



TransGrid

# Opex Forecasting Methodology for Project EnergyConnect

Contingent Project Application for Project  
EnergyConnect

30 September 2020

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# 1. Purpose, structure and scope of this document

## 1.1 Purpose of this document

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On 29 June 2020, we provided the Australian Energy Regulator (AER) with our initial Contingent Project Application (Initial Application) for Project EnergyConnect (the Project or PEC), which included our initial Opex Forecasting Methodology (Initial Opex Methodology).

At the time of submitting our Initial Application, we were part way through our competitive tender process for the Project. We had received tender outcomes from the first stage of our formal tender process, being Request for Tender Phase A (RFT Phase A). Our Initial Application therefore reflected capex and opex based on RFT Phase A.

We committed to providing the AER with a revised capex forecast once we obtained further tender outcomes in the second half of 2020, to ensure that our forecast capex for the Project, and therefore our adjusted revenues and prices, reflects the best available view of the market-tested costs.

This document sets our updated opex forecast, which aligns with our capex forecast for the 2018-19 to 2022-23 (2018–23) regulatory period based on the final stage of our tender process, being the Best and Final Offer (BAFO). We have reflected the BAFO capex forecast in our Principal Application document.

Opex is the operating, maintenance and other non-capex (i.e. insurance costs) that we incur to provide prescribed transmission services to our customers.

This document forms part of our Final Contingent Project Application (Final Application) to the AER for PEC and should be read in conjunction with our Principal Application document and other supporting documents.

Unless otherwise specified, all dollar values in this document are in real 2017-18 dollars, consistent with the 2018-23 Revenue Determination, and are expressed in total costs (i.e. direct costs plus real input cost escalation and any overheads).<sup>1</sup>

## 1.2 Structure of this document

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The remainder of this document is structured as follows:

- > section 2 summarises the changes to forecast incremental opex between the RFT Phase A and BAFO
- > section 3 summarises our forecast incremental opex for PEC for the remainder of the current regulatory period.
- > section 4 explains our forecasting methodology for determining incremental opex for PEC.

## 1.3 Scope of this document

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This document supersedes our Initial Opex Forecasting Methodology which explained our RFT Phase A opex forecast. This document explains and justifies our BAFO opex forecast.

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<sup>1</sup> Consistent with the opex model adopted by the Australian Energy Regulator (AER) in its 2018–23 Revenue Determination, we have treated real 2017-18 dollars as being in *end of year* terms and nominal dollars as being in *middle of year* terms. Throughout the document numbers shown in tables may not add due to rounding.

The scope of the document is limited to the opex forecast for PEC that is attributable to TransGrid (i.e. the components of PEC in New South Wales (NSW)). This document does not:

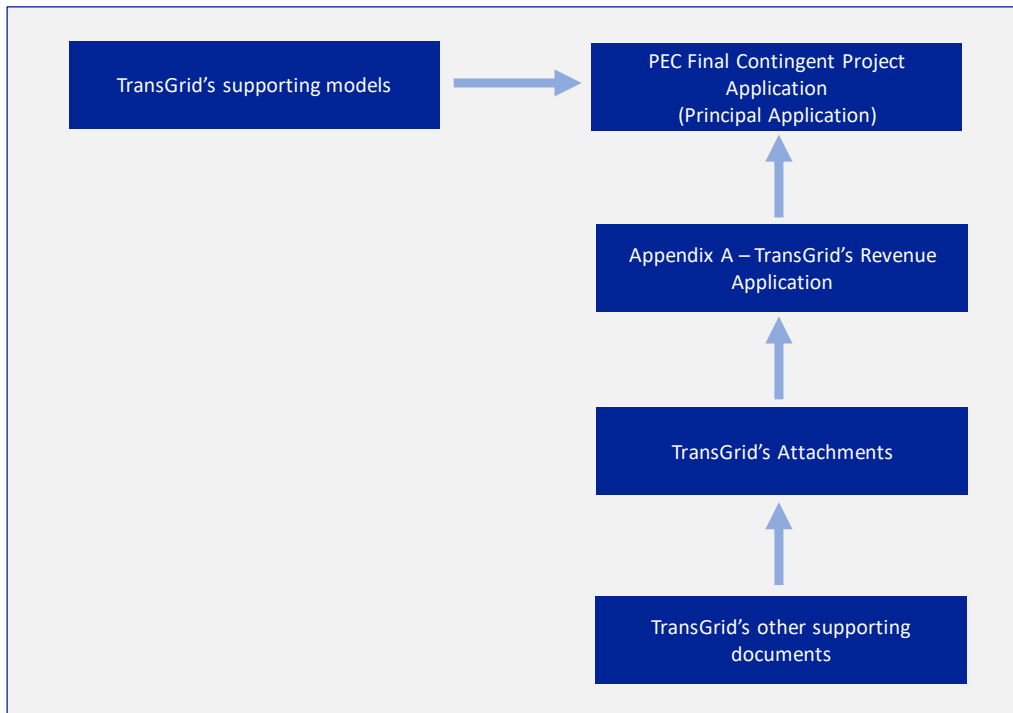
- > address the opex forecast for PEC that is attributable to ElectraNet, or
- > explain or justify our capital expenditure (capex) for the PEC Project This is done in separate documents entitled PEC Capex Forecasting Methodology (submitted to the AER on 20 June 2020) and the Supplementary Capex Forecasting Methodology for Project EnergyConnect - BAFO (together the Capex Forecasting Methodology Documents).

### 1.4 Structure of our Final Application for PEC

There are a number of other Attachments and models that support, and form part of, our Final Application for PEC. This document references these Attachments, models and other supporting documents for further detail and should be read in conjunction with all other documents comprising our Final Application.

Our Final Application is structured as illustrated in Figure 1.1 to be as clear and accessible as possible to the AER, customers and other stakeholders.

Figure 1.1: PEC Final Application document structure



The attachments and supporting models comprising our Final Application are detailed in section 1 of our Principal Application.

## 2. Change in our opex forecast

Our BAFO opex forecast is \$2.6 million. This is \$0.6 million (\$Real 2017-18) lower than our RFT Phase A opex forecast<sup>2</sup> of \$3.2 million (\$Real 2017-18).

We have retained the same methodology for calculating our BAFO opex forecast as we used to derive our RFT Phase A opex forecast. The decrease in our forecast opex is due to a reduction in our debt raising costs.

Table 2.1 shows the changes in our RFT Phase A and BAFO opex forecast.

**Table 2.1: Change to incremental opex forecast for PEC for the current regulatory period (\$Million, Real 2017-18)**

	RFT Phase A	BAFO	Difference	Comment
Operating & Maintenance (excluding labour escalation)	0.6	0.6	-	No change
Property	0.2	0.2	-	No change
Insurance	1.0	1.0	-	No change
Real input cost escalation	>0	>0	-	No change
Debt raising costs	1.4	0.8	(0.6)	Lower capex forecast has resulted in lower forecast debt raising costs
<b>Total</b>	<b>3.2</b>	<b>2.6</b>	<b>(0.6)</b>	

<sup>2</sup> The incremental opex forecast has not been derived from the tender process, however, we refer to the incremental opex forecast set out in our Initial Opex Methodology as the RFT Phase A opex forecast for simplicity purposes.

### 3. Summary of forecast opex for PEC

Forecast incremental opex required for PEC for the 2018-23 regulatory period is \$2.6 million. We used a bottom-up-build approach to determine incremental opex for PEC. In particular, we have forecast opex for each relevant category of opex, as detailed in the AER’s Annual Regulatory Information Notices (RIN):

- > operating and maintenance costs for major works – these costs are estimated based on the routine inspection maintenance regimes as per the current maintenance plans for substations, automation, metering, property, transmission lines and easements or proposed maintenance plans where the equipment is new and no existing maintenance plans exist (i.e. synchronous condensers)
- > property related expenses – such as council rates, water and electricity, and
- > insurance expenses – this covers the estimated premiums for industrial special risks and operational third-party liability insurance for the PEC assets, once they are commissioned.

We have also:

- > applied the labour escalation rates approved by the AER in its 2018-23 Revenue Determination to account for changes to real labour costs, and
- > added benchmark debt raising costs. These costs have been calculated using the same approach applied by the AER in its 2018-23 Revenue Determination, as reflected in the post-tax revenue model (PTRM).

Table 3.1 sets out our incremental opex forecast for PEC, by expenditure category.

**Table 3.1: Incremental forecast opex for PEC for the current regulatory period, (\$Million, Real 2017-18)**

	2018-19	2019-20	2020-21	2021-22	2022-23	Total
Operating & Maintenance (excluding labour escalation)	-	-	-	-	0.6	<b>0.6</b>
Property	-	>0	0.1	0.1	0.1	<b>0.2</b>
Insurance	-	-	-	0.3	0.7	<b>1.0</b>
Real input cost escalation	-	-	-	-	>0	<b>&gt;0</b>
Debt raising costs	-	>0	>0	0.1	0.6	<b>0.8</b>
<b>Total</b>	-	<b>&gt;0</b>	<b>0.1</b>	<b>0.5</b>	<b>1.9</b>	<b>2.6</b>

Table 3.2 sets out forecast incremental opex for PEC by component, together with a summary of the basis of the forecast. Table 3.2 shows that forecast incremental opex does not include incremental expensed overheads or project risk costs.

**Table 3.2: Forecast incremental opex for PEC by component (\$Million, Real 2017-18)**

Opex Item	Value	Basis for Forecast Expenditure
Operating and maintenance expenditure (excluding labour escalation)	0.6	Current maintenance activity unit rates multiplied by projected volumes of activities
Property costs	0.2	Recent property costs rates multiplied by projected value of acquired property
Insurance costs	1.0	██
Real input cost escalation	Less than 0.1 <sup>3</sup>	Labour escalators approved in the AER's 2018-23 Revenue Determination have applied to the labour component of the unit rates
Project risk cost	-	No incremental project risk costs have been included in the incremental opex forecast
Overheads	-	No incremental expensed overheads have been included in the opex incremental opex forecast <sup>4</sup>
Debt raising costs	0.8	The benchmark approach used in the AER's 2018-23 Revenue Determination has been applied to calculate debt raising costs
<b>Total incremental opex</b>	<b>2.6</b>	

Forecast incremental opex for PEC is prudent and efficient having regard for the opex objectives, criteria and factors in the National Electricity Rules (NER). This is demonstrated by:

- > the rigorous, well-defined and transparent opex forecasting methodology set out in this document, and
- > the alignment of forecast opex for PEC with forecast capex for PEC. In this way, forecast incremental opex is aligned with our corporate objectives and governance framework and process.

<sup>3</sup> Labour escalation has a very small impact because labour costs make only a small portion of incremental operating and maintenance expenditure.

<sup>4</sup> That is, we have not included incremental costs from increasing our overall maintenance program, such as works scheduling, tools or training.

## 4. Opex forecasting methodology

This section explains and justifies the forecasting methodology used to determine our incremental forecast opex for PEC.

### 4.1 Choice of “bottom-up-build” forecasting method

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We have used a bottom-up-build to forecast incremental opex for PEC. This approach:

- > is consistent with the approach used to derive our internal budget for the PEC over the remainder of the current regulatory period
- > reflects the AER’s preferred approach to opex forecasting<sup>5</sup>, and
- > is consistent with the approach accepted by the AER for all contingent projects to-date, and
- > is consistent with the approach used to forecast incremental opex for the QNI minor upgrade project contingent project application submitted to the AER on 17 January 2020.<sup>6</sup>

A bottom-up build approach allows for a more precise estimate of the required incremental opex for PEC.

### 4.2 Alignment with our capex forecast for PEC

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Our incremental opex forecast for PEC aligns with our capex forecast for PEC:

- > operating and maintenance activities are assumed to begin once capital assets are installed (namely, once stage 1 assets are commissioned in December 2022)
- > property ownership costs are assumed to be incurred once land and easements are acquired
- > operational insurance coverage will commence<sup>7</sup> once the assets are commissioned (with the premium costs incurred prior to the year of coverage),<sup>8</sup> and
- > debt raising costs are assumed to be incurred when new debt is required to fund capital investment.

This alignment ensures that the same considerations underpinning our capex forecast are captured – albeit indirectly – in the operating forecast.

The entire asset life cycle forms part of our ISO55000 Certified Asset Management System. This represents a shift in lifecycle phase from build to operate and maintain. The drivers, objectives and values underpinning the entire asset lifecycle are aligned across our business.

### 4.3 Robust approach to determining forecast incremental opex

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We applied a two-step process to forecast incremental opex for PEC:

- > **step one** involves determining the base expenditure by:

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<sup>5</sup> The AER advised us on 18 October 2019 in relation to Project EnergyConnect that it preferred a bottom-up build approach to forecast incremental opex.

<sup>6</sup> TransGrid, 17 January 2020, *Opex forecasting methodology for the QNI Minor Upgrade Project*.

<sup>7</sup>

<sup>8</sup>



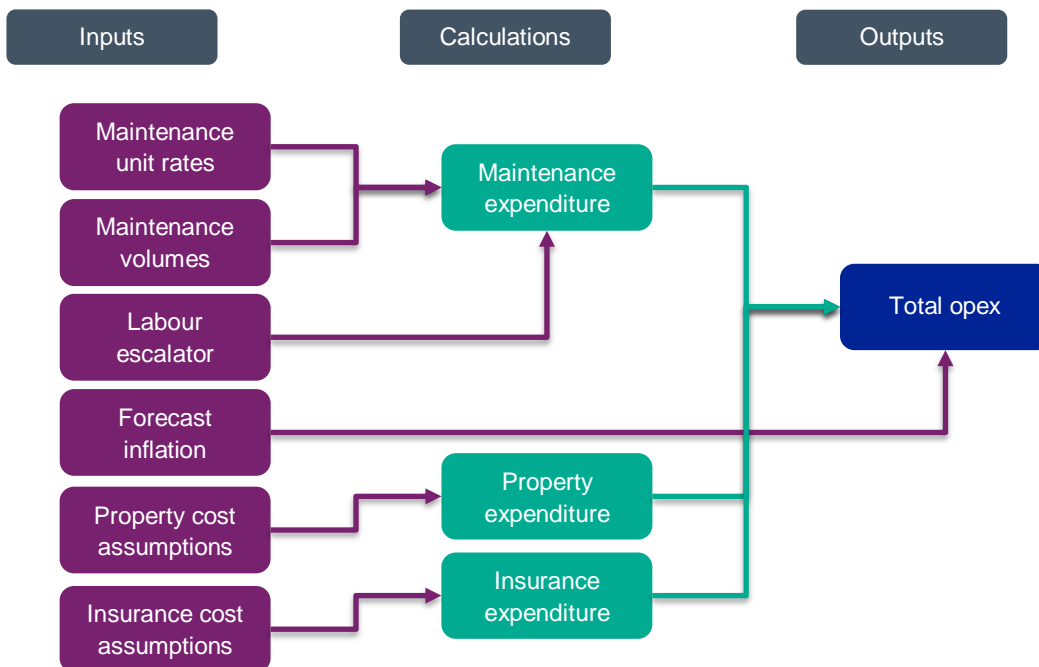
- multiplying unit rates by forecast volumes for operating and maintenance activities, and
  - identifying current property ownership costs and scaling these in proportion to the estimated property value of the acquisition
  - basing the operational insurance premium costs on [REDACTED]
- > **step two** involves applying labour escalators to the base labour expenditure (in step one), as relevant, and adding an allowance for debt raising costs.

This bottom-up build approach reflects the following:

- > existing maintenance plans, unit rates, and property ownership costs
- > external input as appropriate (e.g. third-party estimates for insurance premiums)
- > real cost escalators and debt raising costs consistent with the AER's 2018-23 Revenue Determination.

This forecasting approach is summarised in Figure 4.2 below.

**Figure 4.2: process to determine forecast incremental opex for PEC**



Note: debt raising costs, although a component of forecast incremental opex, are not shown. Debt raising costs are calculated within the PTRM, as explained in Appendix A of the PEC Application.

#### 4.4 Opex forecasting methodology

PEC involves augmenting existing substations and transmission lines. The detail of this work is set out in the Capex Forecasting Methodology Documents.

Forecast incremental opex is the product of volumes or inputs obtained from the PEC specification and the associated unit costs. The calculations and inputs differ across:

- > operating and maintenance expenditure
- > other property costs
- > operational insurance costs, and

- > debt raising costs.

#### 4.4.1 Operating and maintenance expenditure

Operating and maintenance expenditure is based on an assessment of the number and timing of expected operating and maintenance tasks for PEC Stage 1 and the associated unit costs.

Operating and maintenance includes both:

- > condition based or defect maintenance, and
- > routine maintenance and inspection work.

We do not expect to incur any condition based, or defect maintenance, costs over the remainder of the current period because the PEC assets will be new.<sup>9</sup> Accordingly, our incremental opex forecast for PEC does not include any costs associated with condition based or defect maintenance.

We do, however, expect to incur some relatively minor routine maintenance and inspection costs in 2022-23, when the Stage 1 assets are in service. Key elements of the forecast routine maintenance opex are:

- > routine inspection contract costs for synchronous condensers, including an initial maintenance contract establishment cost
- > optical ground wire (OPGW) communications site property and maintenance costs
- > standard six-monthly inspections of substation and monthly remote closed-circuit television (CCTV) review
- > aerial inspections of transmission line assets and vegetation to ensure bushfire compliance
- > property and building inspections and maintenance, including:
  - low voltage residual current device inspections (compliance obligation),
  - fire protection systems inspection,
  - air conditioning maintenance,
  - pest inspection and control,
  - sewer system treatment
- > property grounds maintenance (e.g. buffer zone for bushfire compliance).

We do not expect to incur any costs associated with routine maintenance for digital infrastructure or high voltage (HV) substation assets in the current regulatory period (except for those captured by the synchronous condenser maintenance activity). Accordingly, our incremental opex forecast for PEC does not include any costs associated routine maintenance for these assets.

Forecast incremental opex for PEC has been calculated by multiplying current standard unit rates for 19 different maintenance activities by expected quantities for the 2022-23 year. The maintenance activities are assigned to four broad maintenance plan requirements as set out in Table 4.1, assigned to five broad maintenance plan requirements.

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<sup>9</sup> No condition based or defect maintenance is expected because: (i) defect work should be covered by contractor and supplier defects liability and construction will be ongoing, and (ii) condition-based work is not expected for newly commissioned assets.

**Table 4.1: Operating and maintenance activities**

Maintenance plan requirement	Maintenance activity
New maintenance activities	[REDACTED]
	[REDACTED]
	[REDACTED]
Substations assets maintenance	[REDACTED]
	[REDACTED]
	[REDACTED]
	[REDACTED]
Transmission line assets maintenance	[REDACTED]
	[REDACTED]
Easements and access tracks maintenance	[REDACTED]
	[REDACTED]
Network property maintenance	[REDACTED]
	[REDACTED]
	[REDACTED]
	[REDACTED]
	[REDACTED]
	[REDACTED]
	[REDACTED]
	[REDACTED]

Table 4.2 sets out the key inputs and assumptions used to calculate the operating and maintenance expenditure forecast.

**Table 4.2: Incremental operating and maintenance opex for PEC**

Item	Description
Unit rates	Unit rates are determined for the 19 unique maintenance activities, combining both standard labour costs and material costs.

Item	Description
	<p>These rates are based on standard job costs for the Darlington Point and Wagga sites, and all deployment out of Wagga at this stage. Buronga have been updated to include additional travel time allowances due to remote location based on current resource depots (6.5 hours each way for all resources).<sup>10</sup> Synchronous condenser routine inspection and contract costs are based on information provided by a potential manufacturer.</p> <p>Current assumptions include individual travel instances for each maintenance routine. Unit rates are assumed to be in 2019-20 dollars, were estimated using data from our accounting system, and converted to 2017-18 dollars. In particular:</p> <ul style="list-style-type: none"> <li>&gt; labour costing rates are the average rates calculated based on the actual rates of all employees assigned into labour resource categories including labour on-costs and overhead costs</li> <li>&gt; actual labour rates are sourced from human resources (HR) remuneration and benefits team in accordance with the Enterprise Agreement (EA) and individual employment contracts where the EA does not apply</li> <li>&gt; resource categories are based on the nature of the work performed</li> <li>&gt; both the labour costing rate methodology and output have been reviewed by internal audit and external auditors PricewaterhouseCooper (PwC), and</li> <li>&gt; unit rates for maintenance of assets not currently in our fleet have relied on preliminary commercial information provided by (third-party) suppliers as part of the estimating process.</li> </ul>
Quantities	<p>Quantities, or maintenance frequencies, are based on the standard frequencies outlined in our maintenance plan for each asset class under our ISO55001 certified Asset Management System (AMS) and Electricity Network Safety Management System to manage network safety risks to SFAIRP and ALARP. These include substations plant and equipment, protection, automation, metering, property, transmission lines and easements. The activities are assumed to start part-way through the 2022-23 year.</p>
Escalation and inflation	<p>Real input escalation is applied only to the labour component of the unit rates and is based on the labour escalation rates approved by the AER in its 2018-23 Revenue Determination.<sup>11</sup> This is the simple average of forecasts provided by Deloitte Access Economics and BIS Oxford Economics. The materials component is only escalated by inflation, which is consistent with the AER's 2018-23 Revenue Determination.</p> <p>As the unit rates are current – and so assumed to be in 2019-20 dollars – real labour escalation is applied cumulatively for three years from 2019-20 to 2022-23. Escalated costs have been deflated to 2017-18 dollars using actual inflation for 2018-19 (of 1.59 per cent) and 2019-20 (of negative 0.35 per cent).<sup>12</sup></p>

<sup>10</sup> The 6.5 hour assumption is based on the drive time between TransGrid's Wagga depot and the Buronga substation, which is the assumed location for resources deployed for the Energy Connect maintenance activities.

<sup>11</sup> Specifically, the labour escalation rates adopted by the AER in the capex model used for that 2018-23 Revenue Determination were adopted. As the AER accepted our revised proposal opex forecast, it did not make a separate determination on labour escalators used for opex forecasting purposes.

<sup>12</sup> Actual inflation for 2018-19 and 2019-20 were taken from the Australian Bureau of Statistics' reported annual inflation to June 2019 and June 2020, respectively, for the weighted average eight capital cities. We have assumed that the unit rates are in *middle of year terms* and so needed to be deflated by 1.5 years of inflation from 2019-20 dollars to give real 2017-18 dollars in *end of year terms*.

Item	Description
Assumptions	<p>Key assumptions:</p> <ul style="list-style-type: none"> <li>&gt; no allowance has been made for non-standard assets or design, other than the synchronous condensers which do not have a current standard design</li> <li>&gt; detailed transmission line route has not been established, although this should not materially affect the 2022-23 opex forecast</li> <li>&gt; synchronous condenser maintenance is required to be outsourced due to the complexity of the new technology, which involves a contract establishment cost</li> <li>&gt; all synchronous condensers at Buronga will be commissioned in Stage 1</li> <li>&gt; internal labour associated with contractor defect rectification has not be included, as it is assumed this is minimal, recoverable from the contractor or treated as capex</li> <li>&gt; changes in commissioning dates may have considerable impact on forecast 2022-23 costs – as costs could either increase or decrease depending on earlier or later commissioning, and</li> <li>&gt; no allowance for property rates, taxes or rates are included in this estimate as these are captured separately, as discussed in section 4.4.2 below.</li> </ul>

#### 4.4.2 Other property costs

We expect to incur incremental property related opex due to the required expansion of the Buronga Substation site, including relating to:

- > council rates
- > water rates
- > electricity
- > land tax
- > landholder issues, and
- > easement establishment costs.

This opex is expected to be incurred from 2019-20 to prepare for the border to Buronga and Buronga to Red Cliffs construction work.

Table 4.3 sets out the key inputs and assumptions used to calculate the incremental property related opex for PEC.

**Table 4.3: Incremental property related opex for PEC**

Item	Description
Unit rates	<p>Property ownership unit rates (council rates, land tax, electricity and water rates) and easement establishment costs are based on current statutory rates or costs. Property ownership unit rates are on a per land value basis.</p> <p>For instance:</p> <ul style="list-style-type: none"> <li>&gt; water and electricity charges estimates were baselined from actual cost in 2018 and adjusted to reflect the new substation becoming operational</li> </ul>

Item	Description
	<ul style="list-style-type: none"> <li>&gt; land tax estimates have been calculated based on the Valuer General's land value assessment for land value changes and land tax rates, and</li> <li>&gt; easement establishment costs are costs associated with the establishment of new easements to deal with landholder issues, easement development applications and encroachment resolution.</li> </ul>
Quantities	<p>Property value for all PEC acquired land is used as the 'quantity' for council rates and land tax and is based on the projected land value of the Buronga site (of \$1,035 per hectare, in \$nominal) – which is based on Valuer General land value assessments of surrounding properties, with the same land use classification. Council rate estimates are based on the council rating methodology.</p> <p>Electricity and water rates are based on an assumed multiple (3x) of recent (2017-18) actual rates for the Buronga substation site from 2020-21 onwards.<sup>13</sup> Incremental water rates are assumed to start part way through 2019-20 as the site is prepared. Incremental electricity rates start in 2020-21 during the construction phase.</p>
Escalation and inflation	Land and easement establishment cost values are assumed to stay constant in real terms, which effectively means that they inflate at the forecast inflation rate of 2.45 per cent, as approved by the AER in its 2018-23 Revenue Determination.
Assumptions	<p>Key assumptions:</p> <ul style="list-style-type: none"> <li>&gt; forecast inflation of 2.45 per cent (used to escalate land and easement establishment cost values)</li> <li>&gt; land value (following acquisition) assumed of \$97.248 in 2019-20<sup>14</sup></li> <li>&gt; council rates based on 0.91 per cent of the land value <i>plus</i> a \$270 base rate<sup>15</sup></li> <li>&gt; land tax of 2 per cent of average land value</li> <li>&gt; easement establishment costs of \$19,450 in 2019-20<sup>16</sup></li> <li>&gt; electricity and water rates of \$13,987 in 2017-18.</li> </ul>

#### 4.4.3 Insurance costs

We expect to incur incremental opex associated with insurance premiums for assets required for PEC once they are commissioned. We require three types of insurance for our infrastructure assets including those for PEC:

- > industrial special risks – this covers physical loss, destruction or damage to the assets occurring during operation

<sup>13</sup> The multiple is based on the scope assumption that the Buronga substation site will quadruple in size under PEC, making the additional cost three times that of the existing cost.

<sup>14</sup> This is based on an assumed land value of \$100,000 for 2019-20 in \$nominal converted to \$2017-18 using 1.5 years of inflation from middle of year terms to end of year terms.

<sup>15</sup> The base rate stays constant in \$nominal terms, which means that the *real* dollar value differs each year: \$270 in 2017-18, \$267.87 in 2018-19, \$262.57 in 2019-20, \$256.29 in 2020-21, 250.16 in 2021-22 and \$244.18 in 2022-23.

<sup>16</sup> This is based on estimated establishment costs of \$20,000 for 2019-20 in \$nominal converted to \$2017-18 using 1.5 years of inflation from middle of year terms to end of year terms. These costs cover landholder easement enquiries, development applications, and encroachment issues. The value is based on receiving 4-5 enquiries and applications per year along the new PEC easements, which compares to roughly 600 received annually across the network. Easements are assumed to be acquired during the 2019-20 year.

- > business interruption – this covers financial losses resulting from insured industrial special risks, and
- > operational third-party liability – this covers legal liability for third party property damage or bodily injury occurring during operation.

All three insurance types are prudent as they cover risks that are both material and that we cannot easily (or cost effectively) avoid. Insurance cover will be required once the PEC assets are commissioned (with the first stage by December 2022 and the second stage during 2023-24), so the 2022-23 coverage year will be paid prior to commissioning. Further, our insurance premiums for each financial year are paid in the prior September (i.e. nine months before the start of the financial year). This means that premiums for the 2022-23 and 2023-24 coverage years will be incurred during the 2021-22 and 2022-23 financial years respectively.

[REDACTED] has estimated the costs of insuring PEC during construction and once the assets are operational<sup>17</sup>:

- > the construction phase insurance costs are included in the capex forecast (indirect costs). This is explained in the PEC Capex Forecasting Methodology Documents and the Corporate and network overhead forecast document, and
- > the operational phase insurance costs are included in the incremental opex forecast for PEC. [REDACTED]

Table 4.4 sets out the key inputs and assumptions used to calculate the incremental insurance related opex for PEC, split between industrial special risk and operational third-party insurance. Full details are set out in an independent report from Aon, which is provided as an attachment to this Application.

**Table 4.4: Incremental insurance related opex for PEC**

Insurance type	Description
[REDACTED]	[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]
[REDACTED]	[REDACTED] [REDACTED] [REDACTED] [REDACTED]

<sup>17</sup> [REDACTED]  
<sup>18</sup> We have assumed that half of this full year premium (i.e. \$342,208.75) will be incurred to cover the December 2022 to June 2023 period and that the premium would be incurred during the 2021–22 financial year.

Insurance type	Description
	[REDACTED]
	[REDACTED]
	[REDACTED]
	[REDACTED]
	[REDACTED]

#### 4.4.4 Debt raising costs

We will incur costs for raising the debt needed to fund the capex required to deliver PEC. We have adopted the same benchmark approach applied by the AER in its 2018-23 Revenue Determination to determine these debt raising costs for PEC.

Under AER's benchmark approach, debt raising costs for a given year are calculated by multiplying:

- > the debt portion of the opening regulatory asset base – calculated as the product of the opening RAB for that year by the 60 per cent gearing assumption, and
- > Debt raising cost benchmark – the 8.5 basis point debt raising cost benchmark rate adopted by the AER.

Table 4.5 sets out the key inputs and assumptions used to calculate incremental debt raising costs.

**Table 4.5: Incremental debt raising costs for PEC**

Item	Description
Forecast debt	This is calculated by multiplying the forecast incremental PEC RAB in the PTRM by the assumed leverage ratio (of 60 per cent) adopted by the AER in its 2018-23 Revenue Determination
Debt raising cost	Debt raising cost benchmarking (0.085 per cent) adopted by the AER in its 2018-23 Revenue Determination
Assumptions	Key assumptions: <ul style="list-style-type: none"> <li>&gt; forecast incremental PEC RAB</li> <li>&gt; leverage ratio of 60 per cent, and</li> <li>&gt; debt raising cost benchmark of 0.085 per cent.</li> </ul>

<sup>19</sup> We have assumed that half of this full year premium (i.e. \$18,398.25) will be incurred to cover the December 2022 to June 2023 period and that the premium would be incurred during the 2021–22 financial year.



# Glossary

Abbreviation	
AMS	Asset Management System
Application	Contingent Project Application
BAFO	Best And Final Offer
BIS	BIS Oxford Economics
Capex	Capital Expenditure
CCTV	Closed Circuit Television
DAE	Deloitte Access Economics
EA	Enterprise Agreement
HR	Human Resources
HV	High Voltage
M	Million
NER	National Electricity Rules
NSW	New South Wales
Opex	Operating Expenditure
OPGW	Optical Ground Wire
PACR	Project Assessment Conclusion Report
PEC	Project EnergyConnect
PTRM	Post-tax Revenue Model
PwC	PricewaterhouseCoopers
QNI	Queensland-NSW Interconnector
RAB	Regulatory asset base
RFT	Request For Tender
RIN	Regulatory Information Notices

Abbreviation	
RIT-T	Regulatory Investment Test for Transmission

