Transgrid

People. Power. Possibilities.

A.1 HumeLink – Stage 1 (Early Works) Contingent Project Application

Principal Application document

5 April 2022

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Executive Summary

The Project and this Application

We are pleased to submit our Contingent Project Application for early works (Stage 1 Application or CPA) for HumeLink (the Project or HumeLink). This document is the Principal Application document, which sets out our proposed expenditure, the associated incremental revenue requirement and the indicative customer bill impacts for Stage 1 (early works) activities.

HumeLink is a key component of the energy market transition and will reinforce the southern shared network, which transports electricity from generators across southern New South Wales (NSW), and electricity imported from Victoria and South Australia, to major population centres. The current southern shared network is heavily congested at times of high demand and will become more congested as new renewable generation is connected in southern NSW.

HumeLink will open up additional capacity for new generation in areas with high quality resources – primarily, wind and solar generation – in southern NSW, increase the transfer capacity between Victoria and NSW and improve wholesale market competition, reducing customers' final electricity bills.

The Australian Energy Market Operator's (AEMO's) Draft 2022 Integrated System Plan (Draft 2022 ISP)[1], has defined HumeLink as a staged actionable ISP project with a target delivery date of 2026-27. The project stages and target timing identified in the Draft 2022 ISP are:[2]

- Stage 1 – complete the early works by 2024, and
- Stage 2 – implement the Project by 2026-27, subject to decision rules and a feedback loop.

This Application covers the Stage 1 (early works) component of the Project, which will enable us to:

- determine the prudent and efficient construction cost for Stage 2 (project implementation) by refining the Project scope through innovation and cost effective design
- identify, explore and manage the project risks. This will allow us to mitigate and/or diversify the Project's risks so that residual risk costs included in our Stage 2 Application (which will include the bulk of the Project's costs) are as low as possible, and
- progress activities on the critical path and undertake engagement to retain our social licence in order to achieve AEMO's target delivery date of 2026-27 (i.e. 'as soon as practicable')[3]

We will seek to ensure that the Project is delivered at the lowest sustainable cost to maximise benefits to customers.

Unless otherwise specified, all expenditure forecasts in this Application are expressed in real terms ($2017-18), and all revenue forecasts are expressed in nominal terms, consistent with our 2018-23 Revenue Determination.

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1 AEMO, Draft 2022 Integrated System Plan (Draft 2022 ISP), December 2021, p.13.
2 AEMO, Draft 2022 ISP, December 2021, p. 64
3 AEMO, Draft 2022 ISP, p. 13 (see Table 1).

A project of national significance

HumeLink involves around 360km of new 500kV transmission lines in an electrical 'loop' that links the Greater Sydney load centre with the Snowy Scheme and Project EnergyConnect in south west NSW.[4]

The NSW Government has declared HumeLink as a Critical State Significant Infrastructure for NSW.[5] The Australian Government has also identified HumeLink in Australia's Long Term Emissions Reduction Plan, which finds that HumeLink is needed to strengthen the network in southern NSW and transport renewable energy to consumers from new projects, including Snowy 2.0.[6]

We completed the Regulatory Investment Test for Transmission (RIT-T) in July 2021, which identifies HumeLink (Option 3C in the RIT-T) as the preferred option for reinforcing the southern shared network.[7] The RIT-T estimates that HumeLink will deliver $491 million in net benefits (in NPV terms), primarily from avoided, or deferred, costs associated with generation and storage infrastructure.[8]

AEMO's Draft 2022 ISP reconfirms the need for HumeLink given its key strategic value for the National Electricity Market (NEM) and the benefits it will provide to consumers.[9] HumeLink has been a key project in AEMO's ISPs since 2018.

Direction in AEMO's Draft 2022 ISP to proceed with early works

In its Draft 2022 ISP, AEMO assessed that HumeLink will contribute roughly $1.3 billion[10] in net market benefits under what AEMO assesses to be the most likely scenario (step change) and will deliver significant value under all scenarios.[11] AEMO's Draft 2022 ISP directs us to proceed now with Stage 1 (early works) to achieve the following benefits:[12]

- option value – it will allow us to deliver the Project as soon as possible or defer it if circumstances change
- insurance value – it will mitigate the risk of schedule slippage[13] and the risk of coal exiting faster than anticipated, and
- continual improvement value[14] – it will refine the Project through innovation and cost effective design in order to identify, explore and manage project risks. This will result in more accurate cost estimation and ensure the Project's costs are prudent and efficient.

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4 AEMO, Draft 2022 ISP, December 2021, p. 64
5 Section 5.3 of the Environmental Planning and Assessment Act 1979 (NSW) on 9 March 2018
6 Australian Government, Australia's long-term emissions reduction plan – a whole-of-economy plan to achieve net zero emissions by 2050, 2021
7 Transgrid, Reinforcing the NSW Southern Shared Network to increase transfer capacity to demand centers (HumeLink) (HumeLink PACR), July 2021, p. 1
8 Over the assessment period, on a weighted basis. See Transgrid, HumeLink PACR, July 2021, pp. 5 and 58.
9 AEMO, Draft 2022 ISP, December 2021, p. 13
10 Of the $26 billion in net market benefits that will be delivered by AEMO's Draft Optimal Development Path (ODP)
11 AEMO, Draft 2022 ISP, December 2021, p. 64
12 AEMO, Draft 2022 ISP, December 2021, p. 80
13 AEMO highlights in this regard the value of maintaining the Project's momentum.
14 AEMO comments that further work to drive down project costs should be urgently undertaken as part of early works. AEMO, Draft 2022 ISP, December 2021, p. 12

AEMO has assessed that undertaking early works now will avoid $200 million of 'regret costs' from the Project being delivered too late, due to schedule slippage or earlier-than-expected coal plant closures. AEMO therefore concludes that progressing Stage 1 (early works) is a low regret action for consumers.[15]

On 26 January 2022, AEMO provided us with feedback loop confirmation for Stage 1 (early works) at a cost of $327.60 million and reconfirmed the total Project cost of $3.28 billion.[16]

Our capex forecast and tender process

Table 1 shows our total actual and forecast Stage 1 (early works) capex is $321.87 million.[17] We will incur most of the expenditure in the current (2018-23) regulatory period, with the remainder in 2023-24 (i.e. the first year of the 2023-28 regulatory period).

Table 1: Stage 1 capex ($M, Real 2017-18, excluding equity raising costs)

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Total[1]
Actual	0.38	0.64	8.64	15.59	13.37	-	-	38.61
Forecast	-	-	-	-	31.21	188.85	63.20	283.26
Total capex	**0.38**	**0.64**	**8.64**	**15.59**	**44.58**	**188.85**	**63.20**	**321.87**

Note: 1. Totals do not add due to rounding

As noted, our Stage 1 (early works) capex will enable us to:

- determine the prudent and efficient construction cost for Stage 2 (project implementation)
- identify, explore and manage our project risks, and
- remain on schedule to achieving AEMO's target delivery date of 2026-27.[18]

Stage 1 (early works) includes an Early Contractor Involvement (ECI) process to promote competition and innovation in procuring key components of the Project. This will maximise responsiveness in the supplier market and ensure that the Project's construction cost is prudent and efficient. This will also ensure that all contractual arrangements are in place (including orders placed for key equipment with long lead times) so that we are ready to start construction as soon as possible after the approval of our Stage 2 Application, in order to meet AEMO's target delivery date of 2026-27.

The successful contractors will undertake our Stage 1 procurement activities, which comprise $104.59 million or 32.5 per cent of our total early works capex, including:

- assembling, designing, erecting, and testing of nine standard steel tower types

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15 AEMO, Draft 2022 Integrated System Plan (Draft 2022 ISP), December 2021, p.12.

16 AEMO, Integrated System Plan Feedback Loop Notice – HumeLink (Early works), 27 January 2022 (HumeLink Feedback Loop Notice). AEMO's feedback loop notice confirmation that at a total Project cost of $3.28 billion including $327.6 million of Stage 1 (early works), HumeLink remains part of the Optimal Development Path (ODP) as identified in the most recent ISP, being the 'Update to the 2020 ISP'.

17 This amount excludes equity raising costs.

18 AEMO, Draft 2022 ISP, p. 13 (see Table 1).

- procuring production slots for equipment with long lead times, in particular substation transformers and reactors, and
- undertaking pre-construction development, including for substations and transmission lines, equipment specifications and identifying quantities of plant and materials required.

Stage 1 (early works) capex also includes:

- undertaking project management and providing corporate support services at a cost of $75.45 million (or 23.4 per cent of capex)
- undertaking project development activities at a cost of $32.86 million (or 10.2 per cent of capex)
- undertaking land and environmental planning and approval activities at a cost of $28.85 million (or 9.0 per cent of capex)
- supporting the procurement process at a cost of $27.55 million (or 8.6 per cent of capex)
- acquiring land for a new substation and establishing option agreements for transmission line easements at a cost of $22.12 million (or 6.9 per cent of capex)
- implementing stakeholder and community programs (non-labour costs), including community support, social legacy[19], design and communication and community improvement, at a cost of $18.56 million (or 5.8 per cent of capex), and
- seeking the necessary regulatory approvals from the Australian Energy Regulatory (AER) and AEMO required to implement the project, at a cost of $11.90 million (or 3.7 per cent of capex).

Incremental Revenue requirement and customer bill impact

On the basis of our Stage 1 (early works) capex forecast, we are seeking the AER's approval to increase our allowed maximum allowance revenue (MAR). We are not seeking any adjustment to our allowed 2018-23 MAR because our tariffs for the 2022-23 year (the final year of the 2018-23 regulatory period) will be finalised before the AER makes its determination on our Stage 1 (early works) Application. Rather, our required incremental revenue relates to the 2023-28 period. It is modest because:

- we are not seeking to adjust our current opex allowance as part of this Application, other than adjusting our allowance for debt raising costs as a consequence of the revised capex allowance, and
- our capex is not expected to be commissioned until June 2024 when the early works have been completed.

[19] Social legacy seeks to leverage off the project building a more sustainable energy system – and through its strategic partnership approach, enabling more sustainable, resilient and future focused community programs. This includes community grants, youth traineeships, long-term jobs for indigenous communities, provision of 5G and digital communication.

Table 2: – Incremental maximum allowed revenue – MAR (smoothed) ($M, Nominal)

MAR (Smoothed Revenue)	2023-24	2024-25	2025-26	2026-27	2027-28	Total
2023-28 proposal	797.6	816.4	835.6	855.2	903.4	4,208.1
Impact of Stage 1	-	18.5	19.0	19.4	14.7	71.5
Updated MAR	797.6	834.9	854.5	874.6	918.1	4,279.7

Based on the forecast MAR adjustment, the indicative customer bill impact is an increase of $2.80 per annum for residential customers and an increase of $10.45 per annum for small business customers, commencing in 2024-25.

Customer consultation and support

The size, scale and proposed route of HumeLink has generated strong reactions from a wide range of stakeholders including local communities, landowners, First Nations people and primary producer groups. Early and effective engagement in Stage 1 (early works) is critical to retaining and improving our social licence to deliver the Project and therefore minimising the risks of the Project being delayed and the associated costs. Our Stage 1 (early works) consultation will:

- provide information on the Project timeframes, milestones and engagement processes so that customers have the maximum opportunity to be involved in the Project
- ensure that the community understands the benefits of the project and has the maximum opportunity to be involved in the Project, and
- support us securing access to, and acquiring easements over land.

In July 2021, we re-set our community engagement processes[20] based on respectful, effective and transparent engagement with impacted communities and landholder. We have developed our Humelink Engagement Strategy (HES), which includes indigenous engagement and social impact engagements and initiatives, with local champions and Customer Consultative Groups (CCGs)[21] to identify key areas of concerns and interest and establish alternative consultation methods. Community feedback to date has identified four non-negotiable pillars that form the foundation of our HES:

- Landowner engagement
- Community engagement
- Social legacy, and

[20] TransGrid, Review of HumeLink engagement process, Findings of the Review – Landholder and Community Advocate, July 2021

[21] The CCG provides a forum for discussion and feedback between Transgrid and representatives of the community, stakeholder groups and local councils on matters relating to the Project. The CCG will meet at a minimum three times annually

- Indigenous engagement.

In response to feedback from our Transgrid Advisory Council (TAC), we have also established an Energy Transition Working Group (ETWG). The ETWG will hold regular discussions on projects and initiatives that support the energy market transition, to share knowledge and provide the ETWG members with an opportunity to provide inputs into our decision-making. The AER and the Consumer Challenge Panel (CCP) attend, and participate in, the ETWG meetings. On 8 March 2022, we presented to the ETWG on the key aspects of Stage 1 (early works) for HumeLink. Generally, ETWG members support early works to reduce project risks and determine the prudent and efficient delivery costs, before progressing to Stage 2 (implementation).

Commercial viability of the Project

We consider that HumeLink is in the long-term interests of consumers because it is integral to achieving AEMO's Draft Optimal Development Path (ODP). However, no matter how beneficial HumeLink and other major transmission projects will be to consumers, they must be commercially viable in order to proceed. There are two elements to commercial viability:

- The allowed return must be reasonable – it must match the market (risk reflective) cost of capital, and
- The regulatory allowance must be provided in a way that enables network businesses to maintain the benchmark BBB+ investment grade credit rating while funding network augmentation projects.

No business could be reasonably expected to pursue a project that is forecast to generate less than the return that investors in the market would reasonably require, given the risk associated with that project.

We do not consider the current regulatory arrangements in relation to commercial viability are adequate for major transmission projects and have set out our positions in regulatory reviews that are currently underway, which are considering these matters, including:

- the Australian Energy Regulator's (AER) 2022 Rate of Return Instrument (RoRI) review, and
- the Australian Energy Market Commission's (AEMC) Transmission Planning and Investment Review.

1. Introduction

This Principal Application relates to Stage 1 (early works) activities associated with HumeLink. Stage 1 (early works) activities have been identified by AEMO as a low regret action for consumers[22] and will:

- identify, explore and manage key risks and external factors that will impact the Project's overall costs. These works will assist to reduce cost uncertainty and identify reasonable risk cost amounts for Stage 2 (implementation) of the Project, when the bulk of the costs of delivering HumeLink will be incurred. This will ensure that Stage 2 costs are prudent and efficient, and
- progress activities on the critical path to deliver HumeLink by AEMO's 2026-27 target delivery date (i.e. "as soon as practicable").

We are committed to delivering the Project at the lowest sustainable, whole of lifecycle cost to maximise benefits to customers.

Section 3.2 of this Principal Application explains the relevant trigger events for Stage 1 (early works) and demonstrates that they have occurred.

In accordance with clause 6A.8.2 of the National Electricity Rules (NER or Rules), this Principal Application seeks the AER's approval to amend the capex allowance in our 2018-23 Revenue Determination and our revenue requirements and maximum allowed revenue (MAR) for the 2023–28 regulatory period, so that we can recover the efficient costs of Stage 1 (early works).

1.1. Compliance with the NER

This Application and the supporting documents establish the matters in clause 6A.8.2(f) of the NER, being:

- the forecast of the total capex for the Project meets the threshold as referred to in clause 6A.8.1(b)(2)(iii)
- the amounts of forecast capex and incremental opex reasonably reflect the capex criteria and the opex criteria, taking into account the capex factors and the opex factors respectively, in the context of the contingent project
- the estimates of incremental revenue are reasonable, and
- the dates are reasonable.

1.2. Structure of this document

The remainder of this document is structured as follows:

- Chapter 2 describes the Project and the direction from AEMO in its Draft 2022 ISP to proceed with Stage 1 (early works)
- Chapter 3 sets out the regulatory requirements for this Stage 1 (early works) Application
- Chapter 4 sets out forecast capex for the Stage 1 (early works)

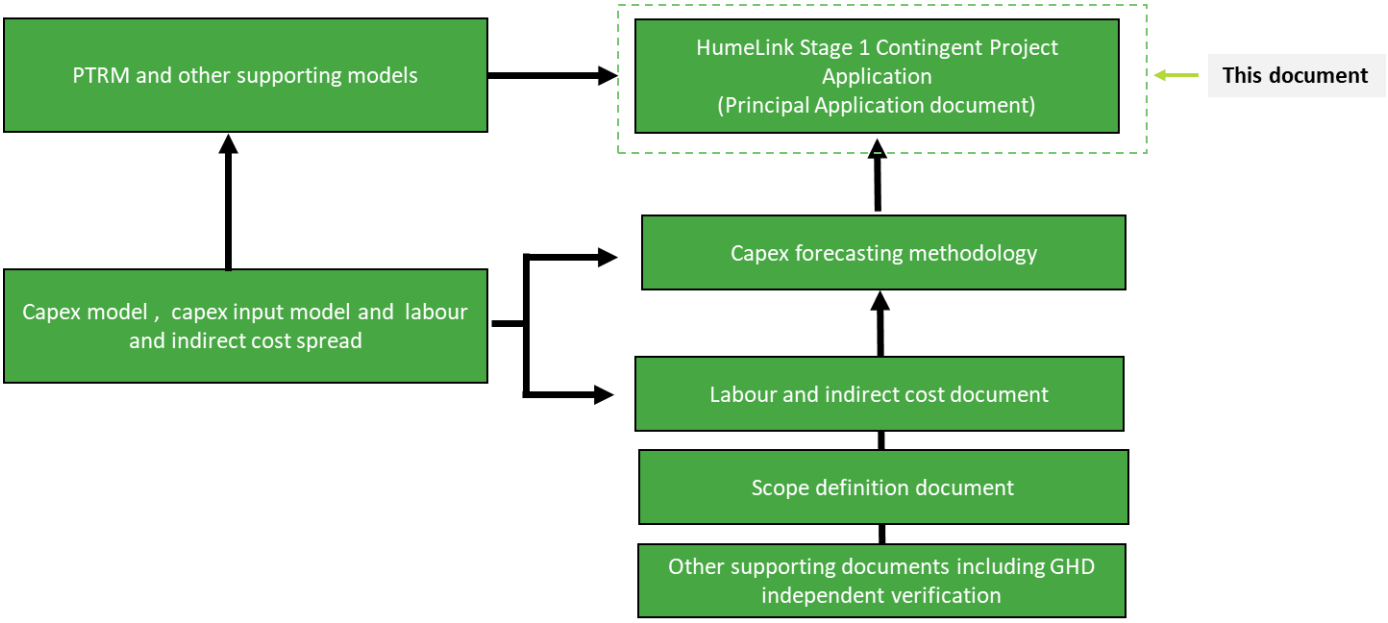
[22] AEMO, Draft 2022 ISP, December 2021, p.12.

- Chapter 5 sets out forecast incremental revenue for the Stage 1 activities and the indicative customer bill impact
- Chapter 6 sets out how the NER and Guidance note requirements have been addressed, and
- Appendix A is our revenue application

1.3. Structure of the Stage 1 CPA for HumeLink

Our Stage 1 (early works) Application comprises the attachments and models (illustrated in Figure 1 and detailed in Table 3) as well as other supporting documents. This Principal Application document references these attachments, models and other supporting documents and should be read in conjunction with them.

Figure 1: Stage 1 CPA document structure for HumeLink



The attachments and models are summarised in Table 3.

Table 3: Documents and models comprising this Application (excluding our other supporting documents)

Document /model number	Name	Content/purpose
A.1	HumeLink - Stage 1 (early works) Contingent Project Application - Principal Application document	Seeks the AER's approval to amend the forecast capex allowance in the 2018-23 Revenue Determination and the revenue requirements and MAR for the 2023–28 regulatory period based on Stage 1 (early works) costs.
A.1A	HumeLink Stage 1 2018–23 Post Tax revenue Model (PTRM)	Demonstrates the calculations of our incremental revenue requirements and MAR for the 2018–23 regulatory period, based on Stage 1 (early works) costs

Document /model number	Name	Content/purpose
A.1B	HumeLink Stage 1 2023–28 Post Tax revenue Model (PTRM)	Demonstrates the calculations of our incremental revenue requirements and MAR for the 2023–28 regulatory period, based on Stage 1 (early works) costs
A.1C	HumeLink Stage 1 2018–23 Roll-forward Model (RFM)	Rolls forward the Regulatory Asset Base (RAB) and Tax Asset Base (TAB) across the 2018–23 regulatory period, inclusive of Stage 1 (early works) costs
A.1D	HumeLink Stage 1 2018–23 Depreciation Model	Calculates forecast depreciation based on as commissioned capex over the 2018–23 capex, inclusive of Stage 1 (early works) costs
A.2	Scope definition document	Overviews the scope of our Stage 1 (early works) activities. It also presents the basis on which the works have been efficiently scheduled to: • determine the prudent and efficient construction cost for Stage 2 • identify, explore and manage our project risks, and • meet the 2026-27 target date in the ISP.
A.3	Capex forecasting methodology	Explains and justifies our Stage 1 (early works) capex including: • summarising the nature and scope of Stage 1 activities • the methodologies we have used to determined our forecast capex, and • how we have verified and validated our capex forecast
A.4	Labour and indirect costs	Explains the bottom-up forecast of labour and indirect support costs required for the development and approvals work, management of the early works program, and overall project management.
A.5	Capex forecast model	This model forecasts capex by regulatory asset class and year to 2023-24, sourcing inputs from the Direct Non-Labour Cost Model and the Labour and Indirect Cost Model and applying labour cost escalation and inflation where appropriate
A.6	Direct non-labour model	This model builds up the procurement and land acquisition costs that input to the Capex Forecast Model
A.7	Labour and indirect cost model	This model builds up the labour and indirect costs (including procurement, project development, community and stakeholder engagement, land and environment, regulatory approvals and other support costs) that inputs to the Capex Forecast Model

Document /model number	Name	Content/purpose
A.7a	Indirect Costs Artefacts 1	This spreadsheet contains the artefacts that support the cost build up for procurement, project development and land acquisition indirect costs
A.7b	Indirect Costs Artefacts 2	This spreadsheet contains the artefacts that support the cost build up for environmental impact, community stakeholder engagement and regulatory approval indirect costs
A.8	GHD Advisory Independent capex Review	An independent assessment of the scope, procurement process and forecast capex for Stage 1 (early works).

In addition, we have provided the AER with other supporting documents that are referenced within the documents listed in Table 3.

2. Project Overview

2.1. A project of national significance

In March 2018, the NSW Government declared HumeLink as a Critical State Significant Infrastructure for NSW.[23] The Australian Government has also identified HumeLink in Australia's Long Term Emissions Reduction Plan, which finds that HumeLink is needed to strengthen the network in southern NSW and transport renewable energy to consumers from new projects, including Snowy 2.0.[24]

In July 2021, we published a RIT-T which identifies HumeLink (Option 3C in the RIT-T) as the preferred option for reinforcing the southern shared network. The RIT-T assessment estimates that HumeLink will deliver $491 million in net benefits (in NPV terms) primarily from avoided, or deferred, costs associated with generation and storage infrastructure.[25]

AEMO's Draft 2022 ISP, published on 10 December 2021, reconfirms the need for HumeLink given its key strategic value for the NEM and the benefits it will provide to consumers.[26] HumeLink has been identified as a key project in AEMO's ISPs since 2018.

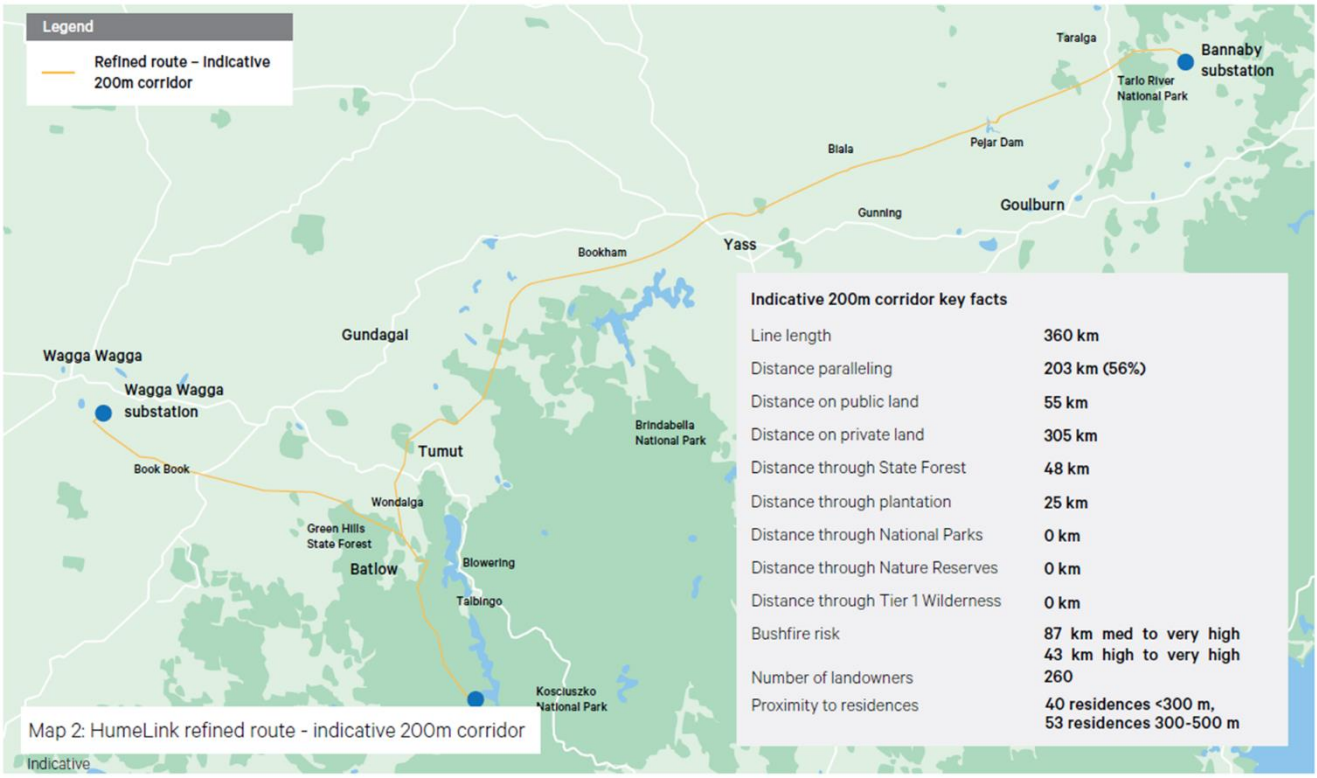
HumeLink will be our largest capital project since construction of our existing network. It involves around 360km of new 500 kV transmission lines in an electrical 'loop' that links the Greater Sydney load centre with the Snowy Mountains Hydroelectric Scheme and Project EnergyConnect in south west NSW.[27]

HumeLink is a key component of the energy market transition. It will open up additional capacity for new generation – primarily renewable wind and solar generation – in southern NSW, increase the transfer capacity between Victoria and NSW and improve wholesale market competition, thereby reducing customers' final electricity bills.

Figure 2 is a map of the proposed 500kV and 330kV double circuit transmission line routes.

[23] Section 5.3 of the Environmental Planning and Assessment Act 1979 (NSW) on 9 March 2018
[24] Australian Government, Australia's long-term emissions reduction plan – a whole-of-economy plan to achieve net zero emissions by 2050, October 2021
[25] Over the assessment period, on a weighted basis. See Transgrid, HumeLink PACR, July 2021, pp. 5 and 58.
[26] AEMO, Draft 2022 ISP, December 2021
[27] AEMO, Draft 2022 ISP, December 2021, p. 64

Figure 2: Map of proposed transmission line routes



2.2. Direction from AEMO to proceed with Stage 1 (early works)

The Draft 2022 ISP has defined HumeLink as a staged actionable ISP project at a total cost of $3.28 billion.[28] It has also determined that HumeLink contributes roughly $1.3 billion of the $26 billion in net market benefits delivered by its Draft ODP in the most likely scenario (step change) and delivers value in all scenarios.[29] The Draft 2022 ISP defines two stages for the Project and has maintained the target delivery date of 2026-27: [30]

- Stage 1 – complete the early works by 2024, and
- Stage 2 – implement the Project by 2026-27, subject to decision rules and a feedback loop.

AEMO has assessed that delivering the Project as early as possible, with early works as the first stage and with an additional checkpoint before construction to reconfirm the Project's need, protects consumers against the risk of schedule slippage and provides insurance value against the risk of coal exiting faster than projected in NSW.

[28] This is equivalent to $3.317 billion ($2021).
[29] AEMO, Draft 2022 ISP, December 2021, p. 64
[30] AEMO, Draft 2022 ISP, December 2021, p. 64

AEMO highlights the risk that four or more coal-fired power stations in NSW may be retired by 2027-28. If this risk materialises, HumeLink will be needed to maintain power system reliability in NSW, avoiding the need to invest in long-duration storage.[31] The Draft 2022 ISP has assessed that HumeLink:

> *is the only identified actionable ISP transmission project that could be delivered in that timeframe to help mitigate these risks.*

AEMO's Draft 2022 ISP therefore directs us to proceed now with Stage 1 (early works) to ensure that the Project can be delivered under all scenarios by the 2026-27 target delivery date and achieve the following benefits:[32]

- option value – either deliver the project as soon as possible if required or defer it if circumstances change
- insurance value – mitigate the risk of schedule slippage and the risk of coal exiting faster than anticipated, and
- continual improvement value[33] – refine the project through innovation and cost effective design in order to identify, explore and manage project risks. This will result in more accurate cost estimation and ensure the Project's costs are prudent and efficient.

AEMO has assessed that undertaking early works actives avoids $200 million of 'regret costs' from the project being delivered too late, due to schedule slippage or earlier than expected coal plant closures. AEMO therefore concludes that progressing Stage 1 of the Project is a low regret action for consumers.[34]

On 26 January 2022, AEMO approved our feedback loop confirmation request for Stage 1 (early works) at a cost of $327.60 million and reconfirmed the total Project cost of $3.28 billion.[35]

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31 AEMO, Draft 2022 ISP, December 2021, pp 64-65, 82.
32 AEMO, Draft 2022 ISP, December 2021, p. 80.
33 AEMO comments that further work to drive down project costs should be urgently undertaken as part of early works. AEMO, Draft 2022 ISP, December 2021, p. 12.
34 AEMO, Draft 2022 ISP, December 2021, p.12.
35 AEMO, Integrated System Plan Feedback Loop Notice – HumeLink (Early works), 27 January 2022 (HumeLink Feedback Loop Notice). AEMO's feedback loop notice confirmation that at a total Project cost of $3.28 billion including $327.6 million of Stage 1 (early works), HumeLink remains part of the Optimal Development Path (ODP) as identified in the most recent ISP, being the 'Update to the 2020 ISP'.

3. Regulatory Requirements

The regulatory requirements for actionable ISP projects are contained in:

- clause 6A.8.2 of the NER
- the AER's Process Guideline for Contingent Project Applications,[36] and
- the AER's Guidance Note for Regulation of actionable ISP projects.[37]

The key requirements are outlined below. Chapter 6 of this Application shows how we have satisfied the regulatory requirements.

3.1. Regulatory requirements

Clause 6A.8.2 of the NER sets out the requirements for making an application to amend a revenue determination to include a contingent project that is an actionable ISP project. This Application is made in accordance with the requirements of clause 6A.8.2(a), (a1) and (b) of the NER, being:

- during the 2018 to 2023 regulatory period
- to amend the revenue determination that applies to us in respect of a contingent project included in AEMO's ISP as an actionable ISP project, and[38]
- within the specified time limits.[39]

This Application includes the information specified in clause 6A.8.2(b) of the NER:

(1) an explanation that substantiates the occurrence of the trigger event

(2) a forecast of the total capital expenditure for the contingent project

(3) a forecast of the capital and incremental operating expenditure, for each remaining regulatory year which the Transmission Network Service Provider considers is reasonably required for the purpose of undertaking the contingent project

(4) how the forecast of the total capital expenditure for the contingent project meets the threshold as referred to in clause 6A.8.1(b)(2)(iii)

(5) the intended date for commencing the contingent project (which must be during the regulatory control period)

[36] AER, Process Guideline for Contingent Project Applications under the NER, September 2007.
[37] AER, Guidance Note for Regulation of actionable ISP projects, March 2021.
[38] NER clause 6A.8.2(a)
[39] NER clause 6A.8.2(a)

(6) the anticipated date for completing the contingent project (which may be after the end of the regulatory control period), and

(7) an estimate of the incremental revenue which the Transmission Network Service Provider considers is likely to be required to be earned in each remaining regulatory year of the regulatory control period as a result of the contingent project being undertaken as described in subparagraph (3), which must be calculated:

(i) in accordance with the requirements of the post-tax revenue model referred to in clause 6A.5.2

(ii) in accordance with the requirements of the roll forward model referred to in clause 6A.6.1(b)

(iii) using the allowed rate of return for that Transmission Network Service Provider for the regulatory control period as determined in accordance with clause 6A.6.2

(iv) in accordance with the requirements for depreciation referred to in clause 6A.6.3, and

(v) on the basis of the capital expenditure and incremental operating expenditure referred to in subparagraph (b)(3).

Clause 6A.8.2(f)(2) of the NER requires the AER to accept the relevant amounts in this Final Application if it is satisfied that:

> *the amounts of forecast capital expenditure and incremental operating expenditure reasonably reflect the capital expenditure criteria and operating expenditure criteria, taking into account the capital expenditure factors and operating expenditure factors, in the context of the contingent project.*

In addressing these requirements, we have had regard for the AER's:

- Guidance Note for Regulation of actionable ISP projects, and
- Process Guideline for Contingent Project Applications.[40]

We have met regularly with the AER in preparing this Application and the AER's feedback has informed the content and structure of this Final Application and supporting documentation.

3.2. Trigger events

Under the National Electricity Rules (NER or Rules), we can submit a CPA for Stage 1 to the AER, if we satisfy the trigger events for actionable ISP projects in clause 5.16A.5.[41] Table 4 shows that the trigger events for Stage 1 of the Project have been met.

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[40] AER, *Process Guideline for Contingent Project Applications under the National Electricity Rules*, September 2007 available at: https://www.aer.gov.au/system/files/ac06907-Final%20guideline.pdf.

[41] Rule 5.16A.5 Actionable ISP project trigger event.

Table 4: Occurrence of the trigger events

Trigger event	Status
Publish the RIT-T Project Assessment Conclusions Report (PACR), which must identify a preferred option that passes the RIT-T.	**Complete** On 29 July 2021, we published a PACR, which identified the preferred option to be a new 500 kV double circuit transmission lines in an electrical 'loop' between Maragle, Wagga Wagga and Bannaby (i.e. 'Option 3C').
Obtain written feedback loop confirmation from AEMO that: • the preferred option addresses the identified need and is on the optimal development path (ODP) in the most recent ISP, and • at the forecast cost, the Project remains part of the ODP	**Complete** On 26 January 2022, AEMO provided written feedback loop confirmation that: • the Stage 1 meets the identified need in the most recent ISP, being the 'Update to the 2020 ISP',[42] and • Stage 1 of the Project remains part of the ODP at a cost of $327.60 million.
There are no outstanding RIT-T PACR disputes - either no disputes were raised or if a dispute has been raised, it has been rejected by the AER or the PACR has been amended accordingly.	**Complete** On 17 December 2021, we resolved the dispute raised by Wunelli Pty Ltd by publishing an addendum to the PACR. This contained the additional analysis requested by the AER in its dispute determination, published on 24 November 2021. The resolution of this dispute marked the completion of the RIT-T process.
The cost in the Stage 1 CPA must be no more than the cost included in AEMO's written feedback loop confirmation.	**Confirmed** Our Stage 1 capex (actual and forecast) in this application is within the Stage 1 cost cap of $327.60 million set out in AEMO's feedback loop confirmation.

3.3. Project timing

For the purposes of this Stage 1 CPA, the applicable dates for the commencement and completion for Stage 1 activities are:

- date for commencement – 1 July 2018, and
- anticipated date for completion – 30 June 2024.[43]

[42] AEMO's assessment must consider the Stage 1 costs as well as the full cost of the Project.
[43] AEMO, Draft 2022 ISP, p. 13.

Some of the Stage 1 (early works) activities have already started. These activities have needed to pre-date this Application, in order to meet AEMO's 2026-27 completion date. The proposed timing for the remaining, more substantive, early works activities in this Application reflects a realistic assessment of the required dates for the Stage 1 activities to enable construction to commence as soon as possible following the approval of our Stage 2 CPA,[44] in order to meet AEMO's target delivery date of 2026-27.[45]

The majority of capex for Stage 1 (early works) will occur during the 2018-23 regulatory period, with the remainder expected to be incurred in 2023-24. The Stage 1 completion date is consistent with the indicative timing set out in the AEMO's draft 2022 ISP.

3.4. Customer and other Stakeholder engagement

The size, scale and proposed route of HumeLink has generated strong reactions from a wide range of stakeholders including local communities, landowners, First Nations people and primary producer groups. Early and effective engagement in Stage 1 (early works) is critical to retaining the social licence required to minimise the risk of the Project being delayed and the associated costs. Our Stage 1 (early works) engagement will:

- provide information on the Project's timeframes, milestones and engagement processes so that stakeholder have the maximum opportunity to be involved in the Project
- ensure that the community understands the benefits and costs of the project, and
- support the Project securing access to, and acquiring easements over land.

In July 2021, we re-set our stakeholder and community engagement processes[46] based on respectful, effective and transparent engagement with impacted communities and landholder. This was in response to concerns expressed by local community groups and landowners located in the HumeLink study corridor about our consultation process and the proposed route. As part of this re-set, we implemented all 20 recommendations made by Landowner Advocate Rod Stowe, which included the establishment of an independent CCGs[47]. The CCGs provide local communities and landowners with a structured, ongoing forum to provide input about HumeLink and their work will remain independent of TransGrid.

We have also developed a HES with local champions and the CCGs to identify key areas of concerns and interest and establish alternative consultation methods. Feedback from the community, landholders and other stakeholders has identified four non-negotiable pillars that will form the foundation of all our engagement.

- landowner engagement – we will consult openly and transparently with landowners impacted by the Project and ensure they are treated fairly and respectfully

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[44] Subject to our Board making a positive Final Investment Decision (FID).
[45] AEMO, Draft 2022 ISP, p. 13 (see Table 1).
[46] TransGrid, Review of HumeLink engagement process, Findings of the Review – Landholder and Community Advocate, July 2021
[47] The CCG provides a forum for discussion and feedback between Transgrid and representatives of the community, stakeholder groups and local councils on matters relating to the Project. The CCG will meet at a minimum three times annually

- community engagement – we will engage continuously with communities, landowners, residents, business owners and stakeholders impacted by the Project to keep them informed and ensure their preferences and priorities are reflected in the Project to the greatest extent possible
- social legacy – we will partner with the community and other stakeholders to develop new ways of delivering a legacy of positive social and environmental outcomes for our communities
- indigenous engagement – we will work respectfully with local Traditional Owners and Elders as well as the Indigenous people and communities throughout the Project.

Our engagement approach is based on genuine consultation through meaningful and transparent dialogue. We are committed to understanding the priorities and preferences of our customers and other stakeholders, keeping them informed and reflecting their feedback to the extent possible in the design of the Project.

We are using a broad range of engagement channels to cater for different interests and availability. These include town halls, webinars, information sessions and public displays, project briefings and fact sheets, one-one meetings, CCGs, newsletters, a dedicated website[48], Place Managers, visualisations[49] and interactive maps[50].

We have developed engagement plans for each of the above four pillars that detail our engagement approach, with whom we will engage, our engagement timeframes and associated activities.

Over the next twelve months, we will also develop action plans for a number of key engagement areas and significant project phases. These are detailed in Table 5, noting that they will be updated as the project progresses and project milestones are confirmed. Additional action plans may be developed and integrated for specific programs of work in response to community and stakeholder feedback.

Table 5: Key action plans for 2022-23 period

Action plan	Description
Environmental Impact Statement Action Plan	Engagement and communication of Environmental Impact Statement Report
200m Corridor Action Plan	Communication activities of the narrowing of the 200m corridor
Geotechnical Investigations Action Plan	Communication activities of the Geotechnical surveys
Underground Feasibility Scoping Report Action Plan	Communication activities of Feasibility Scoping Report

[48] The website is designed to provide general information about the Project and facilitate feedback process by providing a one-stop-shop for communications – newsletters, fact sheets, presentations.
[49] Visualisations are used to provide landowners with a 3D visualisation of the towers
[50] An online engagement platform to support route refinement. Planned updates include the revised corridor (Sept) and the EIS footprint.

In response to feedback from our TransGrid Advisory Council (TAC), we have also established an ETWG. Our ETWG members are:

- Australian Industry Group
- Australian National University, Professor Andrew Blakers
- Clean Energy Council
- Commonwealth Bank of Australia
- Energy Consumers Australia
- Energy Users Association of Australia
- Goldwind
- Snowy Hydro Ltd.
- St Vincent de Paul Society

The ETWG will hold regular discussions on projects and initiatives that support the transition, to share knowledge and provide the ETWG members with an opportunity to participate in decision making, where appropriate. The AER and the CCP attend, and participate in, the ETWG. On 8 March 2022, we presented to the ETWG on the key aspects of Stage 1 (early works) for HumeLink. Generally, ETWG members support early works to reduce project risks and determine the prudent and efficient delivery costs, before progressing to Stage 2 (implementation).

Table 6 outlines the issues, concerns, and opportunities identified through consultation and engagement to date, and how we have and continue to respond to the feedback we have received.

Table 6: Issues, concerns and opportunities identified through consultation and engagement to date

Area of Interest / who	Issues / Concerns / Opportunities	Actions in response
Route options • Directly impacted landowners • Action groups • Local members • Local government • Local Aboriginal Land Council (LALCs) • Media • Government	• Route selection process is unclear • Opportunities for stakeholder input on route selection is unclear • More regular updates for community groups, individual landowners are needed	• Continue to seek input from landowners on property specific alignment • Undertake targeted consultation sessions with communities to seek their input • Provide visual aids and maps allowing input into concept designs where possible • Provide detailed information on the route alignment planning process. • Explain how feedback on alternative route options has been considered
Project justification and need • Directly impacted landowners • Action groups	Concerned that: • project costs outweigh benefits	• Provide project information via multiple channels • Embed Place Managers to regularly check in with their communities • Establish dedicated project website with detailed project information including on

Area of Interest / who	Issues / Concerns / Opportunities	Actions in response
• Community • CCGs • Media • Government	• costs borne by landowners whereas benefits accrue to the broader community • Lack of engagement with regional communities on the need for, and benefits of, the project • Social legacy program should be co-designed with the community.	project benefits and social legacy program • Provide FAQs, regular project briefings and newsletters with detailed project information to address specific areas of concern • Provide access to independent specialist to provide information on technical matters.
Consultation process • Directly impacted landowners • Action groups • Local members • Media • Government	• Engagement not consistent with best-practice • Delay in face-to-face consultation (due to the COVID-19 pandemic) • Should increase use of hybrid consultation opportunities to minimise consultation fatigue • CCGs, community groups and Councils should have greater input in designing our engagement approach	• Work with local champions and CCGs to identify preferred consultation methods and opportunities • Publish draft engagement timeline for stakeholder feedback. Regularly update to ensure it remains current. • Offer a broader range of engagement methods to cater for different stakeholders interest and availability i.e. website, phone, email, letter, interactive map, face-to-face, meetings • Provide information on how to contact the engagement team • Record feedback received • Provide regular updates on how feedback received has been addressed • Publish regular media updates on digital channels aligned to planning milestones
Land use • Directly impacted landowners • Action groups • CCGs • Represented groups • Local members • Local government • LALCs • Government	• Key concerns raised include the Project's impact on: - cultural heritage - biosecurity - bushfire risk - industrialisation of the local region - land clearing and degradation - agricultural land use activities (e.g. disruption of aerial spraying, use of	• Keep the community updated on our investigations into issues of concern • Provide information on our environmental assessment and approval process, and how the community / stakeholders can provide input and escalate concerns. • Embed Place Managers to regularly check in with their communities • Provide information on project benefits • Collaborate with representative groups on solutions • Refine messaging on project impacts so it is clear and accessible

Area of Interest / who	Issues / Concerns / Opportunities	Actions in response
	access tracks and vehicle access) • Further discussion on the pros and cons of using public or private land is needed • Social legacy program should be co-designed with the community so that it addresses their issues.[51]	• Advocate on behalf of the landowner where appropriate
Compensation • Directly impacted landowners • Action groups • Local members	• Delays to identifying the corridor has prolonged landowner uncertainty • Opportunities for stakeholder input and feedback to the Minister on land and easement compensation is unclear • Process and timeline for land and easement acquisition is unclear[52] • Compensation for land and easement acquisition is unfair and does not: - compensate for visual impacts - provide royalties or annualised payment - Provide equal compensation to landholders and renewable developers which is unreasonable.	
Visual impact • Directly impacted landowners • Action groups	• Concerned about a range of visual impact issues including: - the height and material of tower design	

[51] These include bushfire, cultural heritage, regional development
[52] Including negotiating compensation for required easements

Area of Interest / who	Issues / Concerns / Opportunities	Actions in response
• Local members • Local government	- the impact on their property value - the industrialisation of the local region - the proximity of towers to residential homes • Provide opportunities for directly affected landowners to discuss options to mitigate impacts on a case-by-case basis.	

4. Capex forecast

This chapter:

- overviews AEMO's definition and approval of Stage 1 (early works)
- explains the scope of our Stage 1 (early works) activities and the outcomes they will deliver
- overviews our capex forecasting methodology for our Stage 1 (early works) activities
- details our Stage 1 (early works) capex forecast, and
- overviews the independent engineering verification to support our Stage 1 (early works) capex forecast.

Further information on our capex forecast and the scope of our Stage 1 activities is provided in our Capex Forecasting Methodology and Scope Definition supporting documents. These are attachments to this Application.

4.1. AEMO's definition and approval of Stage 1 (early works)

AEMO defines Stage 1 (early works) as pre-construction activities that can be undertaken now, while keeping open the option to continue, defer or cancel the project as new information becomes available.[53] AEMO identifies the following activities as likely to fall within Stage 1 (early works) for HumeLink:[54]

- detailed engineering design – transmission line, structure and substation design, detailed engineering design and planning
- project initiation – this includes planning and design activities needed to accurately define the project, including pre-contracting activities for engineering, procurement and construction contracts such as obtaining binding bids
- cost estimation – finalisation, including quotes for primary and secondary plant
- land-use planning – to identify and obtain all primary planning and environmental approvals, route identification, field surveys, geotechnical investigations, substation site selection, easement acquisition and preparation of option agreements with landowners, and
- stakeholder engagement – with local communities, landowners and other stakeholders.

As discussed in section 2.2, AEMO has issued us with a direction in its Draft 2022 ISP to proceed now with Stage 1 (early works) to achieve the following benefits:[55]

- option value – it will allow us to deliver the project as soon as possible or defer it if circumstances change
- insurance value – it will mitigate the risk of schedule slippage and the risk of coal exiting faster than anticipated, and

[53] AEMO, Feedback Loop Notice, 27 January 2022
[54] AEMO, Draft 2022 ISP, p. 66
[55] AEMO, Draft 2022 ISP, December 2021, p. 80

- continual improvement value[56] – it will refine the project through innovation and cost effective design in order to identify, explore and manage project risks. This will result in more accurate cost estimation and ensure the Project's costs are prudent and efficient.

AEMO has assessed that undertaking early works now will avoid $200 million of 'regret costs' from the project being delivered too late, due to schedule slippage or earlier than expected coal plant closures. AEMO therefore concludes that progressing Stage 1 (early works) is a low regret action for consumers.[57]

4.2. Our Stage 1 (early works) activities and outcomes

Our Stage 1 (early works) capex will deliver the following outcomes:

- determine the prudent and efficient construction cost for Stage 2 (project implementation) by refining the Project scope through innovation and cost effective design
- identify, explore and manage our project risks. This will allow us to mitigate and/or diversify the Project's risks so that residual risk costs included in our Stage 2 Application are as low as possible, and
- achieve AEMO's target delivery date of 2026-27 by ensuring that construction can commence as soon as possible following the approval of our Stage 2 CPA.[58]

Table 7 details the nature of our Stage 1 (early works) activities and how they will contribute to achieving these three outcomes. Our Scope definition document, provided as an Attachment to this Application, provides further information on these activities and how they will deliver these outcomes.

Our Stage 1 (early works) activities comprise direct capex activities and indirect and labour capex activities.

A key component of our direct capex activities relates to procurement. These activities will be undertaken by successful contractors identified through an Early Contractor Involvement (ECI) procurement process, which will promote competition and innovation. The ECI procurement process will maximise responsiveness in the supplier market and ensure that the Project's Stage 2 construction cost is prudent and efficient. This process will also ensure we are ready to start construction as soon as possible after the approval of our Stage 2 CPA, in order to meet AEMO's target delivery date of 2026-27. The procurement activities will be undertaken as part of a separable package (SP) of work, known as SP1, and must be completed prior to construction commencing. Construction will be undertaken in SP2 and is subject to the approval of our Stage 2 CPA and our Board making a positive final investment decision (FID).

[56] AEMO comments that further work to drive down project costs should be urgently undertaken as part of early works. AEMO, Draft 2022 ISP, December 2021, p. 12.
[57] AEMO, Draft 2022 Integrated System Plan (Draft 2022 ISP), December 2021, p.12.
[58] AEMO, Draft 2022 ISP, p. 13 (see Table 1).

Table 7: Stage 1 (early works) activities – nature and outcomes

Category capex	Description	Nature and outcomes
Direct capex		
Procurement	Steel tower assembly design and prototype testing	We will need to complete the detailed design and testing of the towers prior to placing orders for steel. This means that we need to complete these activities in Stage 1 to meet the 2026-27 delivery date.
	Long-lead time equipment (LLE) – Substation transformers and reactors	Delivery of LLE is estimated to take 12-18 months following placement of orders. Payments for production slots are needed as part of Stage 1 to minimise the risk of project delays arising from delay in receiving LLE which may impact our ability to achieve AEMO's target delivery date of 2026-27.
	Pre-construction development – substation and transmission lines	Pre-construction activities include detailed design work, equipment specification and quantities for plant and materials, project documentation and obtaining work permits. These activities will identify all pre-requirements for orders to be placed for the testing of towers, LLE and other plant and materials, such as conductors that have lead times of approximately 12 months. This means that pre-construction activities need to be completed in stage 1 to meet the target delivery date of 2026-27. We also expect that pre-construction activities will drive efficiencies and innovation in the Project's design, thereby lowering the construction costs and risks in Stage 2.
Land acquisitions	Valuation and acquisition costs including options to acquire easements and acquiring a site for Gugaa substation, and cultural heritage	The Project requires the acquisition of easements over a substantial amount of land that impacts many landholder properties. Land access is a critical step to enable construction to commence. It involves: • determining the compensation to be paid to each landholder • establishing option agreements in order to be able to acquire land in Stage 2 • commencing the compulsory acquisition process in the event amicable agreements cannot be reached with landholders • undertaking surveys to identify and protect places of cultural heritage significance along the route, and • securing a site for Gugaa substation so that designs can be undertaken to match the available site location, size and geotechnical conditions. These activities need to be completed before we can commence construction. Our previous experience with land acquisition indicates that having a longer time period to negotiate with land

Category capex	Description	Nature and outcomes
		holders reduces anxiety, the premium we need to pay and the potential for compulsory acquisition. This means that completing land acquisitions related activities in Stage 1 will lower the risk costs in Stage 2 and help meet the target delivery date of 2026-27.
Labour and indirect capex (Development and Approvals)		
Labour and related costs		
Project team resources	Labour and corporate support for project management, procurement, land and environmental activities	Current and additional internal resources will manage development activities and prepare for the delivery of the Project. All development and approval activities are necessary to be completed to achieve an efficient and timely final investment decision (FID) to proceed with the Project following approval for our Stage 2 Application. This timing is critical to align FID and the unconditional execution of contracts so that Stage 2 construction works can proceed according to the critical path to achieve the 2026-27 completion date. Further, these activities will ensure that we manage delivery of Stage 1 in a prudent and efficient manner.
Indirect Costs		
Procurement	Bidder payments	These supporting procurement activities are needed to engage the contract market through the ECI process. Undertaking the ECI process in Stage 1 will: • promote competition and innovation to lower costs including costs for risks for the construction works in Stage 2, and • enable the successful contractors to procure LLE and undertake detailed design and other pre-construction activities in Stage 1. This will ensure construction can commence as soon possible following approval of our Stage 2 Application to meet the 2026-27 completion date.
	Data room services and market road show	
	Transaction procurement support	
Project development	Development, engineering, legal and economic support	The following project development activities must be completed for construction to commence as soon as possible following approval of our Stage 2 CPA to meet the 2026-27 completion date: • legal advice to support land acquisition, procurement and other work activities during Stage 1 • geotechnical reports and concept designs for contractors to prepare their pricing in the ECI process described above • an Owners Engineer to oversee the technical due diligence of the Project, and

Category capex	Description	Nature and outcomes
		• other specialist studies to support development activities. These activities and specialist resources will assist to drive cost efficiency and reduce risk costs.
Land and environment	Fees, labour and indirect costs	Development of the EIS, land acquisition, and related activities are scheduled to be undertaken between May 2021 to January 2023. They include: • EIS development work which is being led by Aurecon, including seasonal route surveys, the environmental scoping report, technical and route option assessments, and completion of EIS documentation • an EIS application fee payable under the Environmental Planning and Assessment (EP&A) Regulation 2000 based on the capital investment value, and • land agents and administrative support to lead the engagement with landholders and negotiations to establish options for easements and compulsory acquisitions. These activities and specialist resources are needed in Stage 1 to meet the 2026-27 completion date. Further, the EIS will set out conditions of approval, including any actions we need to undertake to mitigate the Project's environmental impact. Completing the EIS in Stage 1 will therefore reduce risk costs in Stage 2.
Community & stakeholder engagement	Stakeholder and community programs including social legacy[59], design and communication and community improvement	The local community and landholders will be affected by HumeLink. In Stage 1 we need to implement the HES (including indigenous engagement and social impact engagements and initiatives) to improve stakeholder support for the project and meet stakeholder consultation expectations and requirements. These activities are needed to meet the target delivery date of 2026-27. We also expect that strong stakeholder support for the Project will reduce potential opposition, thereby supporting cost efficiency, including by reducing risk costs.
Regulatory approvals and other support costs	RIT-T and CPA activities including document preparation, modelling and	These activities are needed to prepare our regulatory submissions and seek the necessary regulatory approvals required before the Project can proceed. These activities are needed in Stage 1 to meet AEMO's target delivery date of 2026-27.

[59] Social legacy seeks to leverage off the project building a more sustainable energy system – and through its strategic partnership approach, enabling more sustainable, resilient and future focused community programs. This includes community grants, youth traineeships, long-term jobs for indigenous communities, provision of 5G and digital communication.

Category capex	Description	Nature and outcomes
	commissioning expert reports	

4.3. Our Stage 1 (early works) forecasting method

As detailed in our Capex Forecasting Methodology, our forecast Stage 1 (early works) capex will ensure that the Project is delivered at the lowest sustainable cost to maximise benefits to customers. We have used the following forecasting techniques to derive our Stage 1 capex forecast:

- external market-based quotations and valuations – generally, we have used the lowest cost quotations where we have received multiple quotations
- outcomes from the RIT-T, which have been subject to public scrutiny, stakeholder consultation and AER review
- benchmarks of similar projects, such as Project EnergyConnect
- bottom-up estimates based on recent actual costs, and
- other industry market data and specialist advice.

The forecasting process involved the following three steps.

Step 1 – Define the initial scope and identify the indicative costs

In this step we defined the initial scope for each Stage 1 activity, including by:

- establishing the project team and governance requirements
- identifying the corporate support required for the development and approval activities, and
- identifying required external specialist resources and services.

We obtained prices for these resources and services based on our procurement policies and procedures to establish our initial cost estimate.

Our Scope definition document, provided as an Attachment to this Application, sets out the scope of our Stage 1 activities and explains why the scope is efficient.

Step 2 – Refine the initial scope and costs

In this step, we refined our initial scope and cost estimate by obtaining:

- non-binding offers from suppliers
- actual costs from recent projects for long lead time equipment (LLE)
- recent land acquisition costs
- current design specifications and quantities for plant and materials, and
- additional quotations, where necessary, from specialist service providers.

We also re-engaged with service providers to further refine the Project scope and adjust our internal resources, including stakeholder engagement and social legacy programs.

Step 3 – Finalise the early works capex forecast

In this step, we finalised our capex forecast by:

- updating our labour and support activities for our actual costs to 31 December 2021 from Ellipse, our enterprise resource planning (ERP) system
- refining the scope and costs in step 2 to improve the accuracy our capex forecast, and
- comparing our labour and indirect costs with Project EnergyConnect, which is a comparable project, and AEMO's Transmission Cost Database (TCD).[60] AEMO explains that the costs in its TCD are based on Class 5 estimates and are therefore not as accurate as cost estimates developed at the CPA stage, because these costs take into account the specific details of the project. This analysis showed the following for our Stage 1 (early works):
    - total indirect and labour costs are 4 per cent higher than the equivalent costs for Project EnergyConnect and are 19 per cent higher than AEMO's TCD
    - project management and development costs are 4 per cent higher than the equivalent costs for Project EnergyConnect and are 19 per cent higher than AEMO's TCD
    - land and environment costs are within 2 per cent of the equivalent costs for Project EnergyConnect and are 20 per cent higher than AEMO's TCD
    - stakeholder engagement costs are 2 per cent lower than the equivalent costs for Project EnergyConnect and are 20 per cent lower than AEMO's TCD, and
    - procurement transaction costs are 17 per cent higher than the equivalent costs for Project EnergyConnect and AEMO's TCD. This is due to relatively higher bidder payments for HumeLink in a constrained construction market.

4.4. Our Stage 1 (early works) capex forecast

Table 8 shows our total Stage 1 capex forecast is $321.87 million, excluding equity raising costs. We will incur most of this capex in the current (2018-23) regulatory period. The remainder will be incurred in 2023-24 (i.e. the first year of the 2023-28 regulatory period).

Our total capex (actual and forecast) is within the Stage 1 cost cap of $327.60 million set out in AEMO's feedback loop confirmation. Our capex is additional to the capex approved by the AER in its 2018-23 Revenue Determination.

[60] Comparative Project Capex worksheet – A.6 Capex Forecast Model

Table 8: Stage 1 capex ($M, Real 2017-18)

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Total
Actual	0.38	0.64	8.64	15.59	13.37	-	-	38.61
Forecast	-	-	-	-	31.21	188.85	63.20	283.26
Total capex	**0.38**	**0.64**	**8.64**	**15.59**	**44.58**	**188.85**	**63.20**	**321.87**

Notes: Including overheads, excluding equity raising costs

Table 9 details our Stage 1 capex in terms of direct and labour and indirect activities.

Our Stage 1 activities relating to direct capex include:

- Undertaking procurement activities, which will be undertaken by the successful contractors, at a cost of $104.59 million (or 32.5 per cent of capex). These activities include:
  - assembling, designing, erecting, and testing of nine standard steel tower types
  - procuring production slots for equipment with long lead times, in particular substation transformers and reactors, and
  - pre-construction development, including for substations and transmission lines, equipment specifications and identifying quantities of plant and materials required.
- acquiring land for a substation at Gugaa and establishing option agreements for transmission line easements. This includes binding options for transmission line easements and compulsory acquisition, at a cost of $22.12 million (or 6.9 per cent of total capex)

Our Stage 1 activities relating to labour and indirect capex (development and approvals) include:

- undertaking project management and corporate support (labour costs) for procurement, land and environmental activities, at a cost of $75.45 million (or 23.4 per cent of capex)
- undertaking project development activities, including engineering, legal and economic support, at a cost of $32.86 million (or 10.2 per cent of capex)
- undertaking land and environmental planning and approval activities, including environmental impact studies, surveys, preparing an Environmental Impact Statement (EIS), and specialist land agent support, at a cost of $28.85 million (or 9.0 per cent of capex)
- supporting the procurement process, including bidder payments and data room services at a cost of $27.55 million (or 8.6 per cent of capex).
- consulting with stakeholders and the community (non-labour), including community support, social legacy, design and communication and community improvement, at a cost of $18.56 million (or 5.8 per cent of capex), and
- seeking necessary regulatory approvals – this includes actual costs for completing the RIT-T process as well as our actual and forecast capex for preparing our Stage 1 and Stage 2 Applications, at a cost of $11.90 million (or 3.7 per cent of capex).

Our labour and indirect capex includes our actual costs to 31 December 2021 and our forecast for the additional resources and associated costs to 30 June 2024.

Table 9: Stage 1 CPA capex by category ($M, Real 2017-18, including overheads)

Category capex	Description	Forecast capex	% of total capex
Direct capex			
Procurement	Steel tower assembly design and prototype testing	[redacted]	[redacted]
	Long-lead time equipment – Substation transformers and reactors	[redacted]	[redacted]
	Pre-construction development[61] – substation and transmission lines	[redacted]	[redacted]
Land acquisitions	Cultural heritage, valuation and acquisition costs including options and customer asset relocation	22.12	6.9%
Total direct capex		**126.71**	**39.4%**
Labour and indirect capex (Development and Approvals)			
Labour and related costs		75.45	23.4%
Project team resources	Labour and corporate support for project management, procurement, land and environmental activities	75.45	23.4%
Indirect Costs		119.71	37.2%
Project development	Development, engineering, legal and economic support	32.86	10.2%
Land and environment	Fees, labour and indirect costs	28.85	9.0%
Procurement	Bidder payments	22.22	6.9%
	Data room services and market road show	0.56	0.2%

[61] Includes detailed design for substations and transmission lines and other pre-construction works and costs

Category capex	Description	Forecast capex	% of total capex
	Transaction procurement support	4.78	1.5%
Community & stakeholder engagement	Community support, social legacy, design and communication and community improvement	18.56	5.8%
Regulatory approvals and other support costs	RIT-T analysis and documentation and Stage 1 and 2 CPA documentation, modelling and reports	11.90	3.7%
Total labour & indirect capex		**195.16**	**60.6%**
Total (excluding equity raising costs)		**321.87**	**100.0%**
Equity raising costs	Equity raising costs	2.99	
Total including equity raising costs		**324.86**	

4.5. Independent engineering verification of our Stage 1 Capex (early works)

We engaged GHD to undertake an independent engineering verification and assessment of the scope of our Stage 1 activities and our Stage 1 capex forecast. GHD's assessment:

- verified that our Stage 1 (early works) activities are aligned with the definition of early works
- found that our overall Project timeline is reasonable to meet the 2026-27 project completion date
- confirmed that our procurement costs are reasonable and reflect specialist advice
- found that our indirect and external labour costs are reasonable and are supported by tender outcomes, quotations and benchmarking, and
- found that our actual and forecast internal labour costs are reasonable, noting that our actual labour costs are from Ellipse and our forecast labour costs benchmark in line with other ISP projects.

Overall, GHD concluded that our Stage 1 (early works) costs are within a reasonable margin of its comparative estimates. GHD's independent review therefore supports the consistency of our forecast capex with that which would be incurred by a prudent and efficient business. GHD's report is provided as an attachment to our Application.

4.6. Capex threshold

The proposed capex of a contingent project is required to exceed either $30 million, or 5 per cent of the MAR for the first year of the regulatory control period, whichever is the greater.

Table 10 shows that the forecast capex satisfies the relevant threshold. This means that the capex is covered by the contingent project requirements of the NER.

Table 10 – Contingent project thresholds ($M, Nominal)

AER Decision First year MAR	5% of MAR	Contingent Project Threshold	Pass / Fail
716.7[62]	36	36	Pass (as capex > $36 million)

Notes: NER clause 6a.8.1(b)(2)(iii) requires that expected capex is higher than the greater of $30 million or 5% of MAR. The threshold is $36 million (being 5% of MAR).

[62] AER, Final Decision – TransGrid – Post-tax Revenue Model – May 2018, Revenue Summary.

5. Forecast Revenue and impact on customers' bills

This chapter sets out the incremental revenue forecast for Stage 1 (early works), our updated MAR and the indicative impact on the transmission component of customers' bills.

As discussed above, we are not seeking any adjustment to our 2018-23 MAR because our tariffs for the 2022-23 year (i.e. the last year of the 2018-23 regulatory period) will be finalised before the AER makes its determination on our Stage 1 (early works) Application.

We have determined our incremental revenue forecast using the same assumptions and approaches recently adopted by the AER in its determination on Project EnergyConnect and the QNI Minor contingent project applications. Table 11 summarises the incremental revenue forecast of $71.53 million ($Nominal) over the 2023–28 regulatory period, broken down by building block component, and briefly explains how we have calculated each component. Further detail is provided in Appendix A.

This shows that incremental revenue we are seeking over the 2023–28 regulatory period is modest because:

- we are not seeking to adjust our current opex allowance as part of this Application, other than adjusting our allowance for debt raising cost as a consequence of the revised capex allowance, and
- our capex is not expected to be commissioned until June 2024 when the early works have been completed.

Table 11 – 2023-28 incremental revenue forecast from Stage 1 (early works) ($M, Nominal)

Building block	$ Million, Nominal	Approach
Return on capital	84.59	Calculated by multiplying the forecast opening capital base (updated to include expenditure on Stage 1 (early works) for a given year by the allowed rate of return adopted by the AER.
Return of capital	(16.84)	Calculated as forecast straight line depreciation for each asset class less indexation of the capital base. The value is negative because indexation is higher than depreciation over the 2023–28 regulatory period.
Opex	1.05	We are not seeking to adjust our current opex allowance as part of this Application, other than adjusting our allowance for debt raising cost as a consequence of the revised capex allowance. Debt raising costs have been calculated using the AER's standard approach.
Revenue adjustments	4.82	Updated to include the incremental building blocks revenue from the 2018–23 regulatory period that we were not able to include in the MAR for that period (due to the timing of the Stage 1 (early works) CPA).
Corporate income tax	(3.20)	Calculated as forecast pre-tax income multiplied by the corporate tax rate, less the assumed value of imputation credits.

Building block	$ Million, Nominal	Approach
Annual revenue requirement (i.e. unsmoothed)	70.42	
Impact of smoothing	1.11	Calculated by resolving the year 2 and 5 X-factors so that the NPV of the MAR for the 2023–28 regulatory period matched that of the forecast annual revenue requirement for the same period.
Maximum allowed revenue (i.e. smoothed)	71.53	

Table 12 details the 2023–28 incremental revenue forecast of Stage 1 (early works) by year.

Table 12: – Incremental revenue forecast (smoothed) ($M, Nominal)

MAR (Smoothed Revenue)	2023-24	2024-25	2025-26	2026-27	2027-28	Total
2023-28 proposal	797.63	816.37	835.55	855.19	903.38	**4,208.13**
Impact of Stage 1	-	18.52	18.95	19.40	14.67	**71.53**
Updated MAR	**797.63**	**834.89**	**854.51**	**874.59**	**918.05**	**4,279.66**

Table 13 shows the indicative customer bill impact is an increase of $2.80 per annum for residential customers and an increase of $10.45 per annum for small business customers, commencing 2024-25.

We have applied the same approach to estimating the indicative impact on customer bills over the 2023–28 period that the AER used in its CPA decision on Project EnergyConnect. We converted our proposed MAR into indicative household and small business bills using forecast energy throughput and typical household and small business bill information, such as the typical bill size and the share of NSW residential and small business bills attributed to transmission charges. We are currently consulting with the AER on our approach to cross-period smoothing of allowed revenue.[63]

[63] To smooth allowed revenue across period we have taken the difference between the MAR for the 2018-23 period and the unsmoothed annual building blocks revenue requirement (ABBRR) in NPV terms and added it to the allowed revenues for the 2023-28 period.

Table 13: Impact of Stage 1 on the transmission component of customers' bills ($ per customer per year, Real 2022-23)

	2023-24	2024-25	2025-26	2026-27	2027-28
Residential Bills					
Revenue Proposal (31 January 2022)	1,643.37	1,643.33	1,643.33	1,642.84	1,645.88
Impact of Humelink CPA1	-	2.80	2.80	2.79	2.04
Updated typical customer bill	1,643.37	1,646.13	1,646.13	1,645.62	1,647.93
Small Business Bills					
Revenue Proposal (31 January 2022)	7,021.97	7,021.83	7,021.83	7,019.97	7,031.35
Impact of Humelink CPA1	-	10.45	10.45	10.41	7.64
Updated typical customer bill	7,021.97	7,032.28	7,032.28	7,030.38	7,038.99

5.1. Commercial viability of the Project

We consider that HumeLink is in the long-term interests of consumers because it is integral to achieving AEMO's ODP. However, no matter how beneficial HumeLink and other major transmission projects will be to consumers, they must be commercially viable for in order to proceed. There are two elements to commercial viability:

- The allowed return must be reasonable – it must match the market (risk reflective) cost of capital, and
- The regulatory allowance must be provided in a way that enables network businesses to maintain the benchmark BBB+ investment grade credit rating while funding network augmentation projects.

No business could be reasonably expected to pursue a project that is forecast to generate less than the return that investors in the market would reasonably require, given the risk associated with that project.

We do not consider the current regulatory arrangements in relation to commercial viability are adequate for major transmission projects and have set out our positions in regulatory reviews that are currently underway, which are considering these matters, including:

- the AER's 2022 RoRI review, and
- the AEMC's Transmission Planning and Investment Review.

6. Guide to compliance

Table 14 list the NER requirements for a CPA, and where we have addresses these in our Application

Table 14: Compliance with NER requirements

NER, clause 6A.8.2(b) requirements	Reference in Application
(1) an explanation that substantiates the occurrence of the trigger event	Chapter 3
(2) a forecast of the total capex for the contingent project	Chapter 4
(3) a forecast of the capital and incremental opex, for each remaining regulatory year which the Transmission Network Service Provider considers is reasonably required for the purpose of undertaking the contingent project	Chapter 4
(4) how the forecast of the total capex for the contingent project meets the threshold as referred to in clause 6A.8.1(b)(2)(iii)	Chapter 4
(5) the intended date for commencing the contingent project (which must be during the regulatory control period)	Chapter 3
(6) the anticipated date for completing the contingent project (which may be after the end of the regulatory control period) and	Chapter 3
(7) an estimate of the incremental revenue which the Transmission Network Service Provider considers is likely to be required to be earned in each remaining regulatory year of the regulatory control period as a result of the contingent project being undertaken as described in subparagraph (3), which must be calculated: (i) in accordance with the requirements of the post-tax revenue model referred to in clause 6A.5.2 (ii) in accordance with the requirements of the roll forward model referred to in clause 6A.6.1(b) (iii) using the allowed rate of return for that Transmission Network Service Provider for the regulatory control period as determined in accordance with clause 6A.6.2 (iv) in accordance with the requirements for depreciation referred to in clause 6A.6.3, and (v) on the basis of the capex and incremental opex referred to in subparagraph (b)(3).	Chapter 5 and Appendix A

Table 15 lists the CPA requirements in the AER's Guidance Note and where we have addressed these in our Stage 1 Application.

Table 15: Compliance to AER Guidelines

AER Guideline requirement	Reference in Application
Stakeholder engagement (section 2.2)	
Overview of stakeholder engagement approach and feedback received	Chapter 3 and our Scope definition document.
Project governance (section 2.4)	
Project governance framework and processes, including key roles, accountabilities and responsibilities	Our project governance framework has been provided in previous CPAs and is principally unchanged.
Project (including risk) reporting, monitoring and evaluation arrangements	
Any supporting assurance arrangements	
Project Plans (section 2.4.2)	
High level delivery schedule, with key milestones and timeframes	Our Scope definition document provides a high-level delivery schedule, with key milestones and timeframes for each of the work programs
Key dependencies and decision points for the project	
Project resourcing and capability arrangements	
Risk management framework and plan (see also section 2.6.3 - 'Risk management')	
Established arrangements for post completion project review	
Procurement strategy, processes, and outcomes (section 2.5)	
Overview of procurement strategy, including scope of work packages	Our procurement process is outlined in our Capex Forecasting Methodology (see Appendix B)
Tender Evaluation Plan(s), including roles and responsibilities of evaluation team	
Overview of procurement process(es), including summary of activities and timeline	
Outcomes of procurement activities	
Tender Evaluation and Probity Report(s)	
Risk assessment (section 2.6)	
Detailed risk register containing identifiable projects risks, and	

AER Guideline requirement	Reference in Application
A summary of the efficient mitigation steps taken for the relevant risks	The risk assessments will be developed during the D&A phase for the Stage 2 CPA. Risk in the Stage 1 CPA has been considered for each activity and associated cost using a qualitative approach to determining the mid-point (i.e. P50) estimate of the forecast costs.
An assessment for each residual risk	
Assessment of the risks captured in contractors' scopes of work	

Appendix A Revenue Application

This Appendix A sets out our incremental revenue forecast for the Stage 1 (early works), having regard for clause 6A.8.2(b)(9) of the NER.

As discussed in Chapter 5, although we are seeking an adjustment to our 2018-23 capex allowance, we are not seeking any adjustment to our 2018-23 MAR or tariffs, because our tariffs for the 2022-23 year (i.e. the last year of the 2018-23 regulatory period) will be finalised before the AER makes its determination on our Stage 1 (early works) application.

Therefore, this Appendix A shows:

- The impact to *unsmoothed* revenue (i.e. the Aggregate Building Block Revenue Requirement (ABBRR)) over the 2018–23 regulatory period, and
- The impact to MAR (or *smoothed* revenue) over the 2023–28 regulatory period.

Table 16 sets out the incremental MAR for Stage 1(early works) for the 2023-28 regulatory period. This has been calculated using the PTRM included with Transgrid's Revenue Proposal for the 2023–28 regulatory period.[64]

Table 16 – Incremental MAR ($M, Nominal)

MAR (Smoothed Revenue)	2023-24	2024-25	2025-26	2026-27	2027-28	Total
2023-28 proposal	797.63	816.37	835.55	855.19	903.38	**4,208.13**
Impact of Stage 1 (early works)	-	18.52	18.95	19.40	14.67	**71.53**
Updated MAR	**797.63**	**834.89**	**854.51**	**874.59**	**918.05**	**4,279.66**

The rest of this Appendix A:

- identifies the weighted average cost of capital (WACC) and standard asset life assumptions adopted for the 2018–23 regulatory period
- sets out projected regulatory depreciation, tax allowance, debt and equity raising costs, unsmoothed revenue requirements and MAR for the 2018–23 regulatory period, and
- details the potential customer bill impact from the incremental revenue requirements resulting from the Project for the 2023–28 regulatory period.

[64] Throughout this Appendix A we refer to the PTRM included with Transgrid's Revenue Proposal for the 2023–28 regulatory period as the '2023-28 proposal'. We have also presented any revenue forecasts in end of year nominal terms. This differs from how we presented that revenue in the Revenue Proposal, which were in middle of the year nominal terms.

A.1 WACC

We have calculated the incremental revenue for Stage 1(early works) using the same WACC assumptions as those adopted by the AER in its 2018-23 Revenue Determination, updated for the 2022-23 return on debt averaging period. This is consistent with the requirements of clause 6A.8.2(b)(4)(ii) of the NER.

The WACC parameters are set out in Table 17.

Table 17 – WACC parameters

Parameter	AER Approved Value	
Forecast inflation	2.45%	
Value of imputation credits	40.00%	
Gearing	60.00%	
Nominal pre-tax return on debt	5.97%	for 2018-19
	5.77%	for 2019-20
	5.41%	for 2020-21
	4.96%	for 2021-22
	4.66%	for 2022-23
Nominal post-tax return on equity	7.40%	
Nominal vanilla WACC	6.54%	for 2018-19
	6.42%	for 2019-20
	6.21%	for 2020-21
	5.94%	for 2021-22
	5.75%	for 2022-23

A.2 Asset lives

We have allocated our forecast capex for Stage 1 (early works) across regulatory asset classes, as detailed in our Capex Forecasting Methodology, provided as an attachment to this Application. Capex is depreciated in the PTRM using the standard asset lives used in the AER's 2018-23 Revenue Determination, except for equity raising costs.

The standard life for this asset class was updated from 'n/a' to 40.3 years using the approach adopted by the AER in its recent determinations. The applicable standard asset lives are set out in Table 18.

Table 18 – Asset lives

Asset Category	Standard Life (years)	Explanation
Transmission lines	50	As per the AER's 2018-23 Revenue Determination
Substations	40	
Land and easements	n/a	
Equity raising costs	40.3	As per recent AER decisions, this is calculated as the weighted average standard life for forecast net commission capex[65]

Note: Only asset classes that attract the Project capex are shown.

A.3 Incremental regulatory depreciation

Table 19 sets out our forecast incremental regulatory depreciation for the 2018-23 regulatory period for Stage 1 (early works), consistent with clause 6A.8.2(b)(7)(iv) of the NER. This forecast has been calculated using the AER's most recent PTRM for the 2018–23 period, [66] projected incremental capex, and the asset lives in section A.2.

Incremental regulatory depreciation is negative over the 2018-23 regulatory period. This is because the long-lived nature of the assets leads to indexation being higher than real straight-line depreciation earlier in the lives of those assets. This relationship will reverse later in the assets' lives, leading to positive regulatory depreciation.

Table 19 – Incremental regulatory depreciation ($M, Nominal)

	2018-19	2019-20	2020-21	2021-22	2022-23	Total
AER 2018-23 determination (updated for 2022-23 RoD)	101.23	118.75	129.10	122.42	114.18	**585.68**
Impact of Stage 1 (early works)	-	(0.01)	(0.24)	(0.66)	(1.90)	**(2.81)**
Updated regulatory depreciation	**101.23**	**118.73**	**128.86**	**121.76**	**112.28**	**582.87**

[65] See, for instance, AER, April 2019, *Final Decision, Power and Water Corporation, Post-tax Revenue Model,* PTRM input sheet, W327 cell. Net commissioned capex was used in the weighted average, rather than net as incurred capex, as the former is used to calculate regulatory depreciation in the 'Assets' sheet of our PTRM.

[66] Throughout this Appendix A we refer to the AER 2018–23 determination updated for the 2019-20, 2020-21, 2021-22, and 2022-23 return on debt estimates and the AER's recent determinations on the QNI, VNI, and PEC CPAs as the 'AER 2018-2023 determination (updated for the 2022-23 ROD)'.

A.4 Tax allowance

Table 20 sets out the incremental forecast net tax allowance for the 2018-23 regulatory period attributed to Stage 1 (early works). This has been calculated using the PTRM and projected incremental capex.

We have not made any other changes to the net tax calculation from that used in the AER's 2018-23 Revenue Determination.

Table 20 – Incremental net tax allowance ($M, Nominal)

	2018-19	2019-20	2020-21	2021-22	2022-23	Total
AER 2018-23 determination (updated for 2022-23 RoD)	31.70	33.11	34.78	37.27	40.33	**177.18**
Impact of Stage 1 (early works)	-	(0.11)	(0.10)	(0.08)	(0.02)	**(0.32)**
Updated net tax allowance	**31.70**	**32.99**	**34.68**	**37.19**	**40.30**	**176.86**

A.5 Debt and equity raising costs

Our forecast incremental revenue includes allowances for debt and equity raising costs, consistent with the AER's 2018-23 Revenue Determination. Both costs are calculated automatically within the PTRM.

Debt raising costs are included within the opex building block and are calculated as follows:

- projected opening RAB at the start of each regulatory year is multiplied by assumed gearing (of 60%) and the debt raising cost benchmark (of 0.085%).
- Equity raising costs are included within the capex forecast and recovered via the return on and of capital building blocks. These costs are calculated as follows:
    - retained cash flows are projected by subtracting opex, interest payments, revenue adjustments, tax payable, and dividends from projected smoothed (i.e. MAR) revenue
    - equity raising is projected by subtracting retained cash flows from the equity funding component of projected capex (assuming 60% gearing), and split between distribution reinvestment and external equity raising sources, and
    - equity raising costs are calculated by multiplying the two sources by assumed benchmark equity raising cost rates.

Although no equity raising costs were projected in the AER's original 2018-23 Revenue Determination in May 2018, this was updated as part of the AER's determination on the Project EnergyConnect CPA. Because the Stage 1 (early works) adds to the projected funding requirements over the 2018–23 regulatory period, the PTRM projects that some incremental equity raising will be required. This attracts equity raising costs.

Table 21 – Incremental debt and equity raising costs ($M, Real 2017-18)

	2018-19	2019-20	2020-21	2021-22	2022-23	Total
Debt raising costs						
AER 2018-23 determination (updated for 2022-23 RoD)	3.32	3.44	3.61	3.92	4.61	**18.90**
Impact of Stage 1 (early works)	-	0.00	0.01	0.02	0.04	**0.07**
Updated debt raising costs	**3.32**	**3.44**	**3.62**	**3.94**	**4.65**	**18.97**
Equity raising costs						
AER 2018-23 determination (updated for 2022-23 RoD)	16.30	-	-	-	-	**16.30**
Impact Stage 1 (early works)	3.06	-	-	-	-	**3.06**
Updated equity raising costs	**19.36**	**-**	**-**	**-**	**-**	**19.36**

A.6 Incremental revenue requirements for each year to end of period

Table 22 details the incremental ABBRR for Stage 1 (early works) for the 2018-23 period based on the forecasts provided above and using the PTRM.

Table 22 – Incremental revenue requirements ($M, Nominal)

	2018-19	2019-20	2020-21	2021-22	2022-23	Total
AER 2018-23 determination (updated for 2022-23 RoD)						
Return on capital	416.77	418.43	420.75	433.53	493.06	**2,182.54**
Regulatory depreciation	101.23	118.75	129.10	122.42	114.18	**585.68**
Opex	179.86	187.59	196.82	211.23	208.31	**983.82**
Revenue adjustments	4.71	18.53	5.37	12.71	5.14	**46.46**
Net tax allowance	31.70	33.11	34.78	37.27	40.33	**177.18**
Unsmoothed revenue requirement	**734.28**	**776.40**	**786.83**	**817.16**	**861.02**	**3,975.69**

	2018-19	2019-20	2020-21	2021-22	2022-23	Total
Impact of Stage 1 (early works)						
Return on capital	-	0.24	0.81	1.80	4.66	**7.51**
Regulatory depreciation	-	(0.01)	(0.24)	(0.66)	(1.90)	**(2.81)**
Opex allowance	-	0.00	0.01	0.02	0.04	**0.07**
Revenue adjustments	-	-	-	-	-	**-**
Net tax allowance	-	(0.11)	(0.10)	(0.08)	(0.02)	**(0.32)**
Unsmoothed revenue requirements	**-**	**0.12**	**0.48**	**1.07**	**2.78**	**4.45**
Updated						
Return on capital	416.77	418.67	421.56	435.33	497.72	**2,190.06**
Regulatory depreciation	101.23	118.73	128.86	121.76	112.28	**582.87**
Opex allowance	179.86	187.59	196.83	211.24	208.36	**983.89**
Revenue adjustments	4.71	18.53	5.37	12.71	5.14	**46.46**
Net tax allowance	31.70	32.99	34.68	37.19	40.30	**176.86**
Unsmoothed revenue requirements	**734.28**	**776.52**	**787.31**	**818.23**	**863.80**	**3,980.14**

A.7 Amended ABBRR and MAR

The AER's final decision on the ABBRR for the 2018-23 regulatory period is set out in Table 23, together with the calculation of the amended revenue required for Stage 1 (early works).

Table 23 – Amended ABBRR ($M, Nominal)

	2018-19	2019-20	2020-21	2021-22	2022-23	Total
AER 2018-23 determination (updated for Project EnergyConnect CPA)	734.28	776.40	786.83	817.16	861.02	**3,975.69**
Impact of Stage 1 (early works)	-	0.12	0.48	1.07	2.78	**4.45**
Updated annual revenue requirements	**734.28**	**776.52**	**787.31**	**818.23**	**863.80**	**3,980.14**

Table 24 sets out the updated MAR for the current regulatory period.

Due to the timing of the CPA and the requirements of clause 6A.8.2(n) of the NER, we will only begin to recover incremental revenue approved by the AER in the 2024-25 regulatory year, in accordance with our approved Transmission Pricing Methodology. As shown in Table 24, we will not recover any incremental revenue over the 2018–23 regulatory period.

Table 24 – Amended MAR for the 2018–23 regulatory period ($M, Nominal)

MAR (Smoothed Revenue)	2018-19	2019-20	2020-21	2021-22	2022-23	Total
AER 2018-23 determination (updated for the Project EnergyConnect CPA)	734.28	759.55	779.49	809.14	897.78	**3,980.23**
Impact of State 1 (early works)	-	-	-	-	-	**-**
Updated MAR	**734.28**	**759.55**	**779.49**	**809.14**	**897.78**	**3,980.23**