[37] Ibid.

Copper

In 2022 WA's copper reserves accounted for 1% of global reserves and 17% of Australia's copper production.[38] Most of the copper production in WA comes from mines that primarily produce nickel or gold. Australia's copper demand is forecast to steadily increase in the medium-term (out to financial year 2027-2028) with export volumes expected to be above 800,000 tonnes (see Figure 5-5)[39] – some of this is likely to be supplied through WA.

Figure 5-5 Australian Copper export forecast



Source: ABS (2023) International Trade in Goods and Services, 5368.0; Department of Industry, Science and Resources (2023)

Rare Earths

Western Australia is the third largest supplier of rare earths and in 2022 accounted for 6% of total global supply, 2% of global reserves and for 100% of Australia's rare earths production.[40] WA's resource volumes could sustain production for 110 years at financial year 2021-2022 production rates.[41]

There are several projects underway in WA that look to increase the State's production capacity of rare earths, a majority of these are targeting a late 2024 or 2025 commencement date. A majority of WA rare earths are produced at the Mt Weld mine owned by the Lynas Corporation, a customer of covered

[38] WA JTSI , *WA Battery and Critical Minerals Profile* (Report, July 2023) 12 < wabatterymineralsprofilejuly2023.docx (live.com)>.
[39] Commonwealth Department of Industry, Science and Resources, *Resources and Energy Quarterly March 2023 Report* (Report, March 2023) 131.
[40] WA JTSI , *WA Battery and Critical Minerals Profile* (Report, July 2023) 14 <wabatterymineralsprofilejuly2023.docx (live.com)>.
[41] WA JTSI , *WA Battery and Critical Minerals Profile* (Report, July 2023) 14 < wabatterymineralsprofilejuly2023.docx (live.com)>.

GGP; there are plans for this mine to be expanded (by 12,000 tonnes) and for a processing plant to be built to process the rare earths concentrate (capacity 38,000 tonnes) extracted from Mt Weld.[42,43]

[42] Ibid.
[43] WA JTSI , *WA Battery and Critical Minerals Profile* (Report, July 2023) 15 <wabatterymineralsprofilejuly2023.docx (live.com)>.

6. Demand forecasts for 2025-29

The proposed demand forecasts for covered GGP include forecasts from Yarraloola receipt point and the receipt point from the recently commissioned NGI.

APA/GGT has adopted a future-looking approach to forecasting demand for covered GGP services. This section sets out GGT's proposed approach to forecasting demand and forecast outcomes for the 2025-29 access arrangement period. There are no forecasts of new expansions or extensions to covered GGP that will increase capacity.

6.1. Yarraloola receipt point

Covered GGP is currently fully contracted, and this is expected to continue for the medium to longer term. We are proposing the adopt the same forecasting approach as in 2020-24 and base demand forecasts for Yarraloola receipt point on the contracted capacities under existing gas transportation agreements.

For contracts that are ending during the period, we have assumed that each of these agreements will be renewed at the existing capacities. This is reasonable in the current circumstance as firm capacity from Yarraloola is currently fully contracted. We are in constant contact with GGP customers and have deep understanding of their future ongoing energy sources and requirements from covered GGP.

GGP customers are principally large mineral resource miners and off-grid gas generators delivering energy to mines. The outlook for mining and exports is expected to remain strong. As such, contracting for GGP services remains strong and is expected to continue to be fully contracted for the 2025-29 period. There are no plans to invest in expansion or extension of the GGP.

Many GGP customers have publicly announced a commitment to net zero emissions. Some customers have installed hybrid microgrids to help reduce emissions and others say that they are intending to so some time in the future.

To date, customers have indicated that they are likely to require firm capacities at contracted levels similar to current levels. Customers are gradually moving to alternative energy sources but have indicated that they still require 'backup' capacity from the GGP. Reliability of energy supply is paramount need for customers. And connection to the GGP provides great assurance of continuation of a reliable energy supply to meet energy requirements and manage the variability that happens with renewable generation.

6.2. NGI receipt point

The NGI will enable gas to flow from the west coast to the GGP. The capacity of the NGI is listed as ~76 TJ/day on the WA Gas Bulletin Board.[44] As previously discussed, the flow of gas from NGI, may create additional capacity on the GGP.

It is expected that if gas is flowing from the NGI into GGP, additional capacity may become available in the GGP. This is because the pressure of the gas which is to flow from the NGI at the point of interconnection will be higher than the pressure of the gas currently flowing in the southern part of the GGP. This higher pressure at which gas will be delivered from the NGI may create additional capacity in the GGP.

[44] AEMO WA Gas Bulletin Board, as viewed on 27 October 2023 Gas Bulletin Board (WA) (aemo.com.au)

The interconnection itself does not create the additional capacity. On top of the interconnection, gas needs to flow from the NGI into the GGP to create that additional capacity. At a point of time, the size of the additional capacity created in a section of the GGP depends on, among other things, the amount of gas flowing from the NGI into the GGP.

For the purposed of calculating reference tariffs, we propose to treat forecast contracted capacity from the NGI to GGP as covered capacity based on the provisions in the 2020-24 GGP access arrangement.[45]

In 2020 when the NGI was being proposed, APA stated that:[46]

> *"The NGI is expected to be supported with an initial 25% of capacity identified subject to project commencement and we have identified significant additional demand that we believe will crystallise with APA's commitment to the project."*

To date, this level of contracted capacity has not eventuated and contracted capacity on the NGI has been at a slower rate than anticipated. APA explained to GGT that the slow uptake of contract capacity has been due to several unforeseen circumstances including Covid related issues affecting viability of several mining projects.

This makes forecasting the NGI capacity for the purposes of the GGP access arrangement challenging.

Following the APA Annual General Meeting in October 2023, Macquarie Research issued a note stating that:[47]

> *NGI contract volumes remain at ~15% of the pipeline, and actual volumes are ~10%, which seems a little disappointing, albeit ramp-up of the Perth Basin in FY25 should help.*

GGT's initial forecast for the NGI receipt point was based on actual contracted capacity and customer contracts that were considered 'highly probable' at the time of submitting the initial proposal.

Since then, there has been a change to circumstances for several of these customers and the contracts have been delayed or have not materialised. The main reasons for the changes include:

- Extended land access negotiations delaying projects
- Customer operations suspended thus reducing probability of contracting a present time
- Customers considering alternate energy sources.

We have amended the forecast for NGI to take account of the change in circumstances which has reduced the NGI forecasts.

6.3. Demand forecasting methodology

The approach to forecasting demand for covered GGP firm transportation services for the 2025-29 period, involves two main steps:

1. Forecasting injections from Yarraloola receipt point

[45] Goldfields Gas Pipeline, Revised Access Arrangement, ERA approved (19 December 2019), 1 January 2020, clause 7.2(b)
[46] APA media release, APA forms WA gas grid with new Northern Goldfields Interconnect pipeline, November 2020
[47] Macquarie Flash note, APA Group: AGM provides little new insight, 26 October 2023

2. Forecast injections from NGI receipt point.

The proposed forecast for Yarraloola receipt point is based on:

1. Current contracted capacity for the covered portion of GGP[48]for the 2025-29 period
2. Expectations about probable renewals of contracts that expire during the 2025-29 period
3. Throughput calculated using the average of actual load factors in the 2020-24 access arrangement period (resulting in a load factor of 0.9)[49].

The proposed forecast for NGI receipt point is based on:

1. Currently contracted capacity
2. Removal of contract capacities that do not flow into GGP
3. Expectations about renewals of contracts that expire during the 2025-29 period
4. NGI throughput based on the Yarraloola receipt point average throughput (load factor 0.9).

6.4. Demand forecasts for 2025-29

Based on the above methodology, GGT's view of demand forecasts for GGP firm transportation services during the period 2025-29 period are shown is shown in Table 6-1. In case 2, NGI adds 22.8 to 32.8 TJ/day of capacity to the demand forecast for GGP.

Table 6-1 GGP 2025-29 demand forecasts - Yarraloola receipt point and NGI receipt point

Demand forecasts (capacity and throughput) for pipeline services						
AA5 forecasts - Yarraloola	**Unit**	**2025**	**2026**	**2027**	**2028**	**2029**
Maximum contracted capacity	TJ/day	110.4	110.4	110.4	110.4	110.4
Average contracted capacity	TJ/day	110.4	110.4	110.4	110.4	110.4
Average throughput	TJ/day	94.2	94.2	94.2	94.2	94.2

AA5 forecasts - NGI	**Unit**	**2025**	**2026**	**2027**	**2028**	**2029**
Maximum contracted capacity	TJ/day	12.9	14.3	14.3	14.3	14.3
Average contracted capacity	TJ/day	12.9	14.3	14.3	14.3	14.3
Average throughput	TJ/day	11.4	12.6	12.6	12.6	12.6

AA5 forecasts - Total	**Unit**	**2025**	**2026**	**2027**	**2028**	**2029**
Maximum contracted capacity	TJ/day	123.3	124.7	124.7	124.7	124.7
Average throughput	TJ/day	105.6	106.9	106.9	106.9	106.9

Source: GGT and APA

[48] Most of these contracts are for negotiated under a separate Gas Transportation Agreement. The contracted information is used to calculate the reference service tariff.

[49] At the time this report was prepared actual information was available for 2020, 2021, 2022 and 2023.

7. Demand forecasts meet NGR requirements

In accordance with NGR Rule 74, the demand forecasts for covered GGP are arrived at on a reasonable basis and represents the best forecasts and estimates possible in the current circumstances.

The contracted capacity information for Yarraloola is the best source of information for forecast demand. In the current circumstances, capacity for Yarraloola is fully contracted or expected to be fully contracted for the 2025-29 period. As Yarraloola receipt point is fully contracted there is little to no scope for variation.

NGI receipt point is based on publicly available information and APA confidential customer information. The demand forecast prepared for NGI receipt point is a combination of current contracted capacity and highly probable contracts in the 2025-29 period. The information is consistent with the information APA has provided to the market. The information is the best information in the current circumstances.

The forecasts for throughput for both Yarraloola and NGI is based on the average of actual load factors in the 2020-24 access arrangement period for Yarraloola receipt point. This information is currently available for 2020, 2021, 2022 and 2023. The throughput averaging method is consistent with the approach used to prepare the forecasts for the 2020-24 access arrangement. This method reflects the best approach for NGI as there is currently no throughput history for NGI.