

A.1 HumeLink – Stage 2 (Delivery) – Draft Contingent Project Application

Principal application document

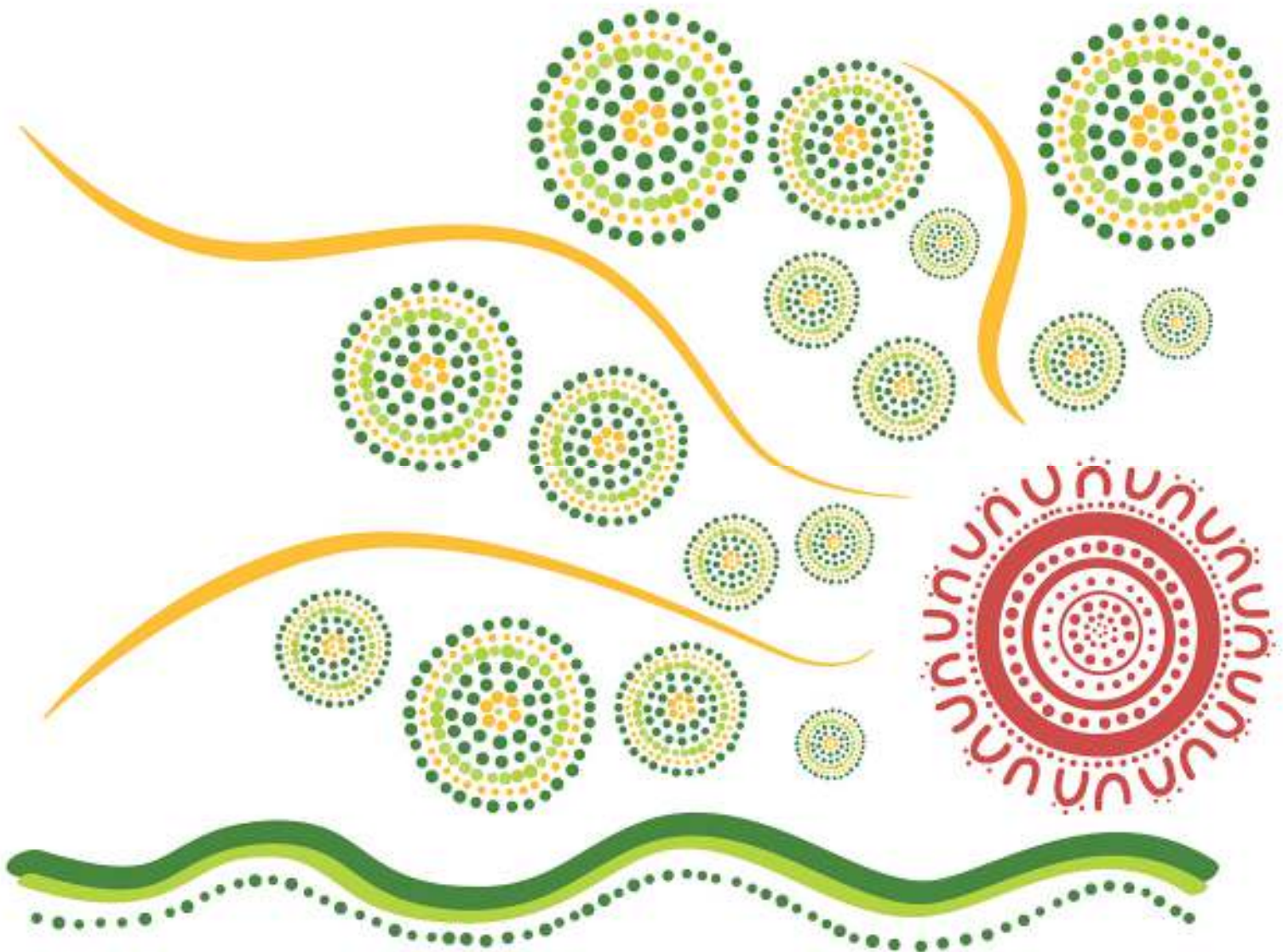
8 December 2023



Acknowledgement of Country

In the spirit of reconciliation Transgrid acknowledges the Traditional Custodians of the lands where we work, the lands we travel through and the places in which we live.

We pay respects to the people and the Elders, past, present and emerging and celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands and waters of NSW and ACT.



Contents

A message from our CEO.....	1
Executive Summary	4
Draft Application and timing.....	5
Our Stage 2 Application is informed by our Stage 1 Early Works	5
Material change in circumstances assessment.....	6
AEMO feedback loop confirmation.....	7
Pre-lodgement stakeholder engagement and how to provide feedback	7
Humelink is a project of national significance	8
Scope of our Stage 2 activities.....	9
Stage 2 forecast capex.....	10
Basis of capex estimate.....	11
Stage 2 forecast opex.....	13
Incremental Revenue requirement and customer bill impact.....	13
Customer consultation and support.....	14
Capital Expenditure Sharing Scheme (CESS).....	15
Commercial viability of the Project	16
1. Introduction	19
1.1. Draft Application and timing	19
1.2. Our Stage 2 Application is informed by our Stage 1 early works	19
1.3. Pre-lodgement stakeholder engagement and how to provide feedback	20
1.4. This Principal Application	20
1.5. AEMO feedback loop confirmation.....	22
1.6. Compliance with the NER	22
1.7. Structure of this document	22
1.8. Structure of the Stage 2 Application for Humelink	23
2. Project Overview	26
2.1. A project of national significance.....	26
2.2. aterial change in circumstances	27
3. Regulatory Requirements	29
3.1. Regulatory requirements.....	30
3.2. Trigger events.....	31
3.3. Project timing.....	33
3.4. Customer and other Stakeholder engagement.....	33

4. Capex forecast.....	39
4.1. Our Stage 2 forecast capex	40
4.2. Basis for capex forecast.....	42
4.2.1. Our approach to design and construction activities and costs.....	44
4.2.2. LLE	51
4.2.3. Other construction costs.....	51
4.2.4. Easement acquisition	55
4.3. Biodiversity offset costs.....	56
4.3.1. Labour and indirect costs	56
4.4. Independent engineering verification of our Stage 2 Capex (delivery).....	57
4.5. Capex threshold	57
4.6. Application of the CESS	58
5. Opex forecast	60
5.1. Our stage 2 Opex forecast.....	61
5.2. Basis of opex forecast.....	62
6. Forecast Revenue and impact on customers' bills.....	63
7. Guide to compliance.....	67
Appendix A Revenue Application	70
A.1 Weighted average cost of capital (WACC).....	71
A.2 Asset lives	72
A.3 Incremental regulatory depreciation	73
A.4 Tax allowance	73
A.5 Debt and equity raising costs.....	73
A.6 Incremental revenue requirements for each year to end of period	75
A.7 Amended ABBRR and MAR	76
8. Abbreviations	77

This page is intentionally left blank.

A message from our CEO

I am delighted to provide our draft Contingent Project Application (draft Application) for the delivery of Humelink, which will be our largest capital project since construction of our existing network. It involves around 360km of new 500 kV transmission lines connecting the greater Sydney load centre with the Snowy Mountains Hydroelectric Scheme and Project EnergyConnect.

We recognise the urgency of the energy transition and are strongly committed to playing our role in the delivery of transmission infrastructure to achieve AEMO's Optimal Development Path. We stand ready to begin delivery of Humelink, which AEMO considers to be in the long-term interests of Australian energy consumers and critical to secure reliable, renewable energy for more than eight million people across New South Wales as the Australian energy sector adjusts to the inevitable retirement of aged coal-fired power plants.

We acknowledge that HumeLink is a significant investment for NSW consumers. We also appreciate the Government's acknowledgement of the financeability issues facing TNSPs in the development of these nation-critical mega projects and the creation of the Rewiring the Nation fund to support accelerated delivery, while longer-term regulatory reform is undertaken to resolve the financeability challenges of these mega projects.

We also acknowledge the concerns of communities and landowners about the impacts of Humelink. We have been rigorous to ensure that:

- We have undertaken significant community, stakeholder and consumer representative engagement and selected the route that best balances cost, environmental impacts and amenity impacts for local communities;
- Every practicable opportunity has been taken to reduce the cost to consumers, including embedding innovation in the design and technical solutions to deliver the most cost-efficient outcome, locking in long-lead equipment on a program basis to reduce cost and time and engaging reputable delivery partners via a competitive process;
- Our contracting model aligns our objectives with those of our delivery partners and consumers, with in-built incentives to deliver Humelink at the lowest cost; and
- Foreseeable risks have been appropriately accounted for and mitigated wherever possible.

These initiatives and others have resulted in a design, project plan, procurement and contracting model that, based on our many decades of experience, collectively provide, the best solution, to the significant challenges they seek to address, at the lowest possible cost to consumers while meeting the ISP timetable. This approach is also consistent with the National Electricity Objective to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers. It covers price, quality, safety, reliability, and security of supply of electricity as well as the reliability, safety and security of the national electricity system.

More specifically, these initiatives together with the outcomes from our early works activities, had at the time of contractual commitment, reduced the overall cost for consumers by \$322 million comprising:

- \$237 million from adopting variable rather than fixed-cost design and construction contracts with our preferred delivery partners, which has allowed them to offer a lower contract price than they otherwise would if they were forced to price in the risk costs through a fixed-price contract, and
- \$85 million, from our program approach to securing long-lead equipment, which has enabled us to accelerate the delivery of transmission infrastructure and drive costs down through economies of scale and consistency in scope.

We plan to submit our feedback loop request to AEMO, subsequent to this draft submission. AEMO has indicated that it intends to publish its feedback loop confirmation alongside its Draft 2024 Integrated System Plan in mid to late December 2023. AEMO's Draft 2024 Integrated System Plan will take into account the updated costs of Humelink (as reflected in this Application) and all other major projects as well as the latest expected timing of wider developments in the NEM, including the revised delivery date for Snowy 2.0.

Separately, we are currently updating the Regulatory Investment Test analysis for Humelink to confirm that, notwithstanding the updated delivery cost, there is no change in the preferred option. We intend to publish this analysis as soon as it is completed.

We stand ready to proceed with the delivery of Humelink for the benefit of consumers and to advance Australia's emission reduction targets. However, financeability of Humelink remains a key challenge. We have been working with the Clean Energy Finance Corporation (CEFC) to develop a concessional financing package via the Rewiring the Nation program and are pleased to confirm that we have some initial terms that will greatly assist Transgrid to make the significant financial commitment required to deliver this multi-billion-dollar nation-critical project. Given the current economic conditions however, the Rewiring the Nation fund is limited in its ability to provide a complete resolution to the financeability issue, as such we appreciate the AER's consideration of limited further support to enable the Humelink project to be financed.

To ensure we are best able to commence construction of Humelink following AEMO's feedback loop confirmation, we respectfully request the following:

- approval from the AER for incremental revenue commensurate with the capital and operating costs of Humelink as we have proposed in this draft Application;
- confirmation from the AER that the CESS regime will not apply in relation to Humelink, given critical differences in the scale and complexity of Humelink relative to the context in which CESS was designed to apply;
- approval from the AER for the establishment of a new asset class for biodiversity offsets to enable depreciation of these costs over the weighted average of the standard lives of all other depreciating assets;
- approval from the AER to adopt as incurred depreciation for all depreciable asset classes.

We have worked closely with our investors in developing this draft Application. Our investors are well across the equity investment required to deliver Humelink and plan to progress their equity commitments through their internal approval processes based on the risk profile contemplated in



our draft Application and based on the confirmation of Transgrid's Baa2 or equivalent rating. Binding equity commitments will be sought at the time of a final investment decision.

As a pivotal component of AEMO's Optimal Development Path to support the energy transition, Transgrid proudly stands ready to deliver this nation-critical project.

Brett Redman
Chief Executive Officer
December 2023



Docup Road

Executive summary

Executive Summary

Draft Application and timing

We are pleased to provide our draft Contingent Project Application for the delivery (Stage 2 Application or CPA-2) of Humelink (Humelink or the Project). This is the Principal Application document, which sets out our proposed expenditure, the associated incremental revenue requirements and the indicative customer bill impacts for Stage 2, delivery activities.

We are committed to meeting the delivery date for Humelink of July 2026 in the Australian Energy Market Operator's (AEMO) Final 2022 Integrated System Plan (2022 ISP). AEMO recently highlighted the importance of delivering Humelink and other actionable transmission projects in the 2022 ISP on time, if reliability risks are to be avoided.¹ Delivering Humelink by July 2026 will ensure that its benefits are delivered as soon as possible at the lowest sustainable cost to consumers, providing reliability of supply and facilitating significant access to renewable energy.

As evidence of our strong commitment to delivering this project, we have worked with our stakeholders to prepare and publish this draft Stage 2 Application prior to feedback loop confirmation. This is intended to enable timely stakeholder feedback and sufficient time for the AER to make its Determination on our Stage 2 Application by 29 March 2023 and help meet the 2022 ISP time frames.

The AER's approval of our prudent and efficient expenditure forecasts, and the resultant changes in our revenues and prices as set out in this Principal Application document, are pre-conditions for the execution of the Notice to Proceed to Stage 2 (or NTP-2) with our design and construction (D&C) contractors (or delivery partners) for the Stage 2 activities. Our contractual arrangements with our D&C contractors require us to execute the contract by July 2024. We will incur significant penalties under the contract for every day the agreement is delayed beyond this date. Receiving the AER's Decision by 29 March 2024 is the latest possible date to enable us to finalise matters, including our funding arrangements, to meet the July 2024 contract execution timeframe. This contractual arrangement reflects the timing we have imposed on our D&C contractors to construct the project to meet the July 2026 delivery date and lock in contract terms early to avoid cost escalation.

The costs in this draft Application reflect the Stage 2 activities associated with the delivery of Humelink, which involves the construction of the new 500kV transmission line linking the Greater Sydney load centre with the Snowy Mountains Hydroelectric Scheme and Project EnergyConnect (PEC or EnergyConnect) in southwest New South Wales (NSW).

Our Stage 2 Application is informed by our Stage 1 Early Works

Our Stage 2 forecast expenditure, which reflects the bulk of the Project's costs, is informed by the outcomes from our Stage 1 activities, which we have been progressing in line with the AER's Decisions on our Stage 1 (Part 1) and (Part 2) Applications. In particular, the AER approved:

- \$380.83 million in its August 2022 Final Decision on our Stage 1 (Part 1) Application,² which is enabling us to undertake a range of Stage 1 activities including project design, stakeholder engagement, land-use planning and approvals and acquisition and project management,³ and

¹ AEMO, *2023 Electricity Statement of Opportunities*, August 2023, p. 11, p. 96-99. AEMO's analysis takes into account a delayed commissioning date for Snowy 2.0 of December 2029.

² AER, [Humelink Early Works Contingent Project Determination](#) (Humelink CPA-1 Part 1 Decision), August 2022

³ The \$380.83 million (\$Real 2022-23) is equivalent to \$321.87 million (\$Real 2017-18)

- \$227.9 million in its August 2023 Final Decision on our Stage 1 (Part 2) Application.⁴ This enabled us to procure long-lead equipment (LLE) for transformers, reactors, conductors and steel towers through our Powering Tomorrow Together (PTT) program. We initiated the PTT program to accelerate the delivery of transmission infrastructure across all of the actionable ISP projects we are delivering and drive costs down through economies of scale and scope.

We expect to complete our Stage 1 activities by July 2024. We have been keeping the AER and the Transgrid Advisory Council (TAC) updated with our progress, key learnings and outcomes from these activities. Our Stage 1 activities have allowed us to invest time in the planning and design phase, continue to consult with stakeholders, identify and quantify project risks and select our D&C contractors through a competitive two-stage Early Contractor Involvement (ECI) process.

Our Stage 1 activities have resulted in our Stage 2 capex forecast being in line with an AACE⁵ class 2 to 3 cost estimate, to provide the necessary cost certainty that consumers will not be over-or-under investing in the Project.

Material change in circumstances assessment

The Regulatory Investment Test for Transmission (RIT-T) Project Assessment Conclusions Report (PACR),⁶ identified Humelink (Option 3C) as the preferred option for reinforcing the southern shared network.

Through our early works, we have refined the cost of delivering Humelink. The total cost to deliver Humelink based on our Stage 1 (early works) and Stage 2 (delivery) Applications is \$4.92 billion. This is around 29 per cent higher than the cost estimate of \$3.82 billion⁷ in the PACR, which was published in July 2021 and did not reflect current global supply chain, socio-political events and labour costs. This increase is in line with the overall cost increase of around 30 per cent for energy infrastructure projects across all elements of the supply chain over the last two years.⁸

Humelink is expected to provide significant value to the National Electricity Market (NEM) acting as the 'link' between Project EnergyConnect PEC, VNI West and the Sydney Ring. This is recognised by the Federal Government, which has supported Humelink through the Rewiring the Nation Fund, acknowledging the Project's key role in strengthening and reconfiguring the NEM to ensure continued reliability through the energy transition.

AEMO's 2022 ISP assessed the net market benefits of the Project at that time to be \$1.3 billion, highlighting that it is the only project that could be delivered in the critical period that directly addresses the risk of limited dispatchable capacity.

Since the 2022 ISP, the recognition of the need for investment that can deliver the following benefits has increased:

- provide resilience to early coal closures
- support Government's emissions reduction targets by supporting renewables
- support electrification of the economy, and

⁴ AER, [Humelink Early Works Stage 1 \(Part 2\) Contingent Project Determination \(Humelink CPA-1 Part 2\)](#), August 2023

⁵ Association for the Advancement of Cost Engineering (AACE) International – cost estimation classification system

⁶ The PACR was published in July 2021. A subsequent Addendum was published in December 2021.

⁷ This is equivalent to \$3.27 billion in Real 2019-20.

⁸ Infrastructure Australia, [2022 Infrastructure Market Capacity Report](#), December 2022. This found that the costs for construction materials has risen by an average of 24 per cent in the last 12 months and labour demand is more than double the projected available supply.

- ensure reliable and secure supply in light of rising demand.

Prior to lodging our final Stage 2 Application, we expect AEMO to have published the Draft 2024 ISP, taking into account the updated costs of the Project as well as the updated costs and timings of other major developments in the NEM more widely, and the revised delivery timing for Snowy 2.0. We expect the analysis in the Draft 2024 ISP to confirm that the Project continues to provide net benefits to the market and remains a key component of the ISP ODP.

Notwithstanding, given the increase in estimated costs of the Project since the PACR we are currently updating the RIT-T NPV analysis to confirm that there is no change in the preferred option. This would meet the Material Change in Circumstances (MCC) requirements as contemplated under NER 5.16A(n) v202. This analysis will utilise the latest available information from AEMO and will reflect updated cost estimates for all credible options assessed in the PACR addendum. We intend to publish this analysis as soon as it is completed.

AEMO feedback loop confirmation

Positive written feedback loop confirmation from AEMO is required to satisfy the trigger events for actionable ISP projects.⁹ These trigger events must be satisfied prior to us submitting our formal Stage 2 Application to the AER.

The purpose of the feedback loop is to assess whether, at the revised cost in this Stage 2 Application, Humelink remains on the ODP.

We will submit our feedback loop request to AEMO shortly after this draft submission and have advised AEMO on the updated costs of the Project. AEMO has informed us that it will undertake its feedback loop assessment using its 2023-24 IASR and its Draft 2024 ISP, which will be published by 15 December 2023. AEMO intends to publish its written feedback loop response alongside its Draft 2024 ISP.

Given the timing of AEMO's written feedback loop response, which in turn determines the timing of our formal Stage 2 Application, we have sought to promote transparency, timely feedback and evaluation, by publishing this draft Stage 2 Application now.

Pre-lodgement stakeholder engagement and how to provide feedback

Stakeholder engagement during the development of this draft Stage 2 Application has been significant and feedback from the community, landowners, the TAC and deep dives with the AER and TAC on key aspects has helped inform our approach to this significant investment on behalf of consumers. We invite further feedback from the AER, our customers and other stakeholders on this draft to inform our final Stage 2 Application.

We acknowledge the AER's formal decision-making process will commence once it receives our final Stage 2 Application in December 2023. Early feedback on this draft Application may assist to expedite the AER's determination process, noting that a timely decision from the AER is crucial to provide the revenue certainty needed for us to proceed with the delivery of the project, and to avoid delay costs under the D&C contracts with our delivery partners.

Please share with us your views and position on this draft Application by email at: regulatory.consultation@transgrid.com.au by 22nd December 2023. This will allow us to consider the feedback we receive during our formal Stage 2 Application which we will submit to the AER following

⁹ Rule 5.16A.5 Actionable ISP project trigger event.

feedback loop confirmation from AEMO. The Stage 2 Application will be placed on formal exhibition for the full statutory period of four weeks.

Humelink is 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.¹⁰ It is a key component of the energy market transition and will reinforce the southern shared network, which transports electricity to major population centres from generators across southern NSW as well as electricity imported from Victoria and South Australia. 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 create 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 NSW Government has declared Humelink as Critical State Significant Infrastructure (CSSI) for NSW.¹¹ The Australian Government also identified Humelink in Australia's Long-Term Emissions Reduction Plan, which found that Humelink is needed to strengthen the network in southern NSW and transport renewable energy to consumers from new projects, including Snowy 2.0.¹²

Humelink has been a key project in AEMO's ISPs since 2018. AEMO's 2022 ISP reconfirmed the need for Humelink given its key strategic value for the NEM and the benefits it will provide to consumers.¹³ We expect the analysis in the Draft 2024 ISP to confirm that the Project continues to provide net benefits to the market and remains a key component of the ODP.

AEMO's 2022 ISP defined Humelink as a staged actionable ISP project, without decision rules.¹⁴ The project stages and target timing identified in the 2022 ISP are:¹⁵

- Stage 1 – complete the early works by approximately 2024, and
- Stage 2 – deliver the Project by July 2026, subject to feedback loop confirmation by AEMO.

AEMO's update to its 2022 Electricity Statement of Opportunities (ESOO) noted that Humelink has 'the potential to significantly reduce the projected reliability risk' for NSW notwithstanding the NSW Electricity Infrastructure Roadmap developments, including the Waratah Super Battery.¹⁶ The 2023 ESOO (which takes into account a delayed commissioning date for Snowy 2.0 of December 2029) highlighted the continuing importance of delivering Humelink and other actionable transmission projects in the 2022 ISP on time, if reliability risks are to be avoided.¹⁷

This Application covers the Stage 2 activities for the Project, which will enable us to complete its construction.

¹¹ Section 5.3 of the Environmental Planning and Assessment Act 1979 (NSW) on 9 March 2018

¹² Australian Government, [Australia's long-term emissions reduction plan – a whole-of-economy plan to achieve net zero emissions by 2050](#), 2021

¹³ AEMO, 2022 ISP, June 2022, p. 13

¹⁴ AEMO, [2022 Integrated System Plan](#) (2022 ISP), June 2022, p.13.

¹⁵ AEMO, [2022 ISP](#), June 2022, p. 67 and 68

¹⁶ AEMO, [Update to 2022 Electricity Statement of Opportunities \(2023 ESOO\)](#), February 2023, p.12.

¹⁷ AEMO, 2023 ESOO, August 2023, p. 11, p. 96-99.

Unless otherwise stated, all expenditure forecasts in this Application are expressed in real 2022-23 dollars, and all revenue forecasts are expressed in nominal terms, consistent with our 2023-28 Revenue Determination.

Scope of our Stage 2 activities

Our Stage 2 activities have been carefully scoped and resourced through our Stage 1 activities and our PTT program to ensure that they are efficient and prudent and will deliver the Project at the lowest sustainable cost. In particular, through our Stage 1 activities, we have been able to:

- determine the prudent and efficient Stage 2 capex forecast in this draft Principal Application by refining the Project scope through further detailed design activities, route selection and the competitive Early Contractor Involvement (ECI) process
- secure cost savings for consumers from our programmatic approach to the ISP projects which we are responsible for delivering. Our PTT program involves the integrated delivery of Humelink, EnergyConnect and VNI West and has been established to accelerate the delivery of transmission infrastructure and drive costs down through economies of scale and scope. The cost saving in this draft Application for consumers from the PTT program is estimated to be \$85 million
- identify, explore and manage the project risks to mitigate and/or diversify the Project's risks so that the residual risk costs (or 'other construction costs') included in this draft Stage 2 Application are as low as possible
- progress activities on the critical path to ensure that construction can commence as soon as possible following the approval of our Stage 2 Application by the AER.¹⁸ These activities include selecting preferred delivery partners through the two-stage competitive ECI process, securing LLE, continuing to engage meaningfully with our stakeholders, preparing the Environmental Impact Statement (EIS) for public exhibition from 30 August 2023, and
- secure cost savings for consumers from negotiating an Incentivised Target Cost (ITC) D&C contract. An ITC D&C contract enables the contractors to offer a lower overall contract price than they otherwise would if they were forced to price in the risk costs (or 'other construction costs') though a fixed price D&C contract. The ITC D&C contract cost of [REDACTED] million included in this draft Stage 2 Application reflects a variable contract cost. If, however, the D&C contractors were required to offer a fixed price contract, then the D&C contract cost is expected to increase by around \$237 million or 8 per cent. The variable contract cost in this Revenue Proposal therefore provides consumers with a higher probability of a lower price outcome.

The cost savings for consumers achieved across our Stage 1 and 2 Applications for Humelink is \$322 million of the total \$500 million we have achieved through our PTT program to date.

In addition, we have estimated further cost savings of \$787 million from the investment synergies, which arise from concurrent investment in Humelink, Project EnergyConnect (PEC) and VNI West. In particular, our draft VNI West Stage 1 Application, which was published on 1 September 2023 includes D&C work packages for undertaking the Project EnergyConnect (PEC) enhancement and Gugaa integration:

- the PEC enhancement works are required to increase the capacity of the transmission line from the Dinawan Substation to Wagga Wagga from 330 kV to 500 kV, and

¹⁸ AEMO, 2022 ISP, June 2022, p.13. (See Table 1).

- the Gugaa integration works are required to connect the enhanced PEC component at the Gugaa substation, which is being constructed as part of Humelink.

Of the total cost saving of \$787 million, approximately \$697 million relates to the PEC enhancement and \$90 million relates to the Gugaa integration works. Our approach to delivering the actionable ISP projects for which we are responsible will ensure that overall, this suite of ISP projects is delivered at the lowest sustainable cost for consumers.

We are seeking the AER's approval for the costs of our Stage 2 activities, which comprise both direct and indirect activities:

- design and construction work including for substations, transmission lines and access tracks
- transportation/mobilisation (i.e., delivery), storage and installation of the LLE, which we secured in Stage 1
- Other construction costs to mitigate and manage risks that are expected to emerge during the delivery phase of the Project
- biodiversity offset costs for the impact of building Humelink on land known to contain certain plant and/or animal species (i.e., to offset our biodiversity liability under the NSW Biodiversity Conservation Act 2016)
- easement acquisition costs to compensate public and private land holders for acquiring easements over their land as well as costs for stamp duty, the value of timber taken, substitute forest land, disturbance costs, construction camps and laydown areas and overhead costs.
- Internal labour resources for undertaking project and commercial management, project control, design and construction, and corporate support (legal, regulatory, health safety and environment (HSE) and insurance), environmental and property, community and stakeholder engagement (CSE) and social licence activities, and
- Indirect activities for a wide range of professional and consulting services related to project and commercial management, project control, design and construction, corporate support (legal, regulatory, HSE and insurance), major project initiatives and CSE.

Stage 2 forecast capex

Table 0.1 shows that our total Humelink Stage 2 forecast capex is \$4,279.14 million, excluding equity raising costs. Our Stage 2 capex is incremental to the capex approved by the AER in its 2023-28 Revenue Determination because it relates to activities that are additional to our normal business activities and would not be incurred other than for undertaking Stage 2 activities for Humelink.

Table 0.1 Stage 2 capex (\$M, Real 2022-23, excluding equity raising costs)

Humelink	2023-24	2024-25	2025-26	2026-27	Total
Actual	-	-	-	-	-
Forecast	42.79	2,099.61	1,990.42	146.33	4,279.14
Total	42.79	2,099.61	1,990.42	146.33	4,279.14

Notes: 1. Including overheads, excluding equity raising costs. 2. Totals may not add due to rounding. 3. No actual costs for stage 2 activities have been incurred yet.

Our Stage 2 (implementation) capex of \$4,279.14 million includes:

- direct capex of \$3,867.55 million (90.38 per cent of Stage 2 capex), and
- labour and indirect capex of \$411.59 million (9.62 per cent of Stage 2 capex).

Our direct capex forecast of \$3,867.55 million comprises:

- \$3,232.80 million for tendered works, comprising:
 - █████ million (or █████ per cent of capex) for the preferred D&C contractors selected through the competitive two-stage ECI process to undertake the East and West contract packages involving the design and construction of substation and transmission line works including access tracks
 - █████ million (or 0.69 per cent of capex) for LLE for transformers, reactors and conductors. These costs relate to transportation/mobilisation (i.e., delivery), storage and installation of the equipment that was secured in Stage 1
 - \$599.07 million (or 14.00 per cent of capex) for the Other Construction costs associated with the delivery of Humelink within the delivery time and budget. These risks cover the reimbursable component of the D&C contracts, scope changes, project delay, biodiversity costs and inherent risks.
- \$634.76 million (or 14.83 per cent of capex) for acquiring easements and acquitting biodiversity offsets:
 - █████ million (█████ per cent of capex) for acquisition of easements. This relates to the payment of compensation to public and private land holders and other costs including stamp duty, the value of timber taken, substitute forest land, disturbance costs, construction camps and laydown areas and overhead costs.
 - █████ (█████ per cent of capex) to acquit our biodiversity offsets liabilities at the lowest possible cost. This includes establishing Biodiversity Stewardship Sites over the period from July 2024 to July 2026.

Our labour and indirect capex forecast of \$411.59 million (or 9.62 per cent) of capex:

- \$204.66 million or 4.78 per cent for labour related to internal resource requirements
- \$202.48 million or 4.73 per cent for indirect non-labour capex, relating to a wide range of professional and consulting services, as well as tender payments and associated facilities costs, and
- \$4.44 million or 0.10 per cent for labour escalation.

Basis of capex estimate

We have developed our forecast capex based on a detailed scope of works using methods that reflect the specific nature of the costs. This includes externally tendered (competitive) D&C contracts, manufacture and supply contracts, pricing from suppliers and independent specialist advice. Our D&C contractor costs have been independently verified by Fission, our independent cost estimator. GHD has independently verified our total capex forecast, by sub-category, as being reasonable. We are delivering Humelink at the lowest sustainable cost for consumers and have secured the following cost savings across Stage 1 and 2 of the Project:

- \$85 million for securing LLE through our PTT program (Stage 1 forecast capex), and
- \$237 million from adopting a variable ITC D&C contract rather than a fixed price D&C contract to deliver the design and construction for substations and transmission lines including access tracks (Stage 2 forecast capex), and

- \$90 million from undertaking the Gugga integration works as part of VNI West Stage 1 activities.

Table 0.2 summarises our Stage 2 forecast capex and the basis of our forecast capex for each capex subcategory.

Table 0.2: Stage 2 forecast capex – basis of estimate by sub-category of capex (\$M, Real 2022-23)

Category of capex	Forecast capex	Basis of capex forecast
Direct costs	3,867.55	
Tendered works	3,232.80	
West – Design, substations and transmission lines including access track	██████████	The outcome of the two-stage competitive ECI tender process (i.e., externally tendered D&C contractors' costs).
East – Design, substations and transmission lines including access track	██████████	
LLE (excluding towers)	██████████	Agreements with suppliers, which were competitively tendered.
Other construction costs ¹	599.07	Detailed probabilistic risk assessment (Monte Carlo analysis) using rates included in the D&C contractors' responses where activities are the same or similar, and our independent cost estimator Fission.
Easement and biodiversity offset costs	634.76	
Easement acquisition	██████████	Options agreements and an independent report from JLL.
Biodiversity offset costs	██████████	An independent report from Niche, which has been verified by WSP.
Labour and indirect costs	407.14	
Labour costs	204.66	Bottom-up build of internal resource requirements and market labour rates over the period.
Indirect costs	202.48	Bottom-up build using current available market rates and recent historical data.
Escalators and equity raising costs	37.68	
Equity raising costs	33.14	Forecast capex calculated using the AER's Post Tax Revenue Model
Real input escalators	4.44	Calculated by multiplying the projected labour components of forecast capex by the real labour

Category of capex	Forecast capex	Basis of capex forecast
		cost escalators approved in the AER's 2023-28 Revenue Determination for Transgrid.
Total capex (excluding equity raising costs)	4,279.14	
Total capex	4,312.28	

Notes: 1. These costs are the 'other construction costs' that we expect to incur in the construction of Humelink, but that are not included in the tender prices.

Stage 2 forecast opex

Table 0.3 shows that our forecast Stage 2 opex is \$23.17 million over the 2023-28 regulatory period, excluding debt raising costs. Our forecast opex relates to:

- maintenance costs for substations, digital infrastructure and transmission lines
- property-related expenses for council rates, land tax, water and electricity
- strategic benefit payments to compensate private landholders impacted by the Project, in accordance with the NSW Government's Strategic Benefit Payment scheme
- insurance expenses for premiums for industrial special risks and operational third-party liability insurance for the Humelink assets, once they are commissioned, and
- vegetation integrity rehabilitation costs.

Our Stage 2 opex for Humelink is incremental to the opex approved by the AER in its 2023-28 Revenue Determination, because it relates to activities that are additional to our normal business activities and would not be incurred other than for undertaking Stage 2 activities for Humelink.

We have also applied the labour escalation rates as set out in our 2023-28 Revenue Determination to account for changes to real labour costs and added benchmark debt raising costs.

Table 0.3: Stage 2 forecast opex (\$M, Real 2022-23, excluding debt raising costs)

Opex	2023-24	2024-25	2025-26	2026-27	2027-28	Total
Total opex	-	0.14	0.14	9.58	13.32	23.17

We will provide an opex forecasting methodology in our Final CPA2. Our opex forecast model is also provided as an attachment to this Application.

Incremental Revenue requirement and customer bill impact

On the basis of our Stage 2 capex forecast, we will be seeking the AER's approval to increase our maximum allowed revenue (MAR) for the 2023-28 regulatory period, from 2025-26 to reflect the impact of incremental capex and opex from the Project. We have assumed the AER's decision will be made in time to reflect the updated MAR in our tariffs for the 2025-26 pricing year.

Table 0.4: Incremental maximum allowed revenue – MAR (smoothed) (\$M, Nominal)

MAR (Smoothed Revenue)	2023-24	2024-25	2025-26	2026-27	2027-28	Total
2023-28 Decision (updated for the Humelink Early Works Parts 1 and 2)	923.99	960.11	995.98	1,033.19	1,071.78	4,985.05
Impact of Humelink Stage 2	-	-	115.16	252.74	251.68	619.58
Updated MAR	923.99	960.11	1,111.14	1,285.92	1,323.46	5,604.63

Based on the forecast MAR adjustment, the indicative customer bill impact is an increase of \$20.52 per annum for residential customers and an increase of \$40.78 per annum for small business customers, commencing in 2025-26. These transmission cost increases are expected to be more than offset by savings in wholesale costs.¹⁹ As discussed above, AEMO's updated net market benefits assessment for the Project will be reflected in its Draft 2024 ISP, which is due to be published in mid to late December 2023.

Customer consultation and support

Our engagement approach is based on genuine consultation through meaningful and transparent dialogue. Underpinned by our Transgrid Engagement Policy, 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.

The voices of the community and our consumers are at the centre of our decision making:

- we recognise the vital role that landowners and the community have in the planning and delivery of our projects and network operations
- we work with the communities in which we operate in a meaningful, accountable, responsive and equitable way through effective and inclusive engagement practices
- we are dedicated to continuously improving our engagement to support our decision making and deliver community benefits, and
- we listen, seek to understand and act on what matters most to communities, working with them to identify opportunities that benefit them, while striving to minimise the impacts of our operations.

Since March 2021, we have hosted more than 50 in-person and online community information events, attended more than 25 independently chaired Community Consultative Group meetings, held more than 1,100 on-on-one meetings with easement-affected landowners and shared over 75,000 project newsletters across the regions impacted by Humelink.

The EIS exhibition period was held from 30 August 2023 to 10 October 2023. We received 154 EIS submissions which we are currently assessing. In the lead up to and during the public exhibition of the EIS we provided briefings to key stakeholders including communities, Councils, government agencies and First Nations stakeholders and members of state and Federal parliaments.

We also prepared a suite of communication materials to support the community and stakeholders in navigating the different sections of the EIS. These supporting documents are available on the project website as well as the in-person sessions we held during the exhibition period.

¹⁹ AEMO, 2022 ISP, p. 68. We note that the assessment of the market benefits from the Project is being separately updated and confirmed through AEMO's draft 2024 ISP analysis.

During the EIS public exhibition period we provided communities and stakeholders with a suite of channels to find out more about the project and the EIS. These include:

- notification to easement-affected landowners (hard copy notification delivered to landowners in line with S.181 EP&A Regulation)
- 20 in-person community information sessions* in regional towns across the project corridor
- up to 20 stakeholder group briefing presentations
- hard copies of the EIS on display at public libraries along the project corridor
- Digital EIS – a user-friendly interactive digital platform to present key EIS findings hosted on the project website
- five community information webinars
- multiple project newsletters, and
- phone and email enquiries.

We have captured, and shared information and issues discussed at key engagement events to date. This information has been used to inform project development, route alignment and ongoing engagement. The reports are published on the project website for those not able to attend an event, as a record of engagement and to ensure transparency.

Capital Expenditure Sharing Scheme (CESS)

As discussed with the AER and our other stakeholders, including the TAC, we are not supportive of the application of CESS to AEMO’s ISP projects, including Humelink. This reflects the inflationary and uncertain operating environment with high value, complex and specialised projects, which results in these incentive schemes introducing an asymmetric risk.

The key drivers of this asymmetric risk to cost arise from:

- labour shortages
- increasing materials costs and supply chain disruption, and
- other and unquantifiable costs that will arise in a project such as this, given the operating environment and the unique characteristics of ISP Projects, including their significant size and scale.

To safeguard against potential losses (i.e., risk costs or other construction costs) D&C contractors require some cost components in their contracts to be variable. This allows them to offer a lower contract price than they otherwise would if they were forced to price in the risk costs through a fixed-price contract.

Given the uncertain and challenging operating environment, a heated construction market experiencing elevated escalation and contractors not being able or willing to enter into fixed-price D&C contracts, the probability of overspending the AER’s capex allowance is greater than the probability of underspending it. This means that Other Construction costs are included in this Stage 2 Application, and which are critical to enable us to deliver Humelink on time and on budget.

Critically, it would not be in the long-term interest of consumers to apply penalties or rewards based on the CESS for differences between actual and forecast expenditure where these differences are driven by factors other than true efficiency savings or losses. The AER’s underlying building block framework already provides an appropriate financial incentive for us to minimise capex. This is because during the regulatory period, revenues are based on forecast capex, such that we do not earn a return on any capex overspend

for the duration of the regulatory period. Any capex overspend is rolled into our regulatory asset base (RAB) at the start of the subsequent regulatory period, only then enabling us to earn a return on our actual prudent and efficient capex. An independent report from HoustonKemp, provided as an Attachment to this draft Application, demonstrates that the underlying building block framework already provides an appropriate financial incentive for us to minimise capex.

As explained above, we are delivering Humelink at the lowest sustainable cost for consumers and have secured cost savings of:

- \$322 million across Stage 1 and 2 of the Project through our PTT program, which we initiated in order to ensure that the actionable ISP projects that we are responsible for are delivered at the lowest sustainable cost; and²⁰
- \$90 million from undertaking the Gugga integration works as part of VNI West Stage 1 activities. This cost saving relates to investment synergies arising from the concurrent investment in Humelink and VNI West. We identified this cost saving initiative through our program approach to project planning and continuous focus on affordability and innovative work practices, which are key priorities for consumers.

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. To attract the capital required to deliver the Project, it must be commercially viable. In this respect, it needs to earn sufficient net cashflows to support the AER's benchmark credit rating and provide the AER's benchmark return on capital. It also needs to do this with the same relative risk profile as afforded to it under the broader business. This will allow investors the confidence they require to finance the project.

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 risks associated with that project.

In relation to sufficiency of cash flow, this issue arises under the current NER due to the unprecedented size and scale of Actionable ISP projects and the current macro-economic environment, which is supported by an upward sloping interest rate curve. This means the cost of financing large scale projects is substantially higher than allowed under the AER's 2022 Rate of Return Instrument (RORI). We have been working with the Clean Energy Finance Corporation (CEFC) to develop a concessional financing package via the Rewiring the Nation program and are pleased to confirm that we have some initial terms that will greatly assist Transgrid to make the significant financial commitment required to deliver this multi-billion-dollar nation-critical project.

We acknowledge, however, that such funding is limited and together with the CEFC have developed the following in our Application to minimise the funding required from the CEFC:

- approval from the AER for incremental revenue commensurate with the capital and operating costs of Humelink as we have proposed in this draft Application;
- confirmation from the AER that the CESS regime will not apply in relation to Humelink, given critical differences in the scale and complexity of Humelink relative to the context in which CESS was designed to apply;

²⁰ This cost saving comprises \$237 million for adopting a variable ITC rather than a fixed price contract and \$85 million for securing LLE through our PTT program.

- approval from the AER for the establishment of a new asset class for biodiversity offsets to enable depreciation of these costs over the weighted average of the standard lives of all other depreciating assets;
- approval from the AER to adopt as incurred depreciation for all depreciable asset classes.

We strongly support the current ENA Rule Change submission on financeability, which would enable alternative depreciation profiles to be adopted to support sufficient cash flows early in ISP projects. The ENA's Rule Change proposes a clear, objective, predictable and formulaic process to assessing and addressing any financeability concerns identified for ISP projects, to give investors the confidence they need to commit to projects of such size and scale in unprecedented global conditions and within highly accelerated timeframes.²¹.

²¹ Energy Networks Australia, [Ensuring Financeability of ISP Projects rule change](#), 9 June 2023



500kV tower

1

Introduction

1. Introduction

1.1. Draft Application and timing

We are pleased to provide our draft Stage 2 Application for Humelink. This is the Principal Application document, which sets out our proposed expenditure, the associated incremental revenue requirements and the indicative consumer bill impacts for Stage 2, delivery activities.

We are committed to meeting the delivery date for Humelink of July 2026 as determined in AEMO's 2022 ISP. In its recent 2023 ESOO, AEMO highlighted the continuing importance of delivering Humelink and other actionable transmission projects in the 2022 ISP on time, if reliability risks are to be avoided.²² Delivering Humelink by July 2026 will ensure that its benefits are delivered as soon as possible at the lowest sustainable cost to consumers.

As evidence of our strong commitment to delivering this project, we have worked with our stakeholders to prepare and publish this draft Stage 2 Application prior to feedback loop confirmation from AEMO, in an effort to enable timely stakeholder feedback and AER consideration, sufficient to allow the AER to make its Determination on our Stage 2 Application by 29 March 2023 and help meet the 2022 ISP timelines.

The AER's approval of our prudent and efficient expenditure forecasts, and the resultant changes in our revenues and prices as set out in this Principal Application document, is a pre-condition for the execution of the NTP-2 with our D&C contractors for the Stage 2 activities. Our contractual arrangements with our D&C contractors require us to execute the contract by July 2024. We will incur significant penalties under the contract for every day the agreement is delayed beyond this date. Receiving the AER's Decision by 29 March 2024 is the latest possible date to enable us to finalise matters, including funding arrangements, to meet the July 2024 contract execution timeframe. This contractual arrangement reflects the timing we have imposed on our D&C contractors to deliver the project to meet the July 2026 delivery date.

We therefore require the AER's Determination on our final Stage 2 Application by 29 March 2024, to avoid incurring delay penalties under the D&C contract (which would further increase the delivery costs of Humelink) and subsequent costs to consumers.

The costs in this draft Application reflect the Stage 2 activities associated with the delivery of Humelink, which involves the construction of the new 500kV transmission line that links the Greater Sydney load centre with the Snowy Mountains Hydroelectric Scheme and PEC in southwest NSW.

1.2. Our Stage 2 Application is informed by our Stage 1 early works

Our Stage 2 forecast expenditure, which reflects the bulk of the Project's costs, is informed by the outcomes from our Stage 1 activities, which we have been progressing in line with the AER's Decisions on our Stage 1 (Part 1) and (Part 2) Applications. In particular, the AER approved:

- \$380.83 million in its August 2022 Final Decision on our Stage 1 (Part 1) Application,²³ which is enabling us to undertake a range of Stage 1 activities including project design, stakeholder engagement, land-use planning and approvals and acquisition and project management,²⁴ and

²² AEMO, 2023 ESOO, August 2023, p. 11, p. 96-99. AEMO's analysis takes into account a delayed commissioning date for Snowy 2.0 of December 2029.

²³ AER, [Hemelink Early Works Contingent Project Determination](#) (Hemelink CPA-1 Part 1 Decision), August 2022

²⁴ The \$380.83 million (\$Real 2022-23) is equivalent to \$321.87 million (\$Real 2017-18).

- \$227.9 million in its August 2023 Final Decision on our Stage 1 (Part 2) Application.²⁵ This enabled us to procure LLE for transformers, reactors, conductors and steel towers through our PTT program which enables us to accelerate the delivery of transmission infrastructure and drive costs down through economies of scale and scope.

We expect to complete our Stage 1 activities by July 2024. We have been keeping the AER and the TAC updated with our progress, key learnings and outcomes from these activities. These activities have allowed us to invest time in the planning and design phase, continue to consult and engage with stakeholders, identify and quantify project risks and identify our D&C contractors through a competitive two-stage ECI process.

Our Stage 1 activities have resulted in our Stage 2 capex forecast being in line with an AACE class 2 to 3 cost estimate, to provide the necessary cost certainty that consumers will not be over- or under-investing in the Project.

1.3. Pre-lodgement stakeholder engagement and how to provide feedback

Stakeholder engagement during the development of this draft Application has been significant and feedback from community, landowners, TAC and deep dives with the AER and TAC on key aspects has helped inform our approach to this significant investment on behalf of consumers. We invite further feedback from the AER, our customers and other stakeholders on this draft to inform our final Stage 2 Application.

We acknowledge that the AER's formal decision-making process will commence once it receives our final Stage 2 Application in December 2023. Early feedback on this draft Application will further inform our Final CPA2 submission noting that a timely decision from the AER is crucial to provide the revenue certainty needed for us to proceed with the delivery of the project, and to avoid delay costs under the D&C contracts with our delivery partners.

Please share with us your views and position on this draft Application by email at: regulatory.consultation@transgrid.com.au by 22nd December 2023. This will allow us to consider the feedback we receive during our formal Stage 2 Application which we will submit to the AER following feedback loop confirmation from AEMO, which is expected by 15 December 2023.

The AER will undertake a formal consultation period upon receipt of our Final CPA2 submission.

1.4. This Principal Application

This Principal Application relates to Stage 2 activities required to deliver Humelink by the July 2026 delivery date in AEMO's 2022 ISP. These activities have been carefully scoped and resourced through our Stage 1 activities and our PTT program to ensure that they are efficient and prudent and will deliver the Project at the lowest sustainable cost. In particular, through our Stage 1 activities, we have been able to:

- determine the prudent and efficient Stage 2 capex forecast in this draft Principal Application by refining the Project scope through further detailed design activities, route selection and the competitive two stage ECI process
- secure cost savings for consumers from our PTT program, which involves the integrated delivery of Humelink, PEC and VNI West and has been established to accelerate the delivery of transmission

²⁵ AER, [Humelink Early Works Stage 1 \(Part 2\) Contingent Project Determination \(Humelink CPA-1 Part 2\)](#), August 2023

infrastructure and drive costs down through economies of scale and scope. The cost saving for consumers from the PTT program in respect of LLE for Humelink is estimated to be \$85 million

- identify, explore and manage the project risks to mitigate and/or diversify the Project's risks so that the residual risk costs included in this Stage 2 Application are as low as possible
- progress activities on the critical path to ensure that construction can commence as soon as possible following the approval of our Stage 2 Application by the AER. These activities included selecting preferred delivery partners through the two-stage competitive ECI process, securing LLE, continuing to engage with our stakeholders, preparing the EIS and acquitting our biodiversity offsets liability to enable construction to commence, and
- secure cost savings for consumers from negotiating ITC D&C contracts with our delivery partners. An ITC D&C contract enables our delivery partners to offer a lower overall contract price than they otherwise would if they were forced to price in the risk costs through a fixed price D&C contract. The ITC D&C contract cost of [REDACTED] million included in this Stage 2 Application reflects a variable contract cost. If, however, the D&C contractors were required to offer a fixed price contract, then the D&C contract cost is expected to increase by between \$237 million to \$461 million or 8 to 15 per cent (inclusive of owners' contingency reflected in this Application). The variable contract cost in this Revenue Proposal therefore provides consumers with a higher probability of a lower price outcome.

The cost savings for consumers achieved across our Stage 1 and 2 Applications for Humelink is \$322 million of the total \$500 million we have achieved through our PTT program. This reflects a conservative estimate of the savings based on the lower bound of the expected costs savings from adopting a D&C rather than a fixed price contract.

In addition, we have estimated further cost savings of \$787 million from the investment synergies, which arise from concurrent investment in Humelink, PEC and VNI West. In particular, our draft VNI West Stage 1 Application includes:

- the PEC enhancement works which is expected to achieve cost savings of approximately \$697 million, and
- the Gugaa integration works which is expected to achieve cost savings of approximately \$90 million.

We are seeking the AER's approval for the costs of our Stage 2 activities, which comprise both direct and labour and indirect activities:

- design and construction work including for substations, transmission lines and access tracks
- delivery, storage and installation of the LLE, which we secured in Stage 1
- Other construction costs to mitigate and manage risks that are expected to emerge during the delivery phase of the Project
- biodiversity offset costs for the impact of building Humelink on plant and/or animal species (i.e., to offset our biodiversity liability under the NSW Biodiversity Conservation Act 2016)
- easement acquisition costs to compensate public and private land holders for acquiring easements over their land as well as costs for stamp duty, the value of timber taken, substitute forest land, disturbance costs, construction camps and lay-down areas and overhead costs.
- internal labour resources for undertaking project and commercial management, project control, design and construction, and corporate support (legal, regulatory, health safety and environment (HSE) and insurance), environmental and property, CSE and social licence activities, and

- indirect activities for a wide range of professional and consulting services related to project and commercial management, project control, design and construction, corporate support (legal, regulatory, HSE and insurance), major project initiatives and CSE.

Section 3.2 of this Principal Application explains the relevant trigger events for Stage 2 (delivery) and provides an update on their status.

1.5. AEMO feedback loop confirmation

Positive written feedback loop confirmation from AEMO is required to satisfy the trigger events for actionable ISP projects. These trigger events must be satisfied prior to us submitting our formal Stage 2 Application to the AER.

The purpose of the feedback is to assess whether at the revised cost in this Stage 2 Application, Humelink remains on the ODP.

We will submit our feedback loop request to AEMO shortly after this draft submission and have advised AEMO on the updated costs of the Project. AEMO has informed us that it will undertake its feedback loop assessment using its 2023-24 IASR and its Draft 2024 ISP, which will be published by 15 December 2023. AEMO intends to publish its written feedback loop response alongside its Draft 2024 ISP.

Given the timing of AEMO's written feedback loop response, which in turn determines the timing of our formal Stage 2 Application, we have sought to promote transparency, timely feedback and evaluation, by publishing this draft Stage 2 Application now.

1.6. Compliance with the NER

This draft Stage 2 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.

1.7. Structure of this document

The remainder of this document is structured as follows:

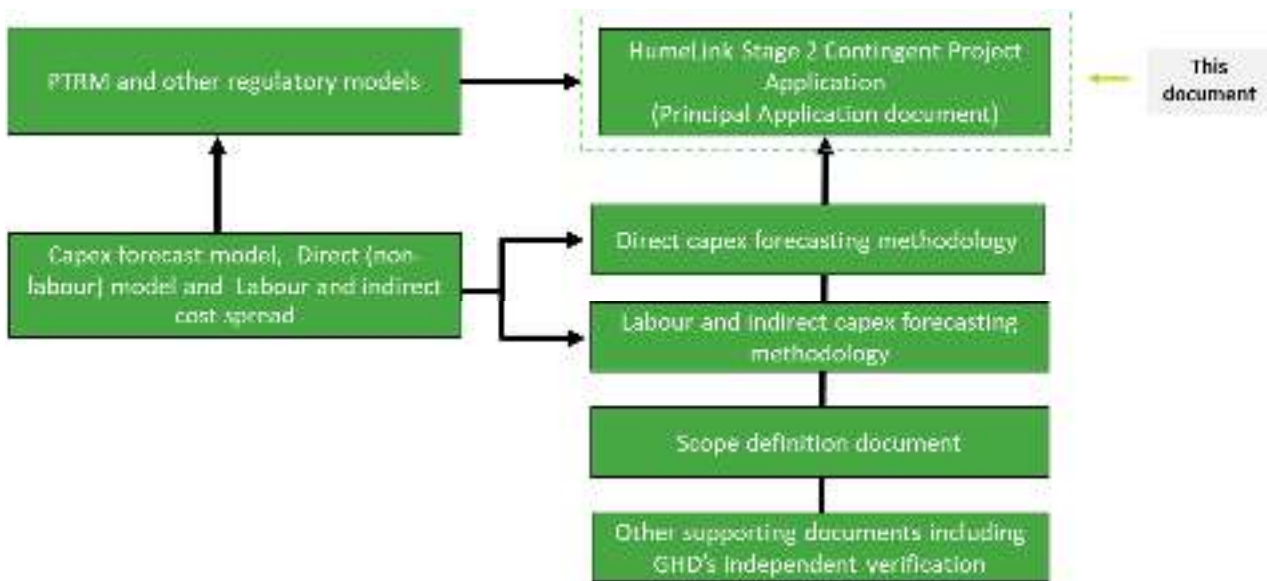
- Chapter 0 describes the Project
- Chapter 0 sets out the regulatory requirements for this Stage 2 Application
- Chapter 0 sets out forecast capex for the Stage 2 including our forecasting methodology
- Chapter 0 sets out forecast opex for the Stage 2 including our forecasting methodology
- Chapter 0 sets out forecast incremental revenue for the Stage 2 activities and the indicative customer bill impact

- Chapter 7 sets out how the NER and AER Guidance note requirements have been addressed, and
- Appendix A is our revenue application.

1.8. Structure of the Stage 2 Application for Humelink

Our Stage 2 Application comprises the attachments and models (illustrated in Figure 1-1 and detailed in Table 1-1) 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 1-1: Stage 2 Application document structure for Humelink

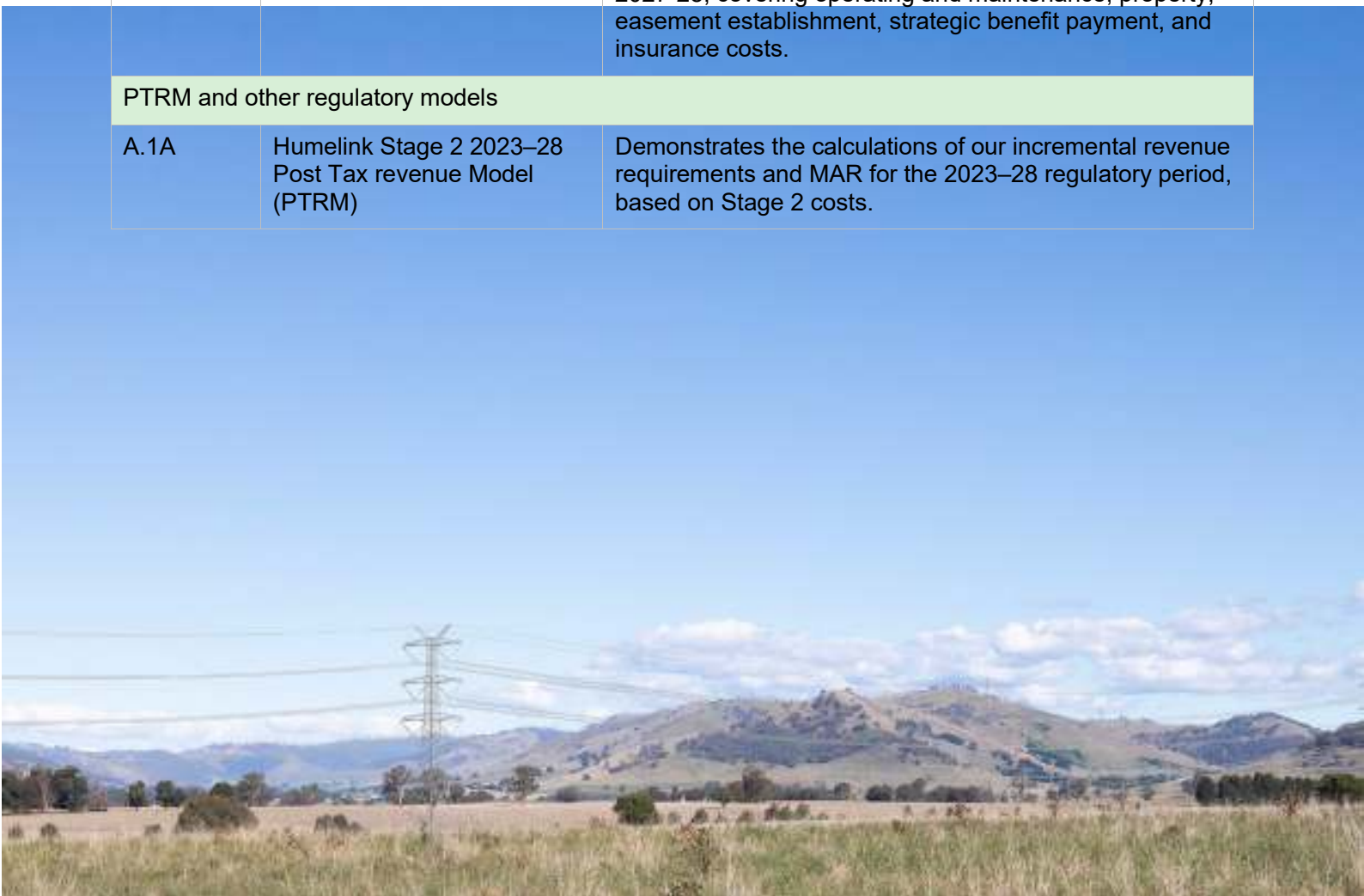


The attachments and models are summarised in Table 1-1.

Table 1-1: Documents and models comprising this Application (excluding our other supporting documents)

Document /model number	Name	Content/purpose
A.1	Humelink - Stage 2 Contingent Project Application - Principal Application document	Seeks the AER’s approval to amend the forecast capex allowance, revenue requirements and MAR in the AER’s 2023-28 Revenue Determination based on Stage 2 costs.
A.2	Scope definition document	Overviews the scope of our Stage 2 activities required to deliver Humelink.
A.3	Direct capex forecasting methodology	Explains and justifies our Stage 2 direct capex including: <ul style="list-style-type: none"> • summarising the nature and scope of Stage 2 activities • the methodologies we have used to determine our forecast capex, and • how we have verified our forecast capex.
A.4	Labour and indirect forecasting methodology	Explains the bottom-up forecast of labour and indirect support costs required to deliver the Project. These include commercial management, project control, design and construction, corporate support (legal, regulatory,

Document /model number	Name	Content/purpose
		HSE and insurance), environmental and property and CSE.
A.5	GHD Advisory Independent capex Review	An independent assessment of the scope, procurement process and forecast capex for Stage 2 (delivery).
Capex and opex models		
A.5	Capex forecast model	This model forecasts capex by regulatory asset class and year to 2026-27, sourcing inputs from the Direct Non-Labour Cost Model and the Labour and Overheads Cost Model and applying labour cost escalation and inflation where appropriate.
A.6	Direct non-labour model	This model builds up the delivery partner, LLE, procurement, easement acquisition and biodiversity offset costs that input to the Capex Forecast Model.
A.7	Labour and overhead costs spreadsheet	This model builds up the labour and indirect costs (including commercial management, project control, design and construction, corporate support (legal, regulatory, HSE and insurance), environmental and property and CSE) that inputs to the Capex Forecast Model.
A.8	Opex forecast model	This model forecasts opex by expenditure category to 2027-28, covering operating and maintenance, property, easement establishment, strategic benefit payment, and insurance costs.
PTRM and other regulatory models		
A.1A	Humelink Stage 2 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 2 costs.



2. Project Overview

2.1. A project of national significance

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 southwest NSW.²⁶

Humelink is a key component of the energy market transition. It will create 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 2-1 is a map of the proposed 500kV double circuit transmission line routes.

Figure 2-1: Map of proposed transmission line routes



In March 2018, the NSW Government declared Humelink as Critical State Significant Infrastructure for NSW.²⁷ 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 customers from new projects, including Snowy 2.0.²⁸

In June 2022, AEMO published its Final 2022 ISP, which reconfirmed the need for Humelink given its key strategic value for the NEM and the benefits it will provide to consumers.²⁹ It found that Humelink will be

²⁶ AEMO, 2022 ISP, June 2022, p. 68

²⁷ Section 5.3 of the Environmental Planning and Assessment Act 1979 (NSW) on 9 March 2018

²⁸ Australian Government, [Australia’s long-term emissions reduction plan – a whole-of-economy plan to achieve net zero emissions by 2050](#), October 2021

²⁹ Humelink has been identified as a key project in AEMO’s ISPs since 2018. AEMO, 2022 ISP, June 2022, p. 13

needed if a third NSW coal-fired power station (including Liddell) retired, noting that at that time the closure of two of NSW power stations (Liddell and Eraring) had already been announced as likely to occur by 2025. If these closures occur, AEMO commented that Humelink will be needed to maintain power system reliability in NSW, avoiding the need to invest in long-duration storage.³⁰ The 2022 ISP has assessed that:

Humelink is the only actionable ISP project that could be delivered in the critical period that directly addresses this risk.

In April 2023, the Liddell power station closed. Consistent with the assumptions in AEMO's 2022 ISP, the Eraring power station is still scheduled to close in 2025, although the NSW government recently announced that it will open discussions with Origin to clarify its plans for Eraring.³¹ Bayswater power station is scheduled to be retired between 2030 and 2033.³²

In February 2023, AEMO published an update to its 2022 ESOO. This assesses that Humelink has 'the potential to significantly reduce the projected reliability risk' for NSW notwithstanding the NSW Electricity Infrastructure Roadmap developments including the Waratah Super Battery.³³

Subsequently, AEMO's 2023 ESOO, published in August 2023, highlighted the continuing importance of delivering Humelink and other actionable transmission projects in the 2022 ISP on time, if reliability risks are to be avoided.³⁴ AEMO's analysis takes into account a delayed commissioning date for Snowy 2.0 of December 2029.

2.2. Material change in circumstances assessment

We undertook the RIT-T for Humelink over the course of 2019 to 2021. The PACR identified Humelink (Option 3C) as the preferred option for reinforcing the southern shared network.³⁵

Through our early works, we have refined our estimate of the cost of delivering Humelink. The estimated total cost to deliver Humelink based on our Stage 1 (early works) and Stage 2 (delivery) Applications is now \$4.92 billion, which is around 29 per cent higher than the cost estimate of \$3.82 billion in the PACR. This cost increase is in line with the overall increase of around 30 per cent for energy infrastructure projects across all elements of the supply chain over the last two years.³⁶

Humelink is expected to provide significant value to the NEM acting as the 'link' between PEC, VNI West and the Sydney Ring. This is recognised by the Federal Government, who has supported Humelink through the Rewiring the Nation Fund, acknowledging the Project's key role in strengthening and reconfiguring the NEM to ensure continued reliability through the energy transition.

AEMO's 2022 ISP assessed the net market benefits of the Project at that time to be \$1.3 billion, highlighting that it is the only project that could be delivered in the critical period to directly addresses the risk of limited dispatchable capacity.

Since the 2022 ISP, the recognition of the importance of investment that can deliver the following benefits has only increased:

³⁰ AEMO, 2022 ISP, June 2022, pp 64-65, 82.

³¹ Office of Energy and Climate Change, *Electricity Supply and Reliability Check Up, NSW Government response*, September 2023, p.6.

³² Australian Financial Review (AFR), [AGL bows to shareholders and hastens coal exit](#), 29 September 2022

³³ AEMO, [Update to 2022 Electricity Statement of Opportunities](#) (ESOO), February 2023, p.12

³⁴ AEMO, *2023 Electricity Statement of Opportunities*, August 2023, p. 11, p. 96-99.

³⁵ Transgrid, [Reinforcing the NSW Southern Shared Network to increase transfer capacity to demand centers \(Humelink\)](#), 29 July 2021 and [the PACR Addendum](#), 17 December 2021

³⁶ Infrastructure Australia, [2022 Infrastructure Market Capacity Report](#), December 2022

- provide resilience to early coal closures
- support Government's emissions reduction targets by supporting renewables
- support electrification of the economy, and
- ensure reliable and secure supply in light of rising demand.

Notwithstanding, given the increase in estimated costs of the Project since the PACR we are currently updating the RIT-T NPV analysis to confirm that Option 3C remains the top ranked option. This would meet the Material Change in Circumstances (MCC) requirements as contemplated under NER 5.16A(n) v202. This analysis will utilise the latest available information from AEMO and will reflect updated cost estimates for all credible options assessed in the PACR addendum. We intend to publish this analysis as soon as it is completed.



Yawan Creek

3

Regulatory requirements

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,³⁷ and
- the AER's Guidance Note for Regulation of actionable ISP projects.³⁸

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, and³⁹
- within the specified time limits.⁴⁰

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)*
- (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*

³⁷ AER, [Process Guideline for Contingent Project Applications under the NER](#), September 2007.

³⁸ AER, [Guidance Note for Regulation of actionable ISP projects](#), March 2021.

³⁹ NER clause 6A.8.2(a)

⁴⁰ NER clause 6A.8.2(a)

- (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.⁴¹

We have met regularly with the AER in preparing this draft Application and the AER's feedback has informed the content and structure of this draft Stage 2 Application and supporting documentation.

3.2. Trigger events

Under the NER, we can submit a CPA for Stage 2 to the AER if we satisfy the trigger events for actionable ISP projects in clause 5.16A.5.⁴² Table 3-1 shows the trigger events for lodging our Stage 2 Application, and how we expect to meet these.

Table 3-1: 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.	<p>Complete</p> <p>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'). We subsequently published an addendum to the PACR (December 2021), in response to the AER's dispute determination, which extended the analysis but confirmed that Option 3C remained the preferred option.</p> <p>We are currently undertaking an update of the PACR NPV analysis, to confirm that the increase in costs of the Project is not a Material Change in Circumstance. We intend to publish this analysis</p>

⁴¹ 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>.

⁴² Rule 5.16A.5 Actionable ISP project trigger event.

Trigger event	Status
	separately to this Draft Stage 2 Application, ahead of our final Stage 2 application.
<p>Obtain written feedback loop confirmation from AEMO that:</p> <ul style="list-style-type: none"> 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 	<p>In progress</p> <p>We will provide AEMO with a feedback loop request letter after we published this draft Stage 2 Application. This request is based on the updated costs of the Project in this draft CPA2.</p> <p>AEMO has advised us that it will undertake its feedback loop assessment using its 2023-24 IASR and its Draft 2024 ISP, which will be published by 15 December 2023.</p> <p>AEMO intends to publish its written feedback loop response alongside its Draft 2024 ISP.</p> <p>AEMO's feedback loop response will therefore confirm that the Project remains on the ODP at the cost in this draft CPA2 and taking into account current market circumstances.</p>
<p>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.</p>	<p>Complete</p> <p>On 17 December 2021, we published an addendum to the earlier PACR, in response to the AER's determination of a dispute by Wulnelli Pty Ltd. The PACR addendum extended the analysis to an additional option (i.e., 'Option 1C-new', a full double circuit option between Maragle and Bannab) and confirmed that the preferred option continued to be a new 500 kV double circuit transmission lines in an electrical 'loop' between Maragle, Wagga Wagga and Bannaby (i.e., 'Option 3C').</p>
<p>The cost in the Stage 2 Application must be no more than the cost included in AEMO's written feedback loop confirmation.</p>	<p>In progress</p> <p>The total capex (actual and forecast) in this draft Stage 2 Application is consistent with the capex in our feedback loop request to AEMO.</p> <p>We expect AEMO to provide written feedback loop confirmation that at the delivery cost of \$4.95 billion in this Stage 2 Application, Humelink remains part of the ODP.</p> <p>This can only be confirmed once we receive AEMO's written Feedback Loop confirmation.</p> <p>We are not proposing to provide a cost in our final Stage 2 Application which is above that in this draft Application and in our feedback loop request.</p>

3.3. Project timing

For the purposes of this Stage 2 Application, the applicable dates for the commencement and completion for Stage 2 activities, pending timely approval, are:

- date for commencement – [REDACTED], and
- anticipated date for completion – [REDACTED].

The proposed timing in this Application reflects a realistic assessment of the required dates for the Stage 2 activities to meet the target delivery date of July 2026. The Stage 2 completion date is consistent with the timeframes in AEMO's 2022 ISP.

3.4. Customer and other Stakeholder engagement

Our engagement approach is based on genuine consultation through meaningful and transparent dialogue. Underpinned by our Transgrid Engagement Policy, 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.

The voices of the community and consumers are at the centre of our decision making:

- we recognise the vital role that landowners and the community have in the planning and delivery of our projects and network operations
- we work with the communities in which we operate in a meaningful, accountable, responsive and equitable way through effective and inclusive practices
- we are dedicated to continuously improving our engagement to support our decision making and deliver community benefits, and
- we listen, seek to understand and act on what matters most to communities, working with them to identify opportunities that benefit them, while striving to minimise the impacts of our operations.

Our aim is to build trusted and beneficial relationships. We strive to build positive and lasting relationships with our local communities and create lasting benefits to our customers, community and the environment as part of our commitment to building a sustainable future.

We recognise the diverse engagement and information needs of the community and have developed a robust plan of engagement that is inclusive, collaborative and clearly demonstrates our commitment to working with the community and stakeholders through open, transparent dialogue.

Our Stage 1 (early works) engagement objectives included, to:

- provide information on the Project's timeframes, milestones and engagement processes so that stakeholders 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.

Our total capex forecast for CSE of \$65.13 million across all stages of the Project, comprises:

- Stage 1 forecast capex of \$27.25 million
- Stage 2 forecast capex of \$37.88 million (reflected in this draft Stage 2 Application).

This is close to the benchmark range of 1.0-1.3% for Major Infrastructure Projects as identified in prominent research by the Australian National University (ANU)'s Institute for Infrastructure in Society (I2S).

The CSE investment proposed for Stage 2 of Humelink also responds directly to calls for improved CSE performance from directly impacted Humelink communities and our key stakeholders, including the Commonwealth⁴³) and NSW Governments, AEMO, the AEIC and the TAC.

Cost of project delays

Stakeholder and community concerns can inevitably lead to project delays which in turn increase costs. Research from Institute for Infrastructure in Society (IS2) at the ANU shows that, for any increased infrastructure spend to be successful, communities should be at the forefront of proponents' planning and delivery strategies.

I2S reported in 2020⁴⁴, the second highest major influence of project delay is stakeholder and community pressure – exceeding other influences including regulatory, planning and technical issues.

These delays have a compound negative impact on consumer energy costs, by delaying access to cheaper wholesale energy and increasing uncertainty for the electricity market, potentially discouraging commitment of new generation projects in the South and Southwest of the State. The cost of these delays has been estimated at \$846,000 per day.⁴⁵

To help mitigate these delays, Transgrid has undertaken a significant review of its CSE activities, including implementation of all recommendations of the Independent Review undertaken by Dr Rod Stowe. These actions have been audited and the improvements made have been acknowledged by the Australian Energy Infrastructure Commissioner, Andrew Dyer, and the Transgrid Advisory Committee. In addition, Transgrid's current approach to CSE already complies with and goes beyond the requirements recommended in the current rule change proposal on Community Engagement proposed by the Federal Minister for Energy and Climate Change, the Hon Chris Bowen.⁴⁶

⁴³ As evidenced by the Rule Change request from Hon Chris Bowen, 11 April 2023. See: [Enhancing community engagement in transmission building | AEMC](#) .

⁴⁴ [Ref]

⁴⁵ [Ref]

⁴⁶ AEMC, [Draft Rule Determination, National Electricity Amendment \(enhancing community engagement in transmission building\) Rule](#), 10 August 2023

Our engagement activities



Since March 2021 we have hosted more than 50 in-person and online community information events, held and attended more than 25 independently chaired Community Consultative Group meetings, held more than 1,100 on-on-one meetings with easement-affected landowners and shared over 75,000 project newsletters across the regions impacted by Humelink.

The EIS exhibition period was held from 30 August 2023 to 10 October 2023. We received 154 EIS submissions which we are currently assessing. In the lead up to the public exhibition of the EIS we provided briefings to key stakeholders including Councils, Government agencies and First Nations stakeholders and members of state and Federal parliament.

We have also prepared a suite of communications materials to support the community and stakeholders in navigating the different sections of the EIS. These supporting documents are available on the project website as well as the in-person sessions we held during the exhibition period.

During EIS public exhibition period we provided communities and stakeholders with a suite of channels to find out more about the project and the EIS. These include:

- notification to easement-affected landowners (hard copy notification delivered to landowners in line with S.181 EP&A Regulation)
- 20 in-person community information sessions* in regional towns across the project corridor
- up to 20 stakeholder group briefing presentations
- hard copies of the EIS on display at public libraries along the project corridor
- Digital EIS – a user-friendly interactive digital platform to present key EIS findings hosted on the project website
- five community information webinars
- multiple project newsletters, and
- phone and email enquiries.

We have captured, and shared information and issues discussed at key engagement events to date. The feedback is critical to informing our design development, route selection and ongoing engagement. The reports are published on the project website for those not able to attend an engagement event, as a record of engagement and to ensure transparency.

Table 3-2 sets out the feedback we have received and how we have or are responding.

Table 3-2: Issues, concerns and opportunities identified through consultation and engagement to date

Area of Interest / who	Issues / Concerns / Opportunities	Actions in response
<p>Route options</p> <ul style="list-style-type: none"> • Easement impacted landowners and neighbours • Action groups • Local members • Local government • Local Aboriginal Land Council (LALCs) • Media • Government 	<ul style="list-style-type: none"> • Route selection process appears unclear and inconsistent • Opportunities for stakeholder input on route selection is unclear • More regular updates for community groups, individual landowners are needed 	<ul style="list-style-type: none"> • 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 • Result: 17 out of 22 route refinements carried out in 2023, resulted in the option proposed by the landowner being accepted by the Project.
<p>City v's Country</p> <ul style="list-style-type: none"> • Easement impacted landowners and neighbours • Action groups • Community • Community Consultative Groups (CCG's) • Media • Government 	<ul style="list-style-type: none"> • Impact of the Project borne by landowners whereas benefits accrue to the broader "city" community • Lack of engagement with regional communities on their preference for undergrounding 	<ul style="list-style-type: none"> • 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 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. • Established Undergrounding Feasibility Steering Committee to investigate option with the community.
<p>Consultation process not delivering community-preferred outcomes.</p>	<ul style="list-style-type: none"> • Engagement not consistent with best practice • Implement use of hybrid consultation opportunities to minimise consultation fatigue 	<ul style="list-style-type: none"> • Work with local champions and CCGs to identify preferred consultation methods and opportunities • Offer a broader range of engagement methods to cater for different

Area of Interest / who	Issues / Concerns / Opportunities	Actions in response
<ul style="list-style-type: none"> Easement impacted landowners and neighbours Action groups Local members Media Government 	<ul style="list-style-type: none"> CCGs, community groups and Councils should have greater input in designing our engagement approach Transgrid should advocate for the community preferred outcomes 	<p>stakeholder interest and availability i.e., website, phone, email, letter, interactive map, face-to-face, meetings</p> <ul style="list-style-type: none"> 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
<p>Land use impacts</p> <ul style="list-style-type: none"> Easement impacted landowners and neighbours Action groups CCGs Represented groups Local members Local government LALCs Government 	<p>Key concerns raised include the Project's impact on:</p> <ul style="list-style-type: none"> 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 access tracks and vehicle access) Social legacy program should be co-designed with the community so that it addresses their issues.⁴⁷ 	<ul style="list-style-type: none"> 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 Advocate on behalf of the landowner where appropriate
<p>Public v's private land use</p> <ul style="list-style-type: none"> Easement impacted landowners and neighbours Action groups CCGs Represented groups Local members Local government LALCs Government 	<ul style="list-style-type: none"> Further discussion on the pros and cons of using public or private land is needed biosecurity bushfire risk industrialisation of the local region land clearing and degradation agricultural land use activities (e.g., disruption of aerial spraying, use of access tracks and vehicle access) 	<ul style="list-style-type: none"> 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

⁴⁷ These include bushfire, cultural heritage, regional development.

Area of Interest / who	Issues / Concerns / Opportunities	Actions in response
<p>Compensation</p> <ul style="list-style-type: none"> • Easement impacted landowners and neighbours • Action groups • Local members 	<ul style="list-style-type: none"> • 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 • Compensation for land and easement acquisition is unfair and does not: <ul style="list-style-type: none"> • compensate for visual impacts • provide royalties or annualised payment • Provide equal compensation to landholders and renewable developers which is unreasonable. 	<ul style="list-style-type: none"> • 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 • Advocacy on behalf of the landowner resulted in the implementation of the Strategic Benefits Payments.
<p>Visual impact</p> <ul style="list-style-type: none"> • Easement impacted landowners and neighbours • Action groups • Local members • Local government 	<p>Concerned about a range of visual impact issues including:</p> <ul style="list-style-type: none"> • the height and material of tower design • 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. 	<p>Provide information on our environmental assessment and approval process, and how the community / stakeholders can provide input and escalate concerns.</p> <p>Embed Place Managers to regularly check in with their communities</p> <p>Provide information on project benefits</p> <p>Collaborate with representative groups on solutions</p> <p>Refine messaging on project impacts so it is clear and accessible.</p>



Turner Lookout

4

Capex forecast

4. Capex forecast

This chapter overviews:

- our Stage 2 capex forecast
- our procurement process and outcomes for the D&C works
- the basis for our capex forecasts by sub-category
- the independent verification and validation of our Stage 2 forecast capex, and
- why we consider the CESS should not apply to Humelink.

4.1. Our Stage 2 forecast capex

Humelink will be the single largest project that we have delivered and will form an integral part of the NEM once completed. It involves the design, construction and operation of approximately 360 kilometres of new high voltage transmission lines and connection to:

- a new Wagga Wagga substation
- upgraded infrastructure at Transgrid's Bannaby substation
- upgraded infrastructure at Transgrid's Maragle substation, which will be constructed as part of the Snowy 2.0 project, and
- augmentation of the existing substation at Wagga Wagga.

Our Stage 2 forecast capex, which reflects the bulk of the Project's costs, has been carefully scoped and resourced through our Stage 1 activities, which we have been progressing in line with the AER's Decisions on our Stage 1 (Part 1) and (Part 2) Applications. More than 61 per cent of our Stage 2 forecast capex is based on market prices obtained through competitive tender processes. We have also relied on pricing from suppliers and independent specialists. Our Stage 1 activities have resulted in our Stage 2 capex forecast being in line with an AACE class 2 to 3 cost estimate, to provide the necessary cost certainty that consumers will not be over- or under-investing in the Project.

This provides confidence to the AER, our customers and other stakeholder that the stage 2 forecast capex in this Application is prudent and efficient and will deliver the Project at the lowest sustainable cost for consumers. Our forecast capex for Humelink reflects \$412 million of cost savings across Stage 1 and 2 of the Project, comprising:

- \$85 million for securing LLE through our PTT program (Stage 1 forecast capex), and
- \$237 million from adopting a variable ITC D&C contract rather than a fixed price D&C contract to deliver the design and construction for substations and transmission lines including access tracks (Stage 2 forecast capex), and
- \$90 million for undertaking the Gugaa integration as part of VNI West Stage 1 activities.

The AER's approval of Other construction costs included in this Stage 2 Application are critical to enable us to deliver Humelink on time and on budget, given:

- the uncertain and challenging operating environment – the construction market is grappling with materials inflation, strained global supply chains, local labour market shortages, and unprecedented

local demand for local civil construction and high voltage expertise. This is discussed in section 4.2.1.2, and

- contractors not being able or willing to enter into fixed price D&C contracts. We have therefore adopted an ITC D&C contract model for the D&C component of delivery. This is discussed in section 4.2.1.3.

Table 4-1 shows that our total Humelink Stage 2 forecast capex is \$4,279.14 million, excluding equity raising costs.

Table 4-1: Stage 2 capex (\$M, Real 2023-23, excluding equity raising costs)

Humelink	2023-24	2024-25	2025-26	2026-27	Total
Actual	-	-	-	-	-
Forecast	42.79	2,099.61	1,990.42	146.33	4,279.14
Total	42.79	2,099.61	1,990.42	146.33	4,279.14

Notes: 1. Including overheads, excluding equity raising costs. 2. Totals may not add due to rounding.

Our Stage 2 (implementation) capex of \$4,279.14 million includes:

- direct capex of \$3,867.55 million (90.38 per cent of Stage 2 capex), and
- labour and indirect capex of \$411.59 million (9.62 per cent of Stage 2 capex).

Our direct capex forecast of \$3,867.55 million comprises:

- \$3,232.80 million for tendered works, comprising:
 - █████ million (or █████ per cent of capex) for the preferred D&C contractors selected through the competitive two-stage ECI process to undertake the East and West contract packages involving the design and construction of substation and transmission line works including access tracks. Section 4.2.1 overviews our ECI process and outcomes through which our D&C contractors have been selected.
 - █████ million (or █████ per cent of capex) for LLE for transformers, reactors and conductor. These costs relate to delivery, storage and installation of the equipment, which was secured in Stage 1
 - \$599.07 million (or 14.00 per cent of capex) for the Other construction costs associated with the delivery of Humelink. These costs cover the reimbursable component of the D&C contracts, scope changes, project delay, biodiversity offset costs and inherent risks.
- \$634.76 million (or 14.83 per cent of capex) for acquiring easements and acquitting our biodiversity offsets liability:
 - █████ million (or █████ per cent of capex) for acquisition of easements. This relates to the payment of compensation to public and private land holders and other costs including stamp duty, the value of timber taken, substitute forest land, disturbance costs, construction camps and laydown areas and overhead costs, and
 - █████ (or █████ per cent of capex) to acquit our biodiversity offsets liabilities at the lowest possible cost. This includes establishing Biodiversity Stewardship Sites over the period from July 2024 to July 2026.

Our labour and indirect capex forecast of \$411.59 million (or 9.62 per cent of total capex):

- \$204.66 million or 4.78 per cent for labour related to internal resource requirements

- \$202.48 million or 4.73 per cent for indirect non-labour capex, relating to a wide range of professional and consulting services, as well as tender payments and associated facilities costs, and
- \$4.44 million or 0.10 per cent for labour escalation.

Table 4-2 details our Stage 2 total capex by sub-category of capex.

Table 4-2 Stage 2 Capex by sub-category of capex (\$M, Real 2023-23)

Category of capex	Forecast capex	% of total capex
Direct costs	3,867.55	90.38%
Tendered works	3,232.80	75.55%
West – Design, substations and transmission lines including access track		
East – Design, substations and transmission lines including access track		
Long-lead equipment (excluding towers)		
Other Construction costs ¹	599.07	14.00%
Easements and biodiversity offsets	634.76	14.83%
Easement acquisition	197.29	4.61%
Biodiversity offset costs	437.47	10.22%
Labour and indirect costs	407.14	9.51%
Labour costs		
Indirect costs		
Labour escalation and equity raising costs	37.68	0.88%
Equity raising costs	33.14	0.78%
Labour escalation	4.44	0.10%
Total capex (excluding equity raising costs)	4,279.14	100.00%
Total capex	4,312.28	N/A

Notes: 1. These are costs we expect to incur in the construction of Humelink, but that are not included in the tender prices.

4.2. Basis for capex forecast

We have developed our Stage 2 forecast capex based on a detailed scope of works using methods that reflect the specific nature of the costs, as shown in Table 4-3.

Table 4-3: Forecast Stage 2 capex by key category (\$M, Real 2023-23)

Category of capex	Forecast capex	Basis of capex forecast
Direct costs	3,867.55	
Tendered works	3,232.80	

Category of capex	Forecast capex	Basis of capex forecast
West – Design, substations and transmission lines including access track	██████████	The outcome of the competitive two-stage ECI tender process (i.e., the successful D&C contractors' tender prices).
East – Design, substations and transmission lines including access track	██████████	
Long-lead equipment (excluding towers)	██████████	Agreements with suppliers.
Other construction costs ¹	599.07	Detailed probabilistic risk assessment (Monte Carlo analysis) using rates included in the D&C contractors' responses where activities are the same or similar, and our independent cost estimator Fission.
Easements and biodiversity offsets	634.76	
Easement acquisition	██████████	Options agreements and an independent report from JLL.
Biodiversity offset costs	██████████	An independent report from Niche, which has been verified by WSP.
Labour and indirect costs	407.14	
Labour costs	204.66	Internal resource requirements and market labour rates.
Indirect costs	202.48	Current available market rates and recent historical data.
Escalators and equity raising costs	37.68	
Equity raising costs	33.14	Calculated using the AER's Post Tax Revenue Model (PTRM).
Real input escalators	4.44	Calculated by multiplying the projected labour components of forecast capex by the real labour cost escalators approved in the AER's 2023-28 Revenue Determination for Transgrid.
Total capex (excluding equity raising costs)	4,279.14	
Total capex	4,312.28	

Notes: 1. These are costs we expect to incur in the construction of Humelink, but that are not included in the tender prices.

Sections 4.2.1 to 4.2.6 overview the basis on which we have derived our Stage 2 forecast capex. Further information is contained in the following document, which form part of this draft Stag 2 Application:

- Direct Capex Forecasting Methodology, and
- Labour and Indirect Capex Forecasting Methodology.

Our Stage 2 forecast capex for Humelink is prudent and efficient. This is demonstrated by:

- the rigorous, well-defined and transparent capex forecasting methodology set out in 4.2.1 to 4.2.6 of this document, our Direct Capex Forecasting Methodology and Labour and Indirect Capex Forecasting Methodology and accompanying models. These are provided as Attachments to this Application.
- the delivery contract model that we have adopted – this is discussed in section 4.2.1
- the reliance on market testing and expert reports – this is discussed in sections 4.2.1 to 4.6, and
- external validation of both the capex – this is discussed in section 4.3.

4.2.1. Our approach to design and construction activities and costs

This section overviews our approach to the D&C component of capex including the ITC contract model adopted in the face of the uncertain operating environment, and our procurement process. Table 4-2 shows that the forecast capex for the D&C activities comprises ██████████ million ██████████ per cent, which is the largest single component of our total Stage 2 forecast capex.

4.2.1.1. East and West contract packages

We have adopted a packaged approach to deliver Humelink, which involves splitting into two geographic packages of similar sizes that will be delivered by two separate delivery contractors. This approach:

- provides a more manageable scope for contractors, aligned with market sounding feedback, and
- best equips us to select contractors with capabilities best suited to the varied works required for the overall project.

The D&C contractors will be responsible for the design, construction, and pre-commissioning of the works under the relevant contract package. We will be responsible for obtaining the planning approvals, obtaining access to the site, and (after completion) the energisation, operation and maintenance of the asset. Construction is expected to commence in 2024 and take 2.5 years to complete.

The two contract packages are:

- Humelink East: consists primarily of the transmission line works from the interface point to the eastern Humelink terminus at Bannaby. This package spans a greater geographical area, with double the length of HV transmission lines (compared to the Humelink West package), while the substation works are relatively small (and predominately civil works rather than electrical works), and
- Humelink West: consists of the lines from the interface point south to the Snowy 2.0 connection at Maragle, and west to the Humelink western terminus at Wagga Wagga. This package involves more substation works, including interfaces at brownfield sites and construction of a new substation near Wagga Wagga, named Gugaa. The route involves more works within alpine regions, state forests and national parks.

Figure 4-1 identifies the indicative scope and interface point between the Contract Packages. The following sections provide an overview of the scope of Humelink East and Humelink West.

Figure 4-1: Overview of the Humelink alignment and contract packages



4.2.1.2. Uncertain operating environment

The current market has shown that complex, large scale infrastructure projects such as Humelink face, among other challenges, uncertain and inflationary operating environments, resourcing and supply chain challenges, intense global competition for capitals and financeability.

Since mid-2021, increases in the cost of construction in Australia have outpaced changes in the Consumer Price Index (CPI). This recent divergence is particularly evident with the change in the Input to Manufacturing Producer Price Indexes (PPIs). Over the 12 months ending June 2022:

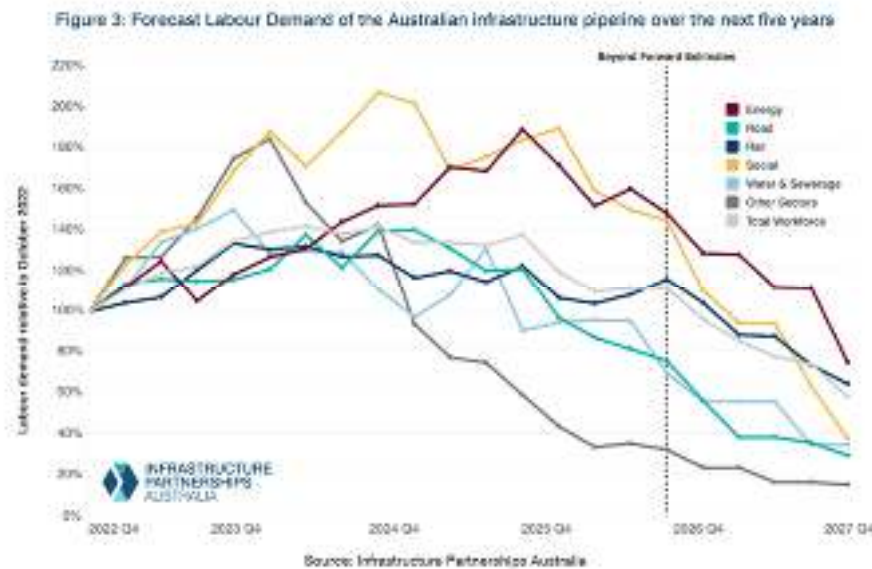
- headline CPI increased by 6.1 per cent over the 12 months ending June 2022, the highest year-ended CPI inflation since the early 1990s. Annual inflation has remained high in 2023, with the ABS reporting a 6.0 per cent annual increase (all groups, non-adjusted) to end June 2023
- the inputs PPI for the manufacturing sector increased by 17.7 per cent over the 12 months ending June 2022, and
- the outputs PPI for heavy and civil engineering construction increased by 9.0 per cent.

It is forecast that increases in real construction costs will likely intensify due to a surge in committed projects, which will compete for increasingly scarce resources. The pipeline of transmission line projects as per the 2022 ISP alone, which are needed to deliver the energy transition, currently exceeds \$20 billion (comprising Actionable projects totaling \$13 billion and several Renewable Energy Zones (REZs)). The number and size of committed energy projects presents a significant challenge to the capacity of the industry. It is driving up labour costs as demand for construction workers, engineers and other skilled professionals continues to increase to deliver:

- the Commonwealth and State Government infrastructure investment programs including hospitals, road upgrades, bridge construction, and water infrastructure projects, and
- large transmission projects on AEMO's OPD, the NSW Electricity Infrastructure Roadmap and other state governments agendas, including:
 - Project EnergyConnect, VNI West, Marinus Link, Sydney Ring

- NSW Government's REZs such as Central-West Orana REZ, New England REZ or Hunter-Central Coast REZ, and
- CopperString, which is supported by the Queensland Government and is being built by Powerlink in north Queensland.

The IPA forecasts that the infrastructure labour force in NSW will be required to grow by 56 per cent by 2024 to deliver the pipeline of infrastructure projects across NSW and Australia.⁴⁸



The cost of materials required to build AEMO's actionable ISP projects is also soaring and volatile due to:

- the surge in surge in construction activity globally
- supply chain disruptions resulting in materials shortages
- the war in Ukraine driving up fuel costs, and
- fluctuations in global commodity market prices for raw materials, such as steel, concrete, copper and aluminium due to geopolitical factors, trade policies and supply disruptions.

As discussed in section 4.2.1.3, in response to the uncertain operating market, contractors are presently offering contracts with flexible pricing and risk-sharing arrangements to accommodate changes and unforeseen circumstances and safeguard against potential losses. This will assist to mitigate their own risk exposure given the significant uncertain operating environment.

4.2.1.3. ITC D&C contracts

We carefully considered contract options for the D&C works required to deliver Humelink.

As noted above, the uncertain and challenging operating environment means that contractors are not able or willing to enter into traditional fixed price D&C contracts. We have therefore adopted an ITC D&C contracting model to deliver the East and West packages for Humelink. The ITC D&C commercial model achieves an appropriate balance between:

- fixed pricing, for components of the scope that are well defined and have high-cost certainty, and

⁴⁸ Infrastructure Partnerships Australia (IPA), Infrastructure Election Monitor NSW – Red Book, Figure 3

- reimbursable pricing with shared risk, for components of the scope which demonstrate scope and cost uncertainty.

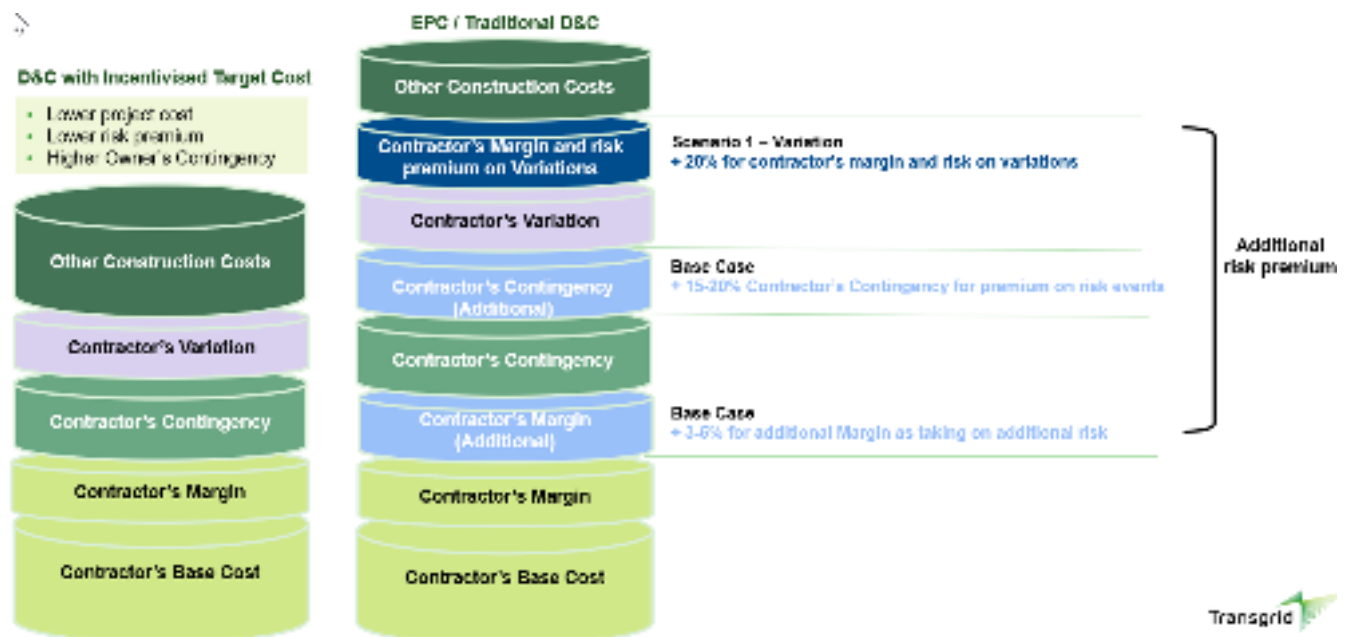
The reimbursable components under the ITC approach allow the D&C contractors to safeguard against potential losses (i.e., risk costs) caused by costs or elements of scope that are subject to high levels of uncertainty, such as labour shortages, increasing materials costs and supply chain disruption. The significant ‘unknowns’ relating to materials cost inflation, inflation pressures on other costs, and skills shortages would otherwise result in contractors adopting very high-risk premiums in fixed price contracts.

This approach is in the long-term interests of consumer because it enables the contractor to offer a lower contract price than they otherwise would if they were forced to price in the risk costs through a fixed price D&C contract. The ITC D&C model balances our focus on affordability with the need to ensure a sustainable level of capex to ensure a sustainable level of revenue to our contractors, to match their costs and ensure the safe delivery of Humelink.

In an uncertain operating environment, the contractor’s risk and contingency premiums are higher to protect them against the likelihood of potential risk costs emerging. In the case of a fixed price D&C contract, the Other Construction costs is expected to be relatively lower, however the actual cost of the project is expected to be higher to account for contractor risk premiums. This is illustrated in Figure 4-2.

As noted above, the expected cost saving to consumers is \$237 million from adopting a variable ITC D&C contract rather than a fixed price D&C contract to deliver the design and construction works for Humelink.

Figure 4-2: D&C ITC vs traditional D&C contract model



The ITC D&C contracting approach that we have adopted allows for fair risk allocation between us and the D&C contractors and is consistent with:

- feedback from our extensive market sounding and early contractor involvement (ECI) process,
- lessons learned from past project experience, in particular from PEC, and
- our focus on affordability and ensuring Humelink is delivered at the lowest sustainable cost for consumers.

Box 4-1 overviews the key principles for the commercial contracting framework and risk allocation.

Box 4-1: Key principles for commercial contracting and risk allocation

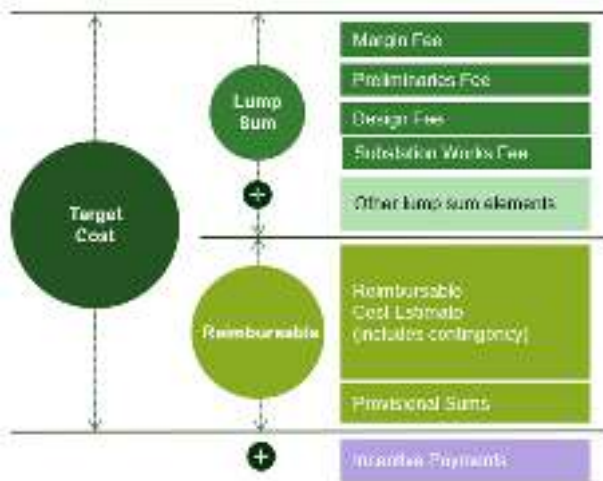


The ITC D&C contracting approach includes fixed and reimbursable components combined with incentives to motivate delivery. The fixed and variable cost components are structured as follows:

- the fixed cost component (i.e., lump sum) relates to the scope elements for which cost certainty is relatively high. For t this relates to design, preliminaries and substations, which comprise ■ per cent of the contract cost, and
- the reimbursable cost component relates to the scope elements for which there is less cost certainty. For Humelink, this relates to the cost of construction of the transmission lines, which comprises ■ per cent of the contract costs. The reimbursable component includes an agreed target cost with incentive arrangements to encourage collaborative behaviours to drive contractor performance and ensure the successful delivery of the Project. The incentive structure includes:
 - a cost incentive, known as a pain-share/gain-share mechanism whereby the contractor shares with us the risk of total costs being lower (gain-share) or higher (pain-share) than the total target cost, with the contractor risk capped at its margin fee
 - a program incentive up to 2.5 per cent of the total contract cost, payable where practical completion is achieved ahead of the target date
 - Key Result Area (KRA) incentives up to 1 per cent of the total contract cost for achievement of key performance indicators in safety, retention of key personnel, and community/stakeholder outcomes, and
 - standardised design, contract and commercial structures to achieve efficiencies across the program that are internationally recognised and used in Australia.

Figure 4-3 illustrates the structure of the ITC contract model.

Figure 4-3: ITC D&C contract model



The key components of the ITC D&C contract model are:

- The target cost – this cost comprises the lump sums and the estimate of reimbursable costs to deliver the entire scope of work for each contract package, based on the information available at the time of entering into the contract.
- The lump sum component – this is the largest component of the cost and includes the following fees:
 - margin fee, which includes margins and overhead costs
 - preliminary fee, which includes management and supervision staff costs, survey work, personnel, site vehicles, site facilities establishment, IT and communication systems, finance, management system and plans
 - design fee, which includes costs for design work required to meet the contractors' design obligations including the independent verification, and
 - substation work fee, which relates to substation and all related temporary works. This includes labour, construction plant and equipment, materials, consumables, commissioning spares and instruments.
- The reimbursable component – this relates to:
 - transmission line works – the costs for labour, plant and equipment associated with access tracks, clearing, tower foundations, steel towers and stringing, and
 - provisional sum items – the cost for unknown contamination, substation noise mitigation, architecture acoustic treatment works, post-practical completion support, unforeseen landholder costs, cultural heritage works, registered Aboriginal party costs, community options, local area works and insurance top ups.
- The incentive regime – this relates to the reimbursable component only (not the lump sum component) and is intended to adjust the value of contractor's payments against the target cost based on the following three incentives:
 - Cost Incentive – this applies where the contractors' actual cost is higher or lower than the target cost and is known as the pain-share/gain-share regime
 - Program Incentive – this applies where the practical completion date occurs before or after the target practical completion date, and

- KRA Incentive – this applies where the works are completed in accordance with various safety, cultural, environmental, CSE and other objectives.

4.2.1.4. Overview of our procurement process

Our process for procuring delivery contractors for each work package was based on a collaborative procurement approach. Our tender process commenced with preparatory work in 2021, ahead of the formal competitive tender process which commenced with formal market sounding in April 2022. The formal tender process involved four phases:

- Phase 1 - Market sounding from April 2022 to July 2022
- Phase 2 - Expression of Interest (EOI) from August 2022 to October 2022
- Phase 3 - Early Contractor Involvement (ECI) Stage 1 October 2022 to February 2023, and
- Phase 4 – ECI Stage 2 March 2023 to August 2023.

The collaborative procurement process mitigates delivery risk by addressing upfront points of commercial engineering and operational tension between us and the D&C contractors.

The ECI phase ensured that the Project scope was refined, key project risks and opportunities addressed and commercial and technical requirements optimised, prior to the award of contracts. This in turn has resulted in better project outcomes and increased value-for-money. It has also promoted the development of innovative solutions and provides a higher degree of program and cost certainty. The outcome of ECI stage 2 was the award of delivery contracts for Humelink East and Humelink West to the successful delivery contractors (one for each contract package). These contracts were officially awarded in December 2023.

Box 4-2 provides an overview of our procurement approach and outcomes.

Box 4-2 Overview of our procurement approach for D&C contractors

Overview:

Our competitive approach to appointing Delivery Partners for the D&C of Humelink was as follows:

1. Establish a Transaction Team - we engaged a Transaction Team (Connell Griffin) to manage the transaction process from commencement of the formal Market Sounding through to the award of the major contract package(s)
2. Engage an external probity adviser, O'Connor Marsden & Associates to ensure the integrity of the process
3. Develop a Tender Evaluation Plan to ensure that all tenders were evaluated fairly, in accordance with Transgrid's requirements and objectives and the Humelink probity framework
4. Set up a tender evaluation team, comprising a Review Panel, Evaluation Panel and external evaluation advisors and specialist reviewers (including financial, legal, engineering and delivery)
5. Undertake formal market sounding, over the period April 2022 to July 2022 to:
 - inform the market about key aspects of Humelink, including the proposed project program, delivery strategy, regulatory approval strategy and planning status
 - obtain industry feedback to validate the packaging and delivery strategy for the project, and
 - identify bona-fide delivery contractors, capable of undertaking the Project to participate in the next stage of the procurement process.

Overview:

A total of 18 entities participated in the early market sounding and nine of these entities registered to participate in the Expression of Interest (EOI) Phase of the procurement process.

6. Undertake EOI Phase over the period August to October 2022, to identify the shortlist of suitably qualified and experienced Applicants to participate in the two-stage ECI Phase. The EOI Phase commenced with the release of the Invitation for Expressions of Interest. Five compliant EOI Applications were received and in October 2022, three EOI Applications were shortlisted to participate in the ECI Phase as ECI Tenderers.
7. Undertake ECI Stage 1 over the period from October 2022 to February 2023. The purpose of this phase was to provide the three ECI Applicants with information on the Project including the design and scope, innovation, statutory approvals, land access technical and commercial requirements as well as the tender submission and evaluation process. The three ECI Applicants submitted initial tender responses in December 2022. In February 2023, the two ECI Tenderers, who best responded to the Evaluation Criteria (i.e., demonstrated the ability deliver the best value for money), were selected to become the Preferred ECI Tenderers (one for each of the East and West Contract Packages) and proceed to ECI Stage 2.
8. Undertake ECI Stage 2 over the period from February to August 2023. The purpose of this phase was to ascertain commitment of preferred ECI Tenderers to achieve the agreed outcomes for the Project and program, optimise their offers for one construction package only – either the East or the West – and to finalise delivery contracts. At the conclusion of this stage, we received their final bids and undertook a detailed final tender evaluation

In parallel, our independent external cost estimator, Fission, has independently verified our D&C contractor costs. Fission has assessed the quantities and pricing of these contractor costs against the ECI stage 1 bids and has developed their own independent cost build up based on the delivery scope.

4.2.2. LLE

Our Stage 2 forecast capex for LLE is [REDACTED] million comprising [REDACTED] million for reactors, [REDACTED] million transformers and [REDACTED] million for conductors. Our stage 2 capex is additional to [REDACTED] million approved by the AER for LLE in its Stage 1 Decisions, which covered the bulk of LLE costs that we expect to incur for Humelink. Our Stage 2 forecast capex relates to:

- For reactors and transformer – storage, transportation/mobilisation (i.e., delivery) and installation costs, and
- For conductor – procurement and transportation of earth-wire and securing land for a lay-down facility location for all conductors.

The forecast capex for these activities is based on the agreement with suppliers.

[REDACTED]

Our Stage 2 forecast capex for Other Construction costs of \$599.07 million is, to the extent possible, based on advice from external parties, the rates included in the contractors' responses where activities are the same or similar, and our independent cost estimator fission.

Our forecast [REDACTED] for Humelink appropriately reflects the complexity, uncertainty, contract model selection and large variety of risks the Project is exposed to and are necessary to ensure the successful delivery of the Project within the delivery timeframes and budget. These matters are discussed in section 4.2.1.

The AER’s guidance note on the regulation of actionable ISP projects (Guidance Note on ISP Projects)⁴⁹ states that it can accept a project risk allowance for a contingent project where:⁵⁰

- residual risks have been identified, and
- the associated cost estimates of the residual risk are efficient i.e., the consequential cost adjusted to reflect the likelihood of occurrence.

We have well developed risk management procedures, which align with AS ISO 31000:2018 Risk Management Guidelines. To determine our forecast capex for Other construction costs, we have developed a robust risk register and have used Monte Carlo probability analysis to quantify our risk costs, focusing on those risks that are expected to materially impact the Project’s delivery cost or schedule.

Our top 25 risk (or other construction costs) comprise \$537.14 million or 90 per cent of our total Other Construction costs, broken down as follows:

- reimbursable risk costs (our forecast capex is \$57.11 million) – these costs relate to the reimbursable component of the D&C contract described in section 4.2.1.3, whereby we are required to adjust the contractor’s payment against the target cost based on the incentive arrangements that apply under the contract
- variation risk costs (our forecast capex is \$195.37 million) – these costs relate to scope changes that may emerge during the delivery phase. These costs are not related to the reimbursable component of the project and are wholly our risk costs
- time (delay) risk costs (our forecast capex is \$243.73 million) – these relate to timing delays that may emerge during the delivery phase as a result of planning or secondary approval delays and construction delays, which result in additional labour resources and corporate overhead costs. These costs are not related to the reimbursable component of the project and are wholly our risk costs.
- inherent risks costs (our forecast capex is \$20.86 million) – these relate to activities for which there is cost uncertainty due to the completeness of information available at this stage of the Project. These costs are not related to the reimbursable component of the project and are wholly our risk costs, and
- biodiversity risks costs (our forecast capex is \$29.07 million) – this relate the possibility that our actual biodiversity offset liability is materially different to our forecast based on the assumptions in our biodiversity strategy not prevailing.

Table 4-4 overviews our Other Construction costs. Further detail is contained in our Direct Capex Forecasting Methodology and our Humelink Risk Report, provided as Attachments to this Application.

Table 4-4: Other construction costs for Humelink (\$M, Real 2023-23)

Risk name	Description	Forecast capex (M)
Reimbursable		
ID47 – productivity	Lower productivity levels than planned and increased rework required in tower foundations and stringing. The Project is within a specialised sector where the current workforce is less experienced and amid skills shortage.	17.86

⁴⁹ AER, [Guidance Note, Regulation of actionable ISP project](#), March 2021

⁵⁰ AER, [Regulation of actionable ISP projects](#), Guidance note, March 2021, pp 16-17.

Risk name	Description	Forecast capex (M)
ID42 – Increase in Plant	Reimbursable plant and equipment costs above estimate for Transmission Line Works.	12.87
ID57 – Tower Design Growth	Design refinement and growth of towers occurs during detailed design.	11.01
ID40 – Increase in labour	Increase in Contractor reimbursable labour costs above EBA for Transmission Line Works.	9.59
ID41 – Local Area Works	Additional Local Area Works during construction leads to increase in reimbursable costs. High construction road use could result in damage and repair requirements and issues in dealing with Councils and non-project contractors.	5.78
Total reimbursable		57.11
Variation		
ID68 – Delay Escalation	Contractor repricing arising from an employer driven delay to NTP2.	52.50
ID13 – Inclement Weather	Claims for delay due to exceeding the inclement weather allowance in contract plus disputes over what is inclement weather and impacted sites.	41.71
ID65 – Tower Foundations	Increase in costs associated tower footings with Geotechnical conditions being substantially different from the conditions expected following investigation works leading to increased costs and adjustment event under the delivery contract	33.08
ID19 – Variations	Claims for variations due to changes in scope due to changes in design and construction manuals or our requirements	31.28
ID33 – Interface Contractor	Lack of coordination with interface contractors (OEM, East/West) resulting in design delays, construction delays, scope gaps, responsibility gaps and additional costs.	15.12
ID59 – Condition of Approval	Changes to Conditions of Approval from the baseline conditions are more onerous.	11.58
ID22 – Fabricated Steel	Increase in supply cost for fabricated steel (Evaluated as an inherent risk with a range from possible cost reduction to cost increases).	10.09
Total variation risk		195.37
Time		

Risk name	Description	Forecast capex (M)
ID2 – EIS Delay	Delay and cost claims from the Contractors due to delay in receiving planning approval.	77.08
ID49 – Owner's Cost	Transgrid Owner's Costs increase due to project duration extension. Note: contractor costs dealt with in specific risks.	72.11
ID5 – Site Access	Delays to and claims by the Contractor due to being unable to access the Site.	24.79
ID35 – Reactor / Transformer Delays	Delays to Transgrid supplied reactors and transformers due to delayed overseas manufacturing and shipping timeframes.	11.81
ID56 – Conductor Delay	Delays to Transgrid supplied conductor and OPGW from delayed overseas manufacturing and shipping timeframes.	11.81
ID37 – Social License	Project loses support (social licence) that results in disruptions such as blockades, protests, legal challenges and other means of obstruction including councils.	11.81
ID27 – Exceptional Events	Exceptional Events such as lockdowns, war, terrorism or natural disaster.	9.63
ID6 – Reliance Info	Variation claims by Contractor due to changes in substation reliance information included in the Contract e.g., (General Arrangements, Single Line Diagrams, Existing assets, Geotech substation sites UGL).	8.80
ID80 – Insolvency of a JV member	Insolvency of one of the JV members of the Delivery Partner	6.88
Total time risk		234.73
Inherent		
ID71 – Uncertainty in the estimate of Owner's non-labour costs for support, travel, legal, etc.	Owner's non-labour costs that vary substantially depending on of events, time of year events occur, etc.	9.49
ID70 – Uncertainty in the estimate of Owner's cost for labour and consultants	Uncertainty of the rates, numbers and employment ramp up and down rates.	6.06
ID72 – Uncertainty in the cost of OEM Transformers,	Orders were placed for the transformers but not for reactors or conductors. Modifications to design may increase the costs of each	5.32

Risk name	Description	Forecast capex (M)
reactors and conductor	unit and transportation costs may be incurred due to changed directions from Transgrid	
Total inherent risk		20.86
Biodiversity		
ID74 – Uncertainty of final biodiversity offset cost	There are many variables in the Delivery Strategy and market that can vary the biodiversity offset cost substantially.	29.07
Total biodiversity		29.07
Total top 25 risks		537.14
Other 43 risks (Combined)	These remaining risks account for 10% of the contingency value.	61.93
Total Other Construction Costs		599.07

4.2.4. Easement acquisition

Our Stage 2 forecast capex for easement acquisition of \$197.29 million relates to the cost of acquiring easements over a substantial amount of land that impacts many landholders' properties. Land access and acquisition is a critical predecessor step to project construction.

Our easement negotiation and acquisition process is consistent with the Land Acquisition (Just Terms Compensation) Act 1991 (NSW) (JTC Act). We commenced activities to secure land and easements as part of our Stage 1 activities, which were approved by the AER in Stage 1 (Part 1) Decision. Our Stage 1 activities focused on undertaking valuations and establishing options agreements with 280 impacted private landholders as well as acquiring land for the Gugaa substation.

Our Stage 2 capex forecast for property and easements is based on an independent expert report from Jones Lang LaSalle (JLL). Our Stage 2 capex relates to the payment of compensation to public and private land holders and other costs including stamp duty, the value of timber taken, substitute forest land, disturbance costs, construction camps and lay-down areas and overhead costs.

Our Stage 2 forecast capex reflects the route through the Green Hills State Forest (Green Hill deviation), which has been chosen through the route selection process that concluded in August 2023. This route was selected after consultation with landowners and Forestry Corporation NSW (FC NSW) and uses public land where possible.

This route also best addresses our social, environmental and land use considerations as well as network resilience and cost. Based on this route alignment, there are approximately [REDACTED] private landowners and [REDACTED] public land parcels, involving government and local authorities.

4.2.5. Biodiversity offset costs

Our Stage 2 forecast capex of █████ million for biodiversity offset costs covers the residual impact on plant communities and threatened species and comprises both ecosystem, and species offset credit liabilities.

Typically, the credit liability for a project needs to be retired following planning approval and before construction commences. However, due to the complexity of large linear infrastructure projects, we are, in consultation with the NSW Department of Planning and Environment (DPE), planning to adopt the same approach as for other major projects:

- obtain planning approval conditions that will allow us to defer our offset obligation for two years from the date of planning approval and
- provide a bank guarantee to meet our offset obligations based on the upper limit of our offset liabilities to enable construction to commence to meet the delivery timeframe.

This approach was adopted in planning approval conditions for other Critical State Significant Infrastructure (CSSI) projects including PEC and Snowy 2.0 and supports the delivery of Humelink at the lowest sustainable cost to consumers.

Our Stage 2 forecast capex is based on an independent expert cost estimation report from Niche (scenario 2). Scenario 2 assumes successful implementation of the key initiatives in our Biodiversity Offset Delivery Strategy (BODS) including to:

- first reduce the offset requirement, then establish Biodiversity Stewardship Agreement sites (BSAs) over the period from July 2024 to July 2026, and
- use of offset acquittal options to retire our credit liability where certainty or time constraints means that this would be comparatively the cheapest option.

4.2.6. Labour and indirect costs

Our Stage 2 forecast capex of \$407.14 million for labour and indirect costs is bottom-up build of costs over the period from █████. There are six streams of labour and indirect costs:

- **Commercial, project management and project controls** – our forecast capex is \$80.07 million. It relates to labour and related costs for commercial oversight of the D&C contracts and LLE as well as project management and oversight required to successfully achieve the Projects' objectives. The activities include integration management, governance, cost control and risk management and mitigations.
- **Community Stakeholder and Engagement (CSE)** – our forecast capex is \$37.88 million. It relates to labour and related costs to consult with the community and our stakeholders about the Project. The activities will be guided by our Humelink Engagement Strategy. CSE activities are crucial to gain and maintain our social licence, undertake media and communications management, deliver community partnership programs and lead the community strategy and activities.
- **Land and Property** – our forecast capex is \$8.05 million. It relates to the labour and related costs required to process the compulsory acquisitions, negotiate landowner settlements, settle disputes and ensure ongoing compliance with option deed terms.
- **Project Design and Construction** – our forecast capex is \$97.73 million. It relates to the labour and related costs needed to manage contractor design and pre-construction and construction activities.

These activities include on site investigations, assessing claims and site supervision. Indirect costs include heavy haulage, road remediation and drone technology investment.

- **Corporate Support** – our forecast capex is \$142.23 million. It relates to HSE, regulatory, insurance and legal functions. Key activities include safety and environmental project assurance, obtaining environmental planning approvals, legal advice in relation to environmental, property, commercial matters and disputes and insurance coverage for construction risk up to commissioning.
- **Major Projects Initiatives** – our forecast capex is \$41.17 million. It relates to labour supporting our PTT program, which been established to accelerate the delivery of transmission infrastructure and drive costs down through economies of scale and scope.

4.3. Independent engineering verification of our Stage 2 Capex (delivery)

We engaged GHD to undertake an independent engineering verification and assessment of the scope of our Stage 2 activities and our Stage 2 capex forecast. GHD’s assessment:

- verified the scope of our Stage 2 activities is realistic to meet the investment need and that our forecast capex is efficient and is consistent with that which would be incurred by a prudent and efficient business
- found that our overall Project timeline is reasonable to meet the July 2026 project completion date
- confirmed that our procurement process and outcomes are reasonable
- 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 2 (delivery) 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 draft Application.

4.4. Capex threshold

The proposed capex for 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 4-5 shows that the forecast capex satisfies the relevant threshold. This means that the forecast capex is covered by the contingent project requirements of the NER.

Table 4-5: Contingent project thresholds (\$M, Nominal)

AER Decision - First year MAR	5% of MAR	Contingent Project Threshold	Pass / Fail
897.78	44.89	44.89	Pass (as capex > \$44.89 million)

Notes: NER clause 6A.8.1(b)(2)(iii) that expected capex is higher than the greater of \$30 million or 5% of MAR. The threshold is \$44.89 million (being 5% of MAR).

4.5. Application of the CESS

As discussed with the AER and our other key stakeholders, including the TAC, we are not supportive of the application of the CESS to ISP projects. This is because in an inflationary and uncertain operating environment with high value, complex and specialised projects, these incentive schemes introduce an asymmetric risk.

As discussed in section 4.2.1.2, the key drivers of this asymmetric risk costs arise from:

- labour shortages
- increasing materials costs and supply chain disruption, and
- other unforeseeable and unquantifiable costs that will arise in a project such as this, given the operating environment and the unique characteristics of ISP Projects including their size and scale.

To safeguard against potential losses (i.e., risk costs) D&C contractors require some cost components in their contracts to be variable. This allows them to offer a lower contract price than they otherwise would if they were forced to price in the risk costs through a fixed price contract.

As discussed in section 4.2.1.3, we have adopted an ITC D&C contract in our Stage 2 Application, whereby some components of the contract are fixed and others are variable. Accordingly, the AER's approval of Other Construction costs included in this Stage 2 Application are critical to enable us to deliver Humelink on time and on budget.

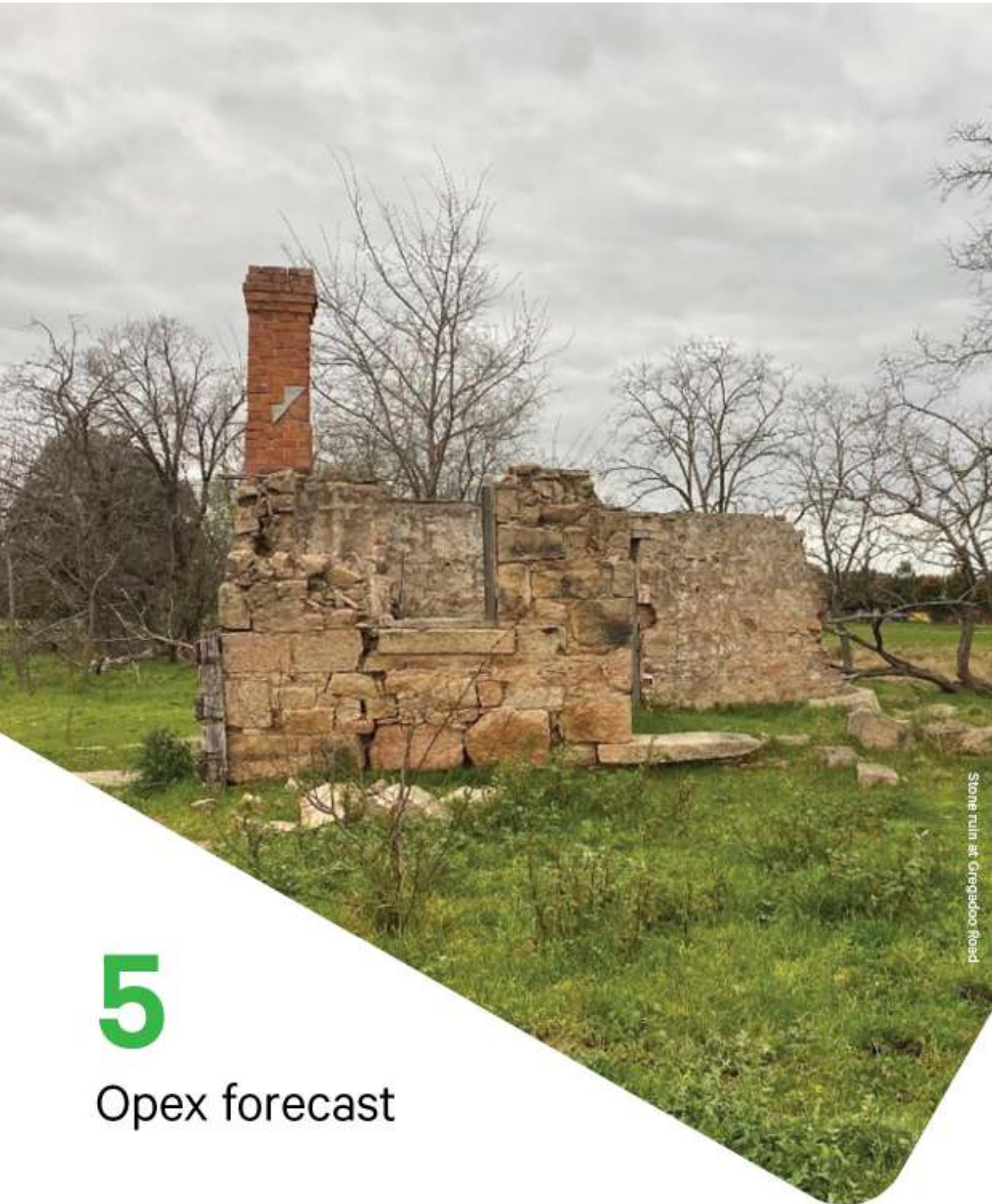
Given the uncertain and challenging operating environment and contractors not being able or willing to enter into fixed price D&C contracts, the probability of overspending the AER's capex allowance is greater than the probability of underspending it.

There is currently no provision in the NER for adjusting the capex allowance approved by the AER for ISP projects, like Humelink, to deal with costs arising from the uncertain operating environment in a way that is fair to all market participants, including customers and TNSPs. Currently, we would need to fund the gap in financing the investment for the remainder of the period and would be penalised under the CESS for any overspend, even when the higher levels of expenditure are efficient. This means that we may therefore not have a reasonable opportunity to recover the efficient costs of delivering the Project. In particular, if the CESS applies, these projects are expected to generate less than the benchmark rate of return. Investors may therefore not be willing to commit capital to these projects, which is not in the long-term interest of consumers, because these projects are critical to:

- the urgent energy transition, which in turn will drive down energy prices
- support the Australian and NSW Government's commitment to a net-zero future, and
- ensure consumers continue to receive access to cheaper, more reliable and secure clean electricity.

It would therefore not be in the long-term interest of consumers to apply penalties or rewards for differences between actual and forecast expenditure where these differences are driven by factors other than true efficiency savings or losses.

Importantly, the AER's underlying building block framework already provides an appropriate financial incentive for us to minimise capex. This is because during the regulatory period, revenues are based on forecast capex, such that we do not earn a return on any capex overspend for the duration of the regulatory period. Any capex overspend is rolled into our RAB at the start of the subsequent regulatory period, only then enabling us to earn a return on our actual prudent and efficient capex. This is demonstrated in a report from HoustonKemp, which is provided as an Attachment to this Application.



Stone ruin at Gregadoo Road

5

Opex forecast

5. Opex forecast

This chapter overviews our Stage 2 opex forecast for Humelink for the 2023-28 regulatory period.

5.1. Our stage 2 Opex forecast

Forecast incremental opex required for Humelink for the 2023-28 regulatory period is \$28.49 million, including debt raising costs, or \$23.17 million, excluding debt raising costs). Our forecast opex relates to:

- maintenance costs for substations, digital infrastructure and transmission lines
- property related expenses for council rates, land tax, water and electricity
- strategic benefit payments to compensate private landholders impacted by the Project, in accordance with the NSW Government's strategic benefit payment scheme
- insurance expenses for premiums for industrial special risks and operational third-party liability insurance for the Humelink assets, once they are commissioned, and
- vegetation integrity rehabilitation costs.

We have also applied the labour escalation rates as set out in our 2023-28 Revenue Determination to account for changes to real labour costs and added benchmark debt raising costs.

Our Stage 2 opex for Humelink is incremental to the opex approved by the AER in its 2023-28 Revenue Determination, because it relates to activities that are additional to our normal business activities and would not be incurred other than for undertaking Stage 2 activities for Humelink.

Table 5-1 sets out our incremental opex forecast for Humelink, by sub-category.

Table 5-1: Incremental forecast opex for Humelink (\$M, Real 2022-23)

Sub-category	2023-24	2024-25	2025-26	2026-27	2027-28	Total
Maintenance costs (excluding labour escalation)	-	-	-	2.33	5.98	8.31
Property	-	0.14	0.14	0.15	0.15	0.58
Strategic Benefits Payments	-	-	-	3.12	3.12	6.23
Insurance	-	-	-	3.59	3.59	7.19
Vegetation Integrity Rehabilitation Costs	-	-	-	0.36	0.36	0.71
Real input cost escalation	-	-	-	0.03	0.12	0.15
Total excluding debt raising costs	-	0.14	0.14	9.58	13.32	23.17
Debt raising costs	-	0.04	1.09	2.08	2.10	5.31
Total including debt raising costs	-	0.17	1.23	11.65	15.43	28.49

5.2. Basis of opex forecast

Table 5-2 sets out forecast incremental opex for Humelink by component, together with a summary of the basis of the forecast. We have applied a bottom-up build approach to forecast incremental opex. The bottom-up build approach reflects the AER's preferred approach for how it would like us to prepare our opex forecast. It is also consistent with the approach accepted by the AER for all contingent projects to-date.

Table 5-2: Forecast incremental opex for Humelink by category (\$M, Real 2022-23)

Opex item	Value	Basis for forecast expenditure
Maintenance costs (excluding labour escalation)	8.31	Current and proposed maintenance activity unit rates multiplied by projected volumes of activities
Property	0.58	Land tax based on estimated land value and estimated council and utility rates
Strategic Benefits Payments	6.23	Calculated in accordance with NSW Government's Strategic Benefit Payments scheme
Insurance	7.19	Based on independent report from Aon
Vegetation Integrity Rehabilitation costs	0.71	Based on works required within Humelink Easement Clearance Zone
Real input cost escalation	0.15	Labour escalators as set out in our 2023-28 Revenue Determination
Debt raising costs	5.31	Calculated using the same approach applied by the AER in its 2023-28 Revenue Determination, as reflected in the PTRM
Total incremental opex	28.49	

Our Humelink opex forecasting methodology, provided as an attachment to this Application, explains and justifies the incremental opex forecast. Our opex forecast model is also provided as an attachment to this Application.



6

Forecast revenue
and impact on
customers' bills

6. 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.

We have determined our incremental revenue forecast using the same assumptions and approaches recently adopted by the AER in its CPA decisions for Humelink Stage 1 (early works). Table 6-1 summarises the incremental revenue forecast of \$619.58 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.

Table 6-1 – 2023-28 incremental revenue forecast from Stage 2 (delivery) (\$M, Nominal)

Building block	\$ Million, Nominal	Approach
Return on capital	692.22	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	(81.44)	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	32.41	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	-	None
Corporate income tax	(23.16)	Calculated as forecast pre-tax income multiplied by the corporate tax rate, less the assumed value of imputation credits.
Annual revenue requirement (i.e., unsmoothed)	620.03	
Impact of smoothing	(0.45)	Calculated by resolving the year 3 to 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)	619.58	

Table 6-2 details the 2023–28 incremental revenue forecast of Stage 2 (delivery) by year.

Table 6-2 – Incremental revenue forecast (smoothed) (\$M, Nominal)

MAR (Smoothed Revenue)	2023-24	2024-25	2025-26	2026-27	2027-28	Total
AER 2023-28 determination (updated for Humelink Early Works Parts 1 and 2)	923.99	960.11	995.98	1,033.19	1,071.78	4,985.05
Impact of Stage 2 (delivery)	-	55.92	121.25	195.33	239.31	611.80
Updated MAR	923.99	1,016.03	1,117.23	1,228.51	1,311.09	5,596.85

Table 6-3 shows the indicative customer bill impact is an average increase of \$20.52 per annum for residential customers and an increase of \$40.78 per annum for small business customers, commencing in 2024-25. These transmission cost increases are expected to be more than offset by savings in wholesale costs.⁵¹ As discussed above, AEMO’s updated net market benefits assessment for the Project will be reflected its Draft 2024 ISP, which is due to be published in December 2023.

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 revenue determination for the 2023–28 period. 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.

Table 6-3: Impact of Stage 2 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					
AER 2023-28 determination (updated for the Humelink Early Works Parts 1 and 2)	2,076.15	2,076.88	2,076.65	2,076.79	2,077.52
Impact of Stage 2 (delivery)	-	-	11.92	25.24	24.40
Updated typical customer bill	2,076.15	2,076.88	2,088.57	2,102.03	2,101.92
Small Business Bills					
AER 2023-28 determination (updated for the Humelink Early Works Parts 1 and 2)	5,105.28	5,106.74	5,106.28	5,106.55	5,108.01
Impact of Stage 2 (delivery)	-	-	23.68	50.16	48.49

⁵¹ AEMO, 2022 ISP, p. 68. We note that the assessment of the market benefits from the Project is being separately updated and confirmed through AEMO’s draft 2024 ISP analysis.

	2023-24	2024-25	2025-26	2026-27	2027-28
Updated typical customer bill	5,105.28	5,106.74	5,129.96	5,156.71	5,156.50



7

Guide to compliance

7. Guide to compliance

Table 7-1 list the NER requirements for a CPA, and where we have addresses these in our Application.

Table 7-1: Compliance with NER requirements

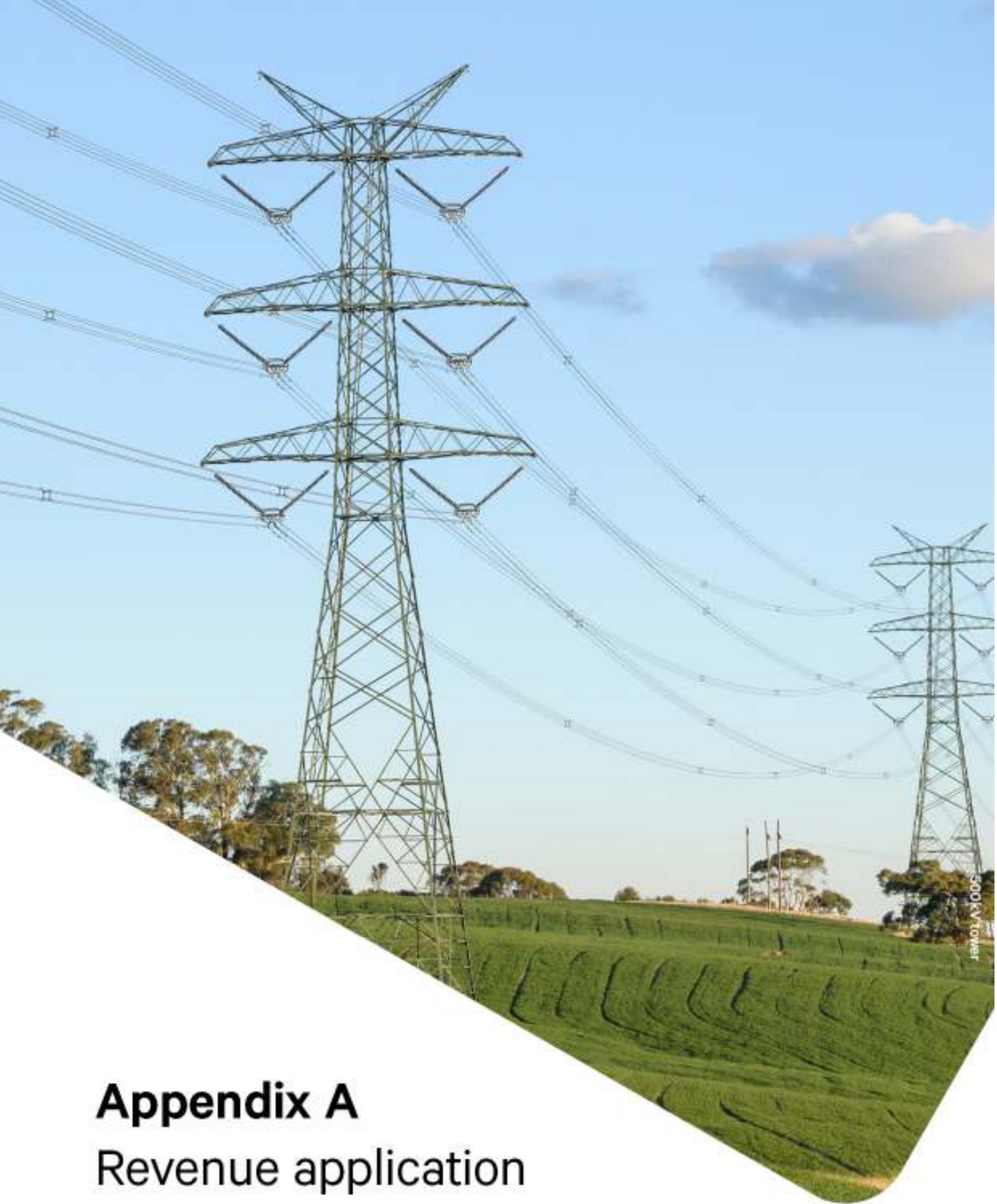
NER, clause 6A.8.2(b) requirements	Reference in Application
1. An explanation that substantiates the occurrence of the trigger event	Chapter 3
2. A forecast of the total capex for the contingent project	Chapter 4
3. A forecast of the capital and incremental opex, for each remaining regulatory year which the Transmission Network Service Provider considers is reasonably required for the purpose of undertaking the contingent project	Chapter 4 and 5
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: <ul style="list-style-type: none"> (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 6 and Appendix A

Table 7-2 lists the CPA requirements in the AER's Guidance Note and where we have addressed these in our Stage 2 Application.

Table 7-2: 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.
Project governance (section 2.4)	

AER Guideline requirement	Reference in Application
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.
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	Chapter 4, Direct Capex Forecasting Method and our Humelink Risk Report.
A summary of the efficient mitigation steps taken for the relevant risks	
An assessment for each residual risk	Risk costs in this Stage 2 Application have been considered for each activity and the associated costs are based on a qualitative approach to determining the mid-point (i.e., P50) estimate of the forecast costs.



5001471005

Appendix A

Revenue application

A.1 Appendix A Revenue Application

This Appendix A sets out our incremental revenue forecast for the Stage 2 (delivery), having regard for clause 6A.8.2(b)(9) of the NER.

As discussed in Chapter 0, on the basis of our Stage 2 capex and opex forecasts, we are seeking the AER's approval to increase our allowed 2023–28 MAR and tariffs. This Appendix A shows:

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

sets out the incremental MAR for Stage 2 activities for the 2023-28 regulatory period. This has been calculated using the PTRM adopted by the AER in its recent decision on the Humelink Stage 1 (Part 2) CPA.⁵²

A. 1: Incremental MAR (\$M, Nominal)

MAR (Smoothed Revenue)	2023-24	2024-25	2025-26	2026-27	2027-28	Total
AER 2023-28 determination (updated for Humelink Early Works Parts 1 and 2)	923.99	960.11	995.98	1,033.19	1,071.78	4,985.05
Impact of Stage 2 (delivery)	-	-	115.16	252.74	251.68	619.58
Updated MAR	923.99	960.11	1,111.14	1,285.92	1,323.46	5,604.63

The rest of this Appendix A:

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

A.2 Weighted average cost of capital (WACC)

We have calculated the incremental revenue for Stage 2 activities using the same WACC assumptions as those adopted by the AER in its 2023-28 Revenue Determination. This is consistent with the requirements of clause 6A.8.2(b)(4)(ii) of the NER.

The WACC parameters are set out in A. 2.

A. 2: WACC parameters

Parameter	AER Approved Value
Forecast inflation	2.92%
Value of imputation credits	57.00%
Gearing	60.00%

⁵² Throughout this Appendix A we have presented any revenue forecasts in end of year nominal terms.

Parameter	AER Approved Value	
Nominal pre-tax return on debt	4.63%	for 2023-24
	4.59%	for 2024-25
	4.72%	for 2025-26
	4.82%	for 2026-27
	4.97%	for 2027-28
Nominal post-tax return on equity	7.48%	
Nominal vanilla WACC	5.77%	for 2023-24
	5.75%	for 2024-25
	5.82%	for 2025-26
	5.88%	for 2026-27
	5.97%	for 2027-28

A.3 Asset lives

We have allocated our forecast capex for Stage 2 activities across regulatory asset classes. Capex is depreciated in the PTRM using the standard asset lives used in the AER's 2023–28 Revenue Determination, with two exceptions:

- for equity raising costs, we have updated the standard life for this asset class to 44.73 years using the approach adopted by the AER in its recent determinations, and
- we have added a new asset class for Biodiversity offset liabilities to enable us to depreciate these costs over the weighted average of the standard lives of all other depreciating assets. This will assist to ensure that the project is financeable.

The applicable standard asset lives are set out in Table A. 3.

A. 3: Asset lives

Asset Category	Standard Life (years)	Explanation
Transmission lines	50.00	As per the AER's 2023–28 Revenue Determination.
Substations	40.00	
Land and easements	n/a	
Biodiversity offsets	47.68	Calculated as the weighted average of the standard lives of all other depreciating assets for the Humelink Stage 2 activities using the same approach as that used to determine the standard life for equity raising costs.
Equity raising costs	44.75	As per recent AER decisions, this is calculated as the weighted average standard life for forecast net commission capex.

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

A.4 Incremental regulatory depreciation

Table A.4 sets out our forecast incremental regulatory depreciation for the 2023–28 regulatory period for Stage 2 activities, 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 2023-28 period, projected incremental capex, and the asset lives in section A.2.

As discussed above, to help improve the financeability of the Humelink project we have set forecast as commissioned capex for all asset class to match forecast as incurred capex. In effect, this leads to forecast capex on all depreciable assets being depreciated on an as incurred rather than as commissioned basis, bringing forward the timing of when depreciation is allowed.

Incremental regulatory depreciation is negative over the 2023–28 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.

A.4: Incremental regulatory depreciation (\$M, Nominal)

	2023-24	2024-25	2025-26	2026-27	2027-28	Total
AER 2023-28 determination (updated for Humelink Early Works Parts 1 and 2)	89.91	102.92	137.24	165.97	156.38	652.41
Impact of Stage 2 (Delivery)	-	(0.53)	(19.15)	(31.73)	(30.03)	(81.44)
Updated regulatory depreciation	89.91	102.39	118.08	134.24	126.35	570.97

A.5 Tax allowance

Table A. 5 sets out the incremental forecast net tax allowance for the 2023–28 regulatory period attributed to Stage 2 activities. 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 2023–28 Revenue Determination.

A. 5: Incremental net tax allowance (\$M, Nominal)

	2023-24	2024-25	2025-26	2026-27	2027-28	Total
AER 2023-28 determination (updated for Humelink Early Works Parts 1 and 2)	24.15	20.37	16.00	22.30	25.02	107.84
Impact of Stage 2 (delivery)	-	(0.98)	(5.46)	(9.13)	(7.59)	(23.16)
Updated net tax allowance	24.15	19.38	10.54	13.18	17.42	84.68

A.6 Debt and equity raising costs

Our forecast incremental revenue includes allowances for debt and equity-raising costs, consistent with the AER’s 2023–28 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 0.083%).
- 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.

A. 6: Incremental debt and equity raising costs (\$M, Real 2022-23)

	2023-24	2024-25	2025-26	2026-27	2027-28	Total
Debt raising costs						
AER 2023-28 determination (updated for Humelink Early Works Parts 1 and 2)	4.53	5.03	5.17	5.08	4.99	24.79
Impact of Stage 2 (delivery)	-	0.04	1.09	2.08	2.10	5.31
Updated debt raising costs	4.53	5.07	6.26	7.16	7.09	30.10
Equity raising costs						
AER 2023-28 determination (updated for the Humelink Early Works Parts 1 and 2)	-	-	-	-	-	-
Impact of Stage 2 (delivery)	33.14	-	-	-	-	33.14
Updated equity raising costs	33.14	-	-	-	-	33.14

A.7 Incremental revenue requirements for each year to end of period

Table A. 7 details the incremental ABBRR for Stage 2 for the 2023-28 period based on the forecasts provided above and using the PTRM.

A. 7: Incremental revenue requirements (\$M, Nominal)

	2023-24	2024-25	2025-26	2026-27	2027-28	Total
AER 2023-28 determination updated for Humelink CPA-1 (Parts 1 and 2))						
Return on capital	525.35	599.12	641.29	655.99	672.42	3,094.18
Regulatory depreciation	89.91	102.92	137.24	165.97	156.38	652.41
Opex	212.59	235.17	243.76	251.85	260.28	1,203.65
Revenue adjustments	12.42	(8.44)	(19.51)	(19.15)	(26.45)	(61.13)
Net tax allowance	24.15	20.37	16.00	22.30	25.02	107.84
Unsmoothed revenue requirement	864.41	949.13	1,018.78	1,076.96	1,087.65	4,996.94
Impact of Stage 2 (delivery)						
Return on capital	-	4.55	135.90	267.96	283.80	692.22
Regulatory depreciation	-	(0.53)	(19.15)	(31.73)	(30.03)	(81.44)
Opex allowance	-	0.18	1.34	13.08	17.81	32.41
Revenue adjustments	-	-	-	-	-	-
Net tax allowance	-	(0.98)	(5.46)	(9.13)	(7.59)	(23.16)
Unsmoothed revenue requirements	-	3.22	112.64	240.19	263.99	620.03
Updated						
Return on capital	525.35	603.67	777.19	923.96	956.22	3,786.40
Regulatory depreciation	89.91	102.39	118.08	134.24	126.35	570.97
Opex allowance	212.59	235.35	245.10	264.93	278.09	1,236.06
Revenue adjustments	12.42	(8.44)	(19.51)	(19.15)	(26.45)	(61.13)
Net tax allowance	24.15	19.38	10.54	13.18	17.42	84.68
Unsmoothed revenue requirements	864.41	952.36	1,131.42	1,317.15	1,351.64	5,616.97

A.8 Amended ABBRR and MAR

Table A. 8 sets out the updated ABBRR for the current regulatory period.

A. 8: ABBRR (\$M, Nominal)

	2023-24	2024-25	2025-26	2026-27	2027-28	Total
AER 2023-28 determination (updated for Humelink Early Works Parts 1 and 2)	864.41	949.13	1,018.78	1,076.96	1,087.65	4,996.94
Impact of Stage 2 (delivery)	-	3.22	112.64	240.19	263.99	620.03
Updated annual revenue requirement	864.41	952.36	1,131.42	1,317.15	1,351.64	5,616.97

Table A. 9 sets out the updated MAR for the current regulatory period.

A. 9: Amended MAR for the 2023-28 regulatory period (\$M, Nominal)

MAR (Smoothed Revenue)	2023-24	2024-25	2025-26	2026-27	2027-28	Total
AER 2023-28 determination (updated for Humelink Early Works Parts 1 and 2)	923.99	960.11	995.98	1,033.19	1,071.78	4,985.05
Impact of Stage 2 (delivery)	-	-	115.16	252.74	251.68	619.58
Updated MAR	923.99	960.11	1,111.14	1,285.92	1,323.46	5,604.63



Temporary Construction compounds

8

Abbreviations

8. Abbreviations

The following abbreviations are used in this Stage 2 Application.

Abbreviation	Definition
AACE	Association for the Advancement of Cost Engineering
ABBRR	Annual Building Block Revenue Requirement
AEIC	Australian Energy Infrastructure Commissioner
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AVP	AEMO Victoria Planning
BC Act	NSW Biodiversity Conservation Act 2016
BCF	Biodiversity Conservation Fund
BSA	Biodiversity Stewardship Agreement
CCG	Community Consultation Group
CEFC	Clean Energy Finance Corporation
CESS	Capital Expenditure Sharing Scheme
CPA or Application	Contingent Project Application
D&A	Development and approvals
D&C	Design and construction
DISER	Department of Industry Science Energy and Research
EIS	Environmental Impact Statement
ENA	Energy Networks Australia
EP&A	Environmental Planning and Assessment
FID	Final Investment Decision
ISP	Integrated System Plan
kV	kilovolt
LALC	Local Aboriginal Land Council
LLE	Long Lead Equipment
MAR	Maximum allowed revenue
MCHPA	Moorabool and Central Highlands Power Alliance Inc.
NEM	National Electricity Market
NER or Rules	National Electricity Rules

Abbreviation	Definition
NEVA	National Electricity (Victoria) Act 2005
NPV	Net present value
NSW	New South Wales
ODP	Optimal Development Path
PACR	Project Assessment Conclusions Report
EnergyConnect or PEC	Project EnergyConnect
PTRM	Post tax revenue model
PTT	Powering Tomorrow Together
RAB	Regulatory Asset Base
REZ	Renewable energy zone
RFM	Roll forward model
RIT-T	Regulatory Investment Test for Transmission
RRG	Regional Reference Group
Stage 1 Application or CPA-1	Contingent Project Application for early works
Stage 2 Application or CPA-2	Stage 2 Contingent Project Application for delivery
TAB	Tax Asset Base
TAC	Transgrid Advisory Committee
VNI PACR	VNI West Project Assessment Conclusions Report
VNI West or the Project	Victorian to New South Wales (NSW) Interconnector West
VRE	Variable renewable energy
WACC	Weighted Average Cost of Capital
WRL	Western Renewables Link