# TransGrid

# Revised Submission on Proposed Contingent Projects

# January 2009

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# Summary

After considering the AER's Draft Decision on TransGrid's Proposed Contingent Projects, TransGrid has an improved understanding of the way that the AER intends to manage the determination and initiation of Contingent Projects.

In the process of considering TransGrid's original revenue proposal, PB and TransGrid agreed on outcomes that met the AER's expectations for a number of the Proposed Contingent Projects. These agreed outcomes were included in the AER's Draft Decision.

In some other cases TransGrid was not able during this process to provide information about some of its Proposed Contingent Projects in a form that permitted PB to recommend inclusion of those Proposed Contingent Projects as Contingent Projects in the AER's Draft Decision. TransGrid has now reviewed its documentation, and in this submission provides the AER with further information that addresses PB's reservations in relation to these Proposed Contingent Projects.

TransGrid believes that the amended Proposed Contingent Projects detailed in this submission now meet the AER's requirements for each Proposed Contingent Project as outlined in the AER's Draft Decision.

In preparing this submission, TransGrid has also reconsidered the draft terms for some of the Proposed Contingent Projects with a view to improving the clarity and level of detail of those terms. Where required, the improved terms for these Proposed Contingent Projects have been included in this submission.

In two cases TransGrid has decided not to proceed with the Proposed Contingent Project for the next regulatory control period.

Finally one Proposed Contingent Project has been transferred to the ex ante capex proposal.

As a general comment, TransGrid emphasises that it is often difficult to accurately scope and cost projects that are uncertain in terms of their final timing and scope, and where the required response to the occurrence of the relevant trigger event is not fully defined at this stage.

However, the process approved by the AER to amend a revenue determination where a Contingent Project trigger event has occurred (together with the requirements of clause 5.6.6 of the NER) requires that:

- all aspects of each Contingent Project will be reviewed after the trigger event occurs; and
- the option which best satisfies the requirements of clause 5.6.6 of the NER and the regulatory test is identified.

In this way, the option which minimises the present value of meeting the relevant technical requirements will be scrutinised and identified via a transparent process which will require further more detailed disclosure of the estimated costs of the relevant Contingent Project.

Whilst this is entirely appropriate, it means that it is not always possible during the revenue determination process to determine an indicative cost for the relevant Contingent Project to the standard and level of detail implied by some of PB's comments.

TransGrid has used its best endeavours to provide an estimate of the indicative cost for each Proposed Contingent Project which reasonably reflects the capital expenditure criteria. However, in some cases this can only be achieved by providing an estimated range for these costs rather than a specific amount. The provision of a specific amount as an estimate in these circumstances would give the impression that there is sufficient accurate data available to make this type of assessment at this stage. This is often not the case. This is particularly the case where the project might also require work by a TNSP in another State and the relative scopes are undefined.

The details for each revised Proposed Contingent Project are summarised in table at the end of this Appendix J.

TransGrid commends these revised and updated Proposed Contingent Projects for the AER's consideration.

# CBD and inner metropolitan area supply

Project No. 6012

## PB's assessment

PB stated that:

> *"This project is associated with joint planning with the local distribution company EnergyAustralia. EnergyAustralia owns and controls 132 kV cables that supply the city of Sydney and as part of its businesses asset management plans these cables are identified as items that may be retired in the medium term future. The retirement of the cables means that the ability to supply the CBD in a secure and reliable manner in accordance with planning criteria will be exceeded unless augmentation takes place. This proposed contingent project is the installation of an additional 330 kV cable into the CBD area from Potts Hill to Surry Hills."*[1]

TransGrid advises that the last statement is not strictly correct. This Proposed Contingent Project is in fact the **advancement** of the installation of the Potts Hill to Surry Hills 330 kV cable that would otherwise be installed one or two years later.

PB noted that the estimated cost of the cable is $650 million and that this exceeds the threshold of $33.4 million for a Proposed Contingent Project. PB stated that

> *"the cost is high, but not unfeasible and the assets scoped appear to relate to providing prescribed services*."[2]

PB accepted that the most likely expenditure is reflected in TransGrid's proposal.

TransGrid has now reviewed the estimated cost for this Proposed Contingent Project in the light of more detailed scoping of the components which is now available, and now considers that a better estimate for the works to be advanced in timing is $500 m.

The trigger event for this Proposed Contingent Project was proposed to be the retirement of some of EnergyAustralia's 132 kV cables. PB considered that:

[1] PB, TransGrid Revenue Reset Appendices An Independent Review (AER_TG2009Reset_Appendices_v4_0.doc), page .A155.
[2] Ibid, page A155.

*"the trigger is not specific as to which cables are being retired and how this would impact on the need for this additional cable"*[3]

TransGrid subsequently identified the cables as being one or more of Energy Australia's cable 929 + 919/3 (Lane Cove to Dalley St via Willoughby), or 928/3 (Lane Cove to Dalley Street).

PB noted that the retirement of EnergyAustralia's cables is a risk, and that the event may occur. Therefore, PB was of the opinion that this would meet the NER requirement of a probable but uncertain trigger which is likely to occur during the next regulatory control period.

Subsequently, in reviewing the scope and cost, based on the limited information provided by TransGrid, PB stated that it:

*"is of the view that the scope of installing a 330 kV cable on retirement of a single 132 kV cable appears in excess of the NER requirement and does not represent a reflective expenditure level. The NER requires that the scope for contingent projects should reasonably reflect an efficient cost in achieving the objectives of a prudent operator. In PB's view, and without the aid of detailed technical assessment, in the first instance a reflective cost would be the replacement of the under-performing single 132 kV cable with a similar unit by EnergyAustralia when compared with the prospect of a $650m capital investment. As presented, the installation of a 330 kV cable has inherent additional capacity compared to the cables proposed retirement."*[4]

## AER's draft decision

The AER stated, in relation to this and other Proposed Contingent Projects:

*"TransGrid suggested that the degree of specification required under the NER for some projects would involve an unreasonable level of detail, for example, in the case of the CBD security of supply project. In this case, the AER considers that TransGrid may have proposed a scope of work in excess of a specific trigger in order to provide benefits for the broader transmission network."*[5]

[3] Ibid, page A155.
[4] PB, TransGrid Revenue Reset Appendices An Independent Review (AER_TG2009Reset_Appendices_v4_0.doc), page A172.
[5] AER, Draft Decision TransGrid transmission determination 2009-10 to 2013-14, page 82.

## TransGrid's revised submission

TransGrid has reviewed PB's interpretation of this Proposed Contingent Project, and has concluded that the intent and scope of the Proposed Contingent Project was not fully appreciated. In particular, the Proposed Contingent Project has been represented as a new project in PB's comments and the AER's Draft Decision, rather than as a one or two year advancement of a potential network augmentation which:

- has already been identified and planned for by TransGrid; and
- will be triggered by retirement of certain Energy Australia 132 kV cables.

In this case the advancement of this network augmentation would be triggered by the retirement of certain Energy Australia 132 kV cables earlier than is currently planned by Energy Australia.

The context of the Proposed Contingent Project is that electricity demand in the Sydney CBD is expected to continue to grow due to increases in the density of population and commercial and light industrial development. At the same time, we understand that certain Energy Australia 132 kV cables are reaching the end of their serviceable life. Some of these cables were laid over 40 years ago to supply the CBD when the coal-fired power stations that had been located there were shut down.

EnergyAustralia and TransGrid are jointly planning to provide sufficient capacity to meet the required reliability criterion for the Sydney CBD in the context of these retirements, as documented in their respective Revenue Proposals.

The plan for supply to the northern part of the CBD is that Energy Australia will retire two cables but keep another two of a total of four ageing 132 kV cables in service until load growth requires that the next 330 kV cable be laid from the Potts Hill/Chullora area to the CBD. Based on current forecasts, retirement of the third and fourth cables will occur after November 2017, which is the nominal date for the 330kV cable development, and consequently no expenditure has been allowed for in the 2009/10 to 2013/14 regulatory control period.

The four cables are designated by Energy Australia as 92L/3, 93M/3 and 928/3 (all Lane Cove to Dalley St), and 929 + 919/3 (Lane Cove to Dalley St via Willoughby).

If Energy Australia determines that the condition of the subject cables has deteriorated more rapidly than predicted, and as a result, more than two of

these cables has to be removed from service prior to the currently schedule date for the installation of the next 330 kV cable to the CBD, then Energy Australia would be unable to meet its reliability obligations in the CBD. The option of replacing a failed cable like-for-like will probably not minimise the present value of the costs of meeting that requirement as compared with advancing the timing for the installation of TransGrid's next 330 kV cable to the CBD.

However advancement of this 330 kV cable by two years will bring a significant amount of the pre-commissioning construction expenditure into the 2009/10 to 2013/14 regulatory control period. Reasons for believing that the 330 kV cable solution would be preferred over other potential options include:

- It is not possible to lay 132 kV replacement cables on the same routes while maintaining reliable supply;
- Obtaining multiple new cable routes in this area is technically difficult, and is likely to be very expensive;
- Use of a 330 kV cable captures economies of scale and minimises cable routes;
- 132 kV cables would be surplus to requirements for several years after the 330 kV cable is installed.

The relative economics and technical feasibility of each option will of course be tested after the trigger event occurs via the process outlined in clause 5.6.6 of the NER and the application of the regulatory test. .

In further explanation of the first two points, it should be noted that:

- Dalley St is located in the north of the Sydney CBD, near Circular Quay; and
- Lane Cove is a northern suburb.

The subject cables include a section laid under the harbour in the vicinity of the Sydney Harbour Bridge and Tunnel, and the route passes through areas that are much more developed than they were when the cables were first laid. Different technologies at much higher cost would be required to replace their function. Achieving economies of scale by installing fewer high capacity cables is likely to be more economic and less disruptive to traffic.

TransGrid recommends the following terms for the AER's approval of this Proposed Contingent Project as a Contingent Project for the purpose of clause 6A.8.1(b):

- The driver for this Proposed Contingent Project is that it is likely that the supply to EnergyAustralia's subtransmission area in the Sydney CBD will not meet the applicable reliability obligations if it becomes necessary to retire more than two 132 kV cables between Lane Cove and Dalley St before the currently schedule time for reinforcing supply to the CBD by construction by TransGrid of the next 330 kV cable to the CBD.
- The scope of the Proposed Contingent Project is the advancement of the next 330 kV cable to the CBD from its predicted November 2017 commissioning date by two years or more, thereby bringing some of the estimated $500 million expenditure into the 2009/10 to 2013/14 regulatory control period. Advancement by two years would result in additional expenditure in this period estimated at $98 million.
- The trigger event is the receipt by TransGrid of a written notification from Energy Australia that:
  - it is proposing to retire more than two of the four 132 kV cables listed below two or more years before the predicted November 2017 commissioning date for the next 330 kV cable to be constructed to the Sydney CBD by TransGrid; and
  - as a consequence, Energy Australia will be unable to meet its reliability of supply obligations in relation to the Sydney CBD.

| Cable number | Cable name |
|---|---|
| 929 or 919/3 | Lane Cove to Dalley St via Willoughby |
| 92L/3 | Lane Cove to Dalley Street |
| 92M/3 | Lane Cove to Dalley Street |
| 928/3 | Lane Cove to Dalley Street |

## Demonstration of Compliance with Rule 6A.8.1

TransGrid considers that this Proposed Contingent Project should be accepted as a Contingent Project for the next regulatory control period as it:

(a) *Is reasonably required to achieve the capital expenditure objectives.*

The expenditure is required in order that TransGrid can continue to achieve and can assist Energy Australia to continue to achieve their respective security, reliability and quality obligations in relation to the provision of prescribed transmission services for the Sydney CBD (as those obligations are defined by the NER and related statutory requirements).

(b) *The proposed contingent capital expenditure is not otherwise provided for in the total forecast capital expenditure.*

The works proposed would otherwise be commissioned in 2017/18 or later for the base-case forecast, and none of the pre commissioning expenditure is included in TransGrid's revised ex ante capex proposal.

(c) *The proposed contingent capital expenditure reasonably reflects the capital expenditure criteria noting that the costs are an estimate at this point.*

It is reasonable at this stage to assume that the most efficient response to the occurrence of this trigger event would be to bring forward the augmentation works which have already been planned for after June 2017. This will of course be tested after the trigger event occurs via the process outlined in clause 5.6.6 of the NER and the application of the regulatory test.

(d) *The proposed contingent capital expenditure exceeds the contingent project threshold of $33.4 million.*

The trigger event brings forward works estimated to cost $500 million, and results in $98 million additional expenditure during the regulatory control period.

(e) *The Proposed Contingent Project and the proposed contingent capital expenditure complies with the submission guidelines.*

(f) *The trigger event for the proposed contingent project is appropriate having regard to the matters listed in clause 6A.8.1(c).*

The trigger event is reasonably specific and is capable of objective verification.

If the trigger event occurs it will be reasonably necessary to undertake the Proposed Contingent Project in order to achieve the capital expenditure objectives (for example, to meet expected demand for and to comply with all applicable regulatory obligations or requirements associated with the provision of prescribed transmission services in relation to the Sydney CBD.)

The occurrence of the trigger event will generate increased costs that relate to a specific location as compared to the entire transmission network as a whole.

The trigger event has been described in terms which mean that the occurrence of the trigger event is all that is required for the revenue determination to be amended by the AER under clause 6A.8.2 of the NER.

The occurrence of the trigger event during the next regulatory control period is probable but is not sufficiently certain because it depends on Energy Australia's assessment as to the condition of the relevant 132 kV cables.

# Gadara/Tumut load area

Project No. 6218

### PB's assessment

PB stated that:

*"The work required as part of this project is to increase the capacity of the network that supplies the Visy Gadara Mill. The project would be the development of a 132 kV transmission line from Wagga to either Tumut or Gadara substations.*

*PB has not identified any provision in the forecast capital expenditure that relates to this project. The project scope is estimated at $54m and appears to reflect the necessary cost of the project and the assets scoped appear to relate to providing prescribed services. The cost of the project exceeds the threshold of a contingent project which is $33.4m.*

*The trigger has been identified as the expansion of the Gadara Mill or an increase in local demand. TransGrid has been advised that the expansion is expected to double the energy requirements at that site. PB's is of the view that the expansion of the Gadara Mill and the expected doubling of the energy requirements (for example the existing load is 100 MW and the application will increase the load to 200 MW) is a sufficiently specific trigger to meet the NER requirements for a contingent project in that it can be objectively verified based on the existing load levels.*

*However, the specified increase in local demand also appears to be a function of local demand growth and therefore is not a specific trigger outside the bounds of the demand scenarios used by TransGrid to determine its forecast capex allowance. Therefore PB recommends that the Gadara Mill expansion and the doubling of the energy requirements for this point load is the only trigger event that meets the NER requirements.*

*The scope of works appears to be the reinforcement of the local area around the Gadara Mill area rather than transmission equipment supplying the site and it appears the physical connection to the Gadara Mill does not require augmentation. Therefore, PB's interpretation is that an increase in local demand may trigger the augmentation rather than specific growth at the Gadara Mill. Given the requirements of the NER requires that the trigger must increase the cost rather than a condition or event that affects the transmission network as a whole, In PB's view this does not pass the NER requirements.*

*Should the trigger be described as expansion of the Gadara Mill only, then this would meet the terms of a probable, but uncertain trigger event in the next regulatory period."*[6]

## TransGrid's revised submission

TransGrid accepts that advice of a confirmed expansion of a single industrial load supplied at Gadara is the sole reason for proposing this Proposed Contingent Project. TransGrid has no reason to expect that Country Energy's demand forecast for the Tumut area load is not robust, and therefore that general load growth is a possible trigger event. Further, it considers that if a spot load was to occur in the Wagga or Yass areas rather than the Gadara/Tumut area, the construction of the Proposed Contingent Project would not necessarily be the most appropriate response.

The situation is that there is only one proposed and likely significant load development in this area that is known to be under consideration, is not yet committed, but has a likelihood of proceeding in the 2009/10 to 2013/14 regulatory control period. This is the expansion of an industrial plant that is currently supplied from the Gadara substation, near Tumut.

If the operator of this industrial plant requests an increase in agreed maximum demand in excess of 20 MW for the purpose of this expansion (which we understand will be the case if the currently proposed expansion of the industrial plant proceeds), TransGrid's transmission network that supplies this substation will not meet its reliability obligations to Country Energy. The currently indicated solution is to construct a new 132 kV line from Wagga to either Gadara or Tumut, together with terminal works at either end. The cost is similar for these two options.

TransGrid recommends the following terms for the AER's approval of this Proposed Contingent Project as a Contingent Project for the purpose of clause 6A..8.1(b):

- The driver for this Proposed Contingent Project is the confirmed expectation that the operator of an industrial plant in the Tumut / Gadara area will (during the next regulatory control period) request an increase in agreed maximum demand from TransGrid in excess of 20 MW in order to satisfy the increased electricity requirements for the expansion of that industrial plant. This increase in agreed maximum demand would overload the current 132 kV supply network and as a result would breach TransGrid's reliability of

[6] PB, TransGrid Revenue Reset Appendices An Independent Review (AER_TG2009Reset_Appendices_v4_0.doc), page A156.

supply obligations unless the transmission network is augmented to provide the required additional power transfer.

- The scope of the Proposed Contingent Project is the construction of an additional 132 kV line from Wagga to either Gadara or Tumut, together with terminal works, at a total indicative cost of $54 million.

- The trigger event is the lodgement with TransGrid of a request to increase the agreed maximum demand for this industrial load by more than 20 MW and the subsequent acceptance by the operator of this industrial load of TransGrid's Offer to Connect via the execution of the related connection documentation.

**Demonstration of Compliance with Rule 6A.8.1**

TransGrid considers that the Proposed Contingent Project should be accepted as a Contingent Project for the next regulatory control period as it:

(a) *Is reasonably required to achieve the capital expenditure objectives.*

The expenditure is required so that TransGrid can continue to achieve, and can assist Country Energy to continue to achieve their respective security, reliability and quality obligations in relation to the provision of prescribed transmission services (as those obligations are defined by the NER and related statutory requirements).

(b) *The proposed contingent capital expenditure is not otherwise provided for in the total forecast capital expenditure.*

The works proposed are not included in the ex ante capex proposal because there has been no formal commitment by the operator of the relevant industrial plant to proceed with an expansion of that plant which requires an increase in agreed maximum demand in excess of 20 MW during the next regulatory control period. As a result the timing is unknown.

(c) *The proposed contingent capital expenditure reasonably reflects the capital expenditure criteria noting that the costs are an estimate at this point.*

It is reasonable to assume at this stage that the most efficient response to the occurrence of this trigger event will be to bring forward augmentation works that are consistent with long term network development plans for the area. This will of course be

tested after the trigger event occurs via the process outlined in clause 5.6.6 of the NER and the application of the regulatory test.

(d) *The proposed contingent capital expenditure exceeds the contingent project threshold of $33.4 million.*

The occurrence of the trigger event will initiate works estimated to cost $54 million.

(e) *The Proposed Contingent Project and the proposed contingent capital expenditure complies with the submission guidelines.*

(f) *The trigger event for the proposed contingent project is appropriate having regard to the matters listed in clause 6A.8.1(c).*

The trigger event is reasonably specific and is capable of objective verification.

If the trigger event occurs it will be reasonably necessary to undertake the Proposed Contingent Project in order to achieve the capital expenditure objectives (for example, to meet expected demand for and to comply with all applicable regulatory obligations or requirements associated with the provision of prescribed transmission services in relation to this part of the transmission network.)

The occurrence of the trigger event will generate increased costs that relate to a specific location as compared to the entire transmission network as a whole.

The trigger event has been described in terms which mean that the occurrence of the trigger event is all that is required for the revenue determination to be amended by the AER under clause 6A.8.2 of the NER.

The occurrence of the trigger event during the next regulatory control period is probable but is not sufficiently certain because it depends on the decision of the relevant customer to proceed with this expansion and the exact timing of that decision.

# Orange 330/132 kV substation

Project No. 6262

## PB's assessment

PB stated that:

*"The project is the construction of a new 330 / 132 kV substation in the Orange area. PB has not identified any allowance in the forecast capital expenditure relating to this project.*

*The project has been identified as required due to the confirmed expansion of the Cadia gold mine. Additional to this, TransGrid has stated that an industrial load in the same area would also be a trigger. The cost of $63m includes the procurement of 2 x 330 / 132 kV; 375 MVA transformers plus associated switchgear and busbars. This project cost exceeds the required threshold of $33.4m to be considered a contingent project.*

*The low voltage side of the transformers (132 kV) would be constructed with switchgear bays that would allow six additional circuits that feed the Panorama and Mt Icely area. This augmentation is on the shared network and the assets scoped appear to relate to providing prescribed services, that is, PB has not identify any assets that could relate to a negotiated service…..*

*The trigger has been identified as the confirmed expansion of the Cadia gold mine or an industrial load in the same area, where the increase in additional load cannot be supported by the current transmission assets. In PB's view, the confirmed expansion of the gold mine meets the terms of the NER as it is an event that may occur, but an unconfirmed and non-specific increase in industrial load in a generic location does not.*

*In PB's view, the proposed trigger as currently defined, does not meet the terms of the NER as an unconfirmed increase in industrial load does not meet the criteria. As the expansion of the Cadia mine is confirmed, but not fixed, this meets the NER requirement for probable but uncertain trigger that may occur in the next regulatory period."*[7]

## TransGrid's revised submission

TransGrid advises that there is only one proposed and likely significant load development (i.e. a significant load development which will result in a

[7] PB, TransGrid Revenue Reset Appendices An Independent Review (AER_TG2009Reset_Appendices_v4_0.doc), pages A157-8.

request being made to TransGrid for a significant increase in agreed maximum demand) in this area that is known to be under consideration, is not yet committed, but is likely to proceed during the 2009/10 to 2013/14 regulatory control period.

This is the proposed expansion of a mine that is currently supplied by a 132 kV line that is connected to Orange substation.

If the proposed expansion of the mine result in an increase in agreed maximum demand of more than 40 MW (as compared to the current agreed maximum demand) TransGrid's transmission network that supplies the towns of Bathurst, Orange, Molong and surrounding areas will not meet its reliability obligations to Country Energy.

We understand that the increase in the agreed maximum demand for the mining load will considerably exceed 40 MW.

The presently indicated solution is to bring forward the establishment of a 330/132 kV substation near the Mt Piper to Wellington 330 kV transmission line that passes nearby, and to inject additional power into Orange using short connections to existing 132 kV lines and substations.

This solution means bringing forward augmentation works which would otherwise be required later to address normal load growth. This option is assessed as being more economic than alternative 132 kV augmentations options that would be surplus to requirements when the 330/132 kV substation development eventually goes ahead.

PB advised that:

> *"The costs associated with this project allow for a substation that would support the local area in the future, however the NER states that the project must be reflective of the scope. As the scope has been identified as the expansion of the Cadia gold mine, in PB's view the current scope exceeds this requirement and does not meet the NER requirement."*[8]

TransGrid has reviewed the proposed scope of the augmentation works that would be required to meet this increase in agreed maximum demand. In doing so, it has taken into account that the increase in agreed maximum demand will clearly exceed the current 40 MW limit. The scope of works now includes a single 330/ 132 kV transformer at a new site, instead of two

[8] PB, TransGrid Revenue Reset Appendices An Independent Review (AER_TG2009Reset_Appendices_v4_0.doc), page A157

transformers and four 132 kV lines that terminate at existing sites instead of six. The estimated cost has been reduced to $46.8 million.

TransGrid recommends the following terms for the AER's approval of this Proposed Contingent Project as a Contingent Project for the purpose of clause 6A..8.1(b):

- The driver for this Proposed Contingent Project is the confirmed expectation that the owner of an existing mine in the Orange area is likely to commit to an expansion of that mine, which would necessitate increasing the agreed maximum demand for the mine by more than 40 MW. This increase in agreed maximum demand would require additional power transfer and this would in turn overload TransGrid's 132 kV supply network and result in breach of its reliability of supply obligations.

- The scope of the Proposed Contingent Project is the construction of a single transformer 330/132kV substation that is connected to TransGrid's Mt Piper to Wellington 330 kV line, plus terminal works, 330 kV and 132 kV line construction and rearrangements, at a total indicative cost of $46.8 million.

- The trigger event is the lodgement with TransGrid or Country Energy of a request to increase the agreed maximum demand for this mine by more than 40 MW and the subsequent acceptance by the operator of this mine of TransGrid's or Country Energy's Offer to Connect via the execution of the related connection documentation.

**Demonstration of Compliance with Rule 6A.8.1**

TransGrid considers that the Proposed Contingent Project should be accepted as a Contingent Project for the regulatory control period as it:

(a) *Is reasonably required to achieve the capital expenditure objectives.*

The expenditure is required so that TransGrid can continue to achieve, and can assist Country Energy to continue to achieve their respective security, reliability and quality obligations in relation to the provision of prescribed transmission services (as those obligations are defined by the NER and related statutory requirements).

(b) *The proposed contingent capital expenditure is not otherwise provided for in the total forecast capital expenditure.*

The works proposed are not included in the capex proposal because there has been no formal commitment by the operator of the relevant mine to proceed with an expansion of that mine which requires an increase in agreed maximum demand in excess of 40 MW during the next regulatory control period. As a result the timing is unknown.

(c) *The proposed contingent capital expenditure reasonably reflects the capital expenditure criteria noting that the costs are an estimate at this point.*

It is reasonable to assume that the most efficient response to the occurrence of this trigger event will be to bring forward augmentation works that are consistent with long term network development plans for the area. This will of course be tested after the trigger event occurs via the process outlined in clause 5.6.6 of the NER and the application of the regulatory test.

(d) *The proposed contingent capital expenditure exceeds the contingent project threshold of $33.4 million*.

The occurrence of the trigger event will initiate works estimated to cost $46.8 million.

(e) *The Proposed Contingent Project and the proposed contingent capital expenditure complies with the submission guidelines.*

(f) *The trigger event for the proposed contingent project is appropriate having regard to the matters listed in clause 6A.8.1(c).*

The trigger event is reasonably specific and is capable of objective verification.

If the trigger event occurs it will be reasonably necessary to undertake the Proposed Contingent Project in order to achieve the capital expenditure objectives (for example, to meet expected demand for and to comply with all applicable regulatory obligations or requirements associated with the provision of prescribed transmission services in relation to this part of the transmission network.)

The occurrence of the trigger event will generate increased costs that relate to a specific location as compared to the entire transmission network as a whole.

The trigger event has been described in terms which mean that the occurrence of the trigger event is all that is required for the revenue determination to be amended by the AER under clause 6A.8.2 of the NER.

The occurrence of the trigger event during the next regulatory control period is probable but is not sufficiently certain because it depends on the decision of the relevant customer to proceed with this expansion and the exact timing of that decision.

# Williamsdale 330 kV Substation Stage 2

Project No. 5564

This Proposed Contingent Project has been moved to the proposed ex ante capex allowance.

# Voltage compensation

Project No. 6098

TransGrid has reviewed this Proposed Contingent Project and has concluded that it is not possible to achieve the standard of definition of location and scope that PB claims to be necessary for classification by the AER as a Contingent Project.

Consequently TransGrid withdraws this Proposed Contingent Project from its revenue proposal.

# Reactive support at seven sites

PES 5567

### PB's assessment

PB stated that:

*"This project is the installation of reactive support at any of the six separate switchyards, listed below.*

- *Bayswater*
- *Liddell*
- *Eraring*
- *Vales Point*
- *Munmorah*
- *Mt Piper*
- *Wallerawang*

*The additional reactive equipment would be required should the current arrangements for reactive power procurement become uneconomic. TransGrid currently acquires reactive support from generators via network support arrangements.*

*PB has not identified any allowance in the current forecast capital expenditure for reactive support at the six identified sites. The project is expected to cost $36m but PB has not been able to establish the nature of the specific scope of works, and subsequently we are not able to determine if any element of the scope relates to negotiated services, so we were not able to determine that the cost is reflective of the contingent project triggers need.*

*PB highlights that the contingent project cost is the aggregate cost of the individual capacitor banks which could be assessed from an efficiency and prudency perspective on a separate basis. The grouping of several smaller discrete projects in this manner is not directly consistent with the materiality requirements of a contingent project."*[9]

### AER's Draft Decision

The AER stated

*"In another case, 'reactive support at six sites', the difficulties in defining an appropriate trigger may relate to the grouping of what appear to be several smaller projects which individually may be considered efficient by the AER but which do not meet the materiality requirements for a contingent project"*[10]

[9] PB, TransGrid Revenue Reset Appendices An Independent Review (AER_TG2009Reset_Appendices_v4_0.doc), page A160

[10] AER, Draft Decision TransGrid transmission determination 2009-10 to 2013-14, page 82.

## TransGrid's revised submission

This Proposed Contingent Project raises important matters for consideration by the AER.

All synchronous generating units[11] have a limited capability to generate reactive power at the same time as they are generating real power[12]. The generating units in most of the coal-fired power stations in NSW have the capability to generate more reactive power than is required by the standards specified in the NER. To date TransGrid has assumed that this capability is present and NEMMCO has used part of this capability to maintain reliability in the transmission network without any specific payments to the relevant Generators.

However ongoing access to this reactive power capability has not been secured on a commercial basis.

TransGrid considers that this situation is not sustainable, as TNSPs in other jurisdictions have set a precedent by treating this capability as a network support service, which they purchase under contract from Generators.

TransGrid advised in its Annual Planning Report 2008 (page 56) that, for the 2009/10 to 2013/14 regulatory control period, it intends to enter into network support contracts with all these Generators for the provision of the reactive power necessary to satisfy the relevant service standards and technical requirements for its transmission system (subject to confirming via the completion of the clause 5.6.6 process and regulatory test that this option minimises the present value of the costs of meeting that requirement). TransGrid has included an allowance for the pass-through of these costs in its opex proposal.

It is possible however that the prices offered by these Generators may be in excess of the cost of other options for meeting this requirement (for example, undertaking a network development which provides the reactive power support required for a particular part of the transmission system). In this circumstance the application of the regulatory test would require TransGrid to implement the network augmentation option over the generator network support option. TransGrid's alternative network augmentation option would be to construct shunt capacitor banks at a 330 kV site located near the relevant power station (i.e. the power station that

[11] All large generators are synchronous generators. Very small generators may be asynchronous, but these are unimportant in this context.

[12] Reactive power is used to help control and support the voltage levels in the transmission network. Real power is transmitted and sold to consumers to meet their energy requirements.

has offered reactive power support for a cost which exceeds the network augmentation option).

TransGrid notes that, under Rule 6A.6.6(e)(7), the AER must consider substitution possibilities between operating and capital expenditure (i.e. in this case replacing portion of the operating expenditure allowance for network support services payments with the estimated capital expenditure required to implement the less cost network augmentation option).

Inclusion of this Proposed Contingent Project as a Contingent Project would facilitate the implementation of the least cost option if it is determined (via the completion of the clause 5.6.6 process and the regulatory test) that the generator network support option is not the least cost option for meeting this requirement.

The approximate reactive power quantities required to be purchased under network support service contracts are shown in the following table, which also shows the indicative sizes of the shunt capacitor banks that would be required in the absence of the related generator network support service contract:

| Location (330 kV busbar) | Reactive power contract amount (MVAr) | Alternative Capacitor Banks (number x bank size MVAr) |
|---|---|---|
| Hunter Valley- Bayswater & Liddell | 700 | 3x200 |
| Central Coast – Eraring, Munmorah & Vales Pt | 650 | 3x200 |
| Central West – Wallerawang & Mt Piper | 530 | 2x200 |

In the interests of ensuring that the least cost objectives of the NEM are achieved, TransGrid believes that it should retain the option of constructing these shunt capacitor banks if any of the network support services contracts offered by the Generators do not represent the least cost option for meeting the relevant requirement.

The following facts are relevant:

- Securing the current amount of reactive power support is essential for maintaining the power transfer capability from power stations to load centres. Without this reactive power support, TransGrid can not meet the reliability obligations for its transmission system.

- Each Generator is in a monopoly position for the supply of reactive power in the area of its power stations[13].
- TransGrid is obliged to implement the least cost option for meeting this requirement. Whilst TransGrid is able to pass through the difference between the amount of network support payments provided in its revenue determination and the amount it actually pays for network support services, TransGrid is committed to implementing the least cost option for meeting this requirement.

PB was concerned that the shunt capacitor banks would be located at different locations in the State, and that the total project is a conglomerate of several projects. However, TransGrid notes that all the works are directed at meeting TransGrid's reliability obligations in the main load centres of Newcastle, Sydney and Wollongong.

TransGrid recommends the following terms for the AER's approval of this Proposed Contingent Project as a Contingent Project for the purpose of clause 6A..8.1(b):

- The driver for this Proposed Contingent Project is the need to ensure that the reactive power support required to maintain the power transfer capability from power stations to the main load centres in NSW is secured at the least cost to customers.

- The scope of this Proposed Contingent Project is the installation of shunt capacitor banks at or near various power stations, totalling 1600 MVAr in eight banks at an indicative cost of $36 million.
- The trigger event would be:
    - the receipt of offers from each Generator for the provision of the network support services during the next regulatory control period which are required to maintain the power transfer capability from power stations to the main NSW load centres and to meet TransGrid's related reliability obligations; and
    - the determination (via the completion of the clause 5.6.6 process and the regulatory test) that the installation of shunt capacitor banks at or near a power station constitutes a least cost option for meeting TransGrid's specific reliability obligation in relation to the power transfer capability from that power station to the main NSW load centres (as compared to the option of acquiring network support services from that power station at the offered price).

[13] Under the circumstances where emergency reactive power support is needed at one power station, it will not usually be possible to transmit it from another station to the required location.

## Demonstration of Compliance with Rule 6A.8.1

TransGrid considers that the Proposed Contingent Project should be accepted as a Contingent Project for the next regulatory control period as it:

(a) *Is reasonably required to achieve the capital expenditure objectives.*

The expenditure is required in order that TransGrid can continue to achieve its reliability obligations in relation to the provision of prescribed transmission services (as those obligations are defined by the NER and related statutory requirements) when transmitting bulk energy from these power stations to the main NSW load centres.

(b) *The proposed contingent capital expenditure is not otherwise provided for in the total forecast capital expenditure.*

Provision was made in TransGrid's opex proposal for the pass-through of network support payments for the provision of reactive power network support services by these Generators. The works proposed are not included in the ex ante capex proposal because there is no certainty that the installation of the capacitor banks will be required. This will depend upon the outcome of commercial negotiations and the application of the clause 5.6.6 process and the regulatory test.

(c) *The proposed contingent capital expenditure reasonably reflects the capital expenditure criteria noting that the costs are an estimate at this point.*

The occurrence of the trigger event will arise only if it is determined (via the completion of the clause 5.6.6 process and the regulatory test) that the installation of shunt capacitor banks at or near a power station constitutes a least cost option for meeting TransGrid's reliability obligations (as compared to the option of acquiring network support services from that power station at the offered price). Inclusion of this Proposed Contingent Project will facilitate the substitution of this operating expenditure with capital expenditure (as provided in Rule 6A.6.6(e)(7)) resulting in a least cost outcome to customers.

(d) *The proposed contingent capital expenditure exceeds the contingent project threshold of $33.4 million*.

The occurrence of the trigger event in relation to all of the power stations will initiate works estimated to cost up to $36 million.

In our view, clause 6A.8.1(b)(iii) of the NER must by definition require this determination to be made with reference to the maximum scope for the Proposed Contingent Project (otherwise, the AER would be pre empting the final scope of the Contingent Project).

(e) *The Proposed Contingent Project and the proposed contingent capital expenditure complies with the submission guidelines.*

(f) *The trigger event for the proposed contingent project is appropriate having regard to the matters listed in clause 6A.8.1(c).*

The trigger event is reasonably specific and is capable of objective verification.

If the trigger event occurs it will be reasonably necessary to undertake the Proposed Contingent Project in order to achieve the capital expenditure objectives (for example, to maintain the reliability of prescribed transmission services).

The occurrence of the trigger event will generate increased costs that relate to various specific locations as compared to the entire transmission network as a whole. Clause 6A.8.1(c)(3) of the NER would not in our view be interpreted narrowly and would clearly extend to cover more than one specific location.

The trigger event has been described in terms which mean that the occurrence of the trigger event is all that is required for the revenue determination to be amended by the AER under clause 6A.8.2 of the NER.

The occurrence of the trigger event during the next regulatory control period is probable but is not sufficiently certain because it depends on the outcome of these commercial negotiations and the finalisation of the clause 5.6.6 process and the regulatory test.

# System protection scheme

TransGrid proposed a system protection scheme to increase power transfer capability from the Snowy region into NSW. The proposal is for either a network support services contract or for inter-tripping services.

TransGrid has included an allowance in its opex proposal for the acquisition of network support services to achieve this objective.

The Proposed Contingent Project allowance was intended to leave open the option of achieving the same objective via the implementation of a network augmentation option if it was determined via the completion of the regulatory test and the process set out in clause 5.6.6 of the NER, that the network augmentation option constituted a least cost option for meeting TransGrid's reliability obligations (as compared to the option of acquiring network support services at the offered price).

TransGrid has reviewed this project and has concluded that it is not possible to achieve the standard of definition of location and scope that PB considers to be necessary for classification as a Contingent Project.

Consequently TransGrid withdraws this Proposed Contingent Project from its proposal.

# Hunter Valley – Central Coast 500 kV line

Project No. 5568

## PB's assessment

TransGrid proposed that the estimated expenditure for this project totalled $331 million, made up of three items:

1. construction of a 500 kV double circuit transmission line from Hunter Valley to Eraring (estimated at $270.5 million);
2. transfer of the Bayswater units 1 & 2 from 330 kV to a 500 kV connection (estimated at $31 million); and
3. 3rd Kemps Creek 500/330 kV transformer (estimated at $30 million).

PB stated that it:

*"acknowledges that the construction of a 500 kV transmission line will achieve the objective, but the transfer of the Bayswater units 1 & 2 and a Kemps Creek 500 / 330 kV transformer do not appear to be required to achieve the objective. These two items are discussed in detail below.*

***Transfer of Bayswater unit 1 & 2***
*TransGrid has provided comment that the transfer of Bayswater Units to 500 kV requires new generator transformers. When examining this requirement against the NER requirements we were not able to establish how installing new generator transformers at Bayswater would achieve the objectives of improving power flow from the northern or western power station development. Therefore in PB's view, this is not a reflective cost and should not be included as part of the overall development for the required work.*

***Kemps Creek 500 / 330 kV transformer***
*The third part of the overall development is the installation of a third 500 MVA transformer at Kemps Creek. In relation to the trigger of a 400 MW generator in the northern or western area of NSW, the generation is sited in an area distant from Kemps Creek and PB has not been able to establish that the installation of this transformer achieves the objective of improving power flow from the Hunter Valley to Eraring. On this basis, In PB's view this does not meet the requirement of the NER and should not be included as part of this development."*[14]

[14] PB, TransGrid Revenue Reset Appendices An Independent Review (AER_TG2009Reset_Appendices_v4_0.doc), page A180.

Consequently PB reduced the estimated cost from $331 million to $270 million by removing expenditures of $31 million and $30 million respectively.

## AER's draft decision

The AER has made the following draft determination:

> *"The driver for this project is the possibility of power station development in the Hunter Valley area to help address the increased load in the Newcastle – Sydney – Wollongong load corridor.*
>
> *The scope of the project involves the development of a double circuit 500 kV line between the Hunter Valley and Eraring. The indicative cost of this project is $270 million.*
>
> *The trigger for this project is either a northern or western NSW power station development exceeding 400 MW, or the development of the Queensland network interconnection that enables an increase in NSW import capability that exceeds 400 MW or a spot load development in the Newcastle area exceeding 200 MW, and (for all of these triggers), TransGrid is directed to undertake a regulatory test for a line development under the Last Resort Planning Power provisions of the NER."*[15]

## TransGrid's revised submission

In respect of the two items that PB removed in order to arrive at a lower expenditure, TransGrid advises that these are required works at the time of constructing the double circuit 500 kV line between the Hunter Valley and Eraring. Moving the connection of two Bayswater generating units from the 330 kV network to the 500 kV network, and installing an additional 500/330 kV transformer at the load end of the 500 kV network are essential to enable the 330 and 500 kV networks to properly and efficiently share the power transfer. Otherwise the 330 kV network might continue to overload. Further the development of a new line connection to the Bayswater 500 kV switchyard will raise short circuit levels in the 500 kV and 330 kV transmission systems. The short circuit levels may exceed the rating of the 330kV plant in the Bayswater area and hence it will be necessary to reduce the short circuit levels by moving the Bayswater generator connection away from the 330 kV switchyard and transmission network.

During the current regulatory control period, two Bayswater generating units were transferred from the 330 kV network to the 500 kV line that was

[15] AER, Draft Decision TransGrid transmission determination 2009-10 to 2013-14, page 279.

formed between Bayswater and Marulan via Mt Piper in the west. This was done to cause the 500 kV line to accept a greater portion of the total power transfer, and to reduce the number of 500/330 kV transformers needed at Bayswater. The same considerations will apply when the 500 kV line is constructed to connect Bayswater to Eraring. The extra generation or power transfer that will trigger this Proposed Contingent Project will cause higher power loadings to be imposed on the 330 kV transmission network, and it will be necessary to relocate generation to the 500 kV transmission network to reduce the number of 500/330 kV transformers and to efficiently load up the 500 kV transmission system. This will particularly be the case if it is found necessary to replace an existing 330 kV line with the new 500 kV line.

The Bayswater generator transformers are the property of the power station owner, and the transfer of the first two Bayswater generating units to 500 kV was achieved by TransGrid entering into a network support services contract with that owner. In this way the amount of the associated network support payments are pass-through to Transmission Network Users via a AER approved network support pass through amount. These arrangements were approved by the AER.

TransGrid assumes that the AER would approve similar pass-through arrangements that would be needed for the transfer of the remaining two Bayswater generating units, and for this reason agrees that this would not be classed as capex, and therefore it is appropriate to remove this item from the scope of the work under this Proposed Contingent Project.

The need for an additional 500/ 330 kV transformer at Kemps Creek substation[16] is a direct consequence of the additional power that will be transferred over the Eraring to Kemps Creek 500 kV line when more power is injected at Eraring via the new line from the Hunter Valley. The new line will result in an increase in the power injected into the 500 kV system at Eraring and would increase the power flow on the Eraring – Kemps Creek 500 kV line. This in turn would increase the loading in the existing 500/330 kV transformers at Kemps Creek, which might cause the rating of the transformers to be exceeded. TransGrid has identified the need for an additional 500/330 kV transformer at Kemps Creek. TransGrid contends that this development and expenditure are essential and integral parts of the development and that the expenditure of $30 million should be added to the proposed cost, which becomes $300 million.

The recommended amended scope of this Proposed Contingent Project is the development of a double circuit 500 kV line between the Hunter Valley and Eraring and the installation of an additional 500/330 kV transformer at

[16] Kemps Creek is located in western Sydney

Kemps Creek substation. The indicative cost of this Proposed Contingent Project is $300 million.

TransGrid advises that if it became aware of the impending need to relieve loading on its existing network, it would be unlikely that the AEMC's last resort planning power would be used to direct TransGrid to apply the regulatory test to the implementation of this Proposed Contingent Project.

TransGrid recommends the adoption of the following as the trigger event for this Proposed Contingent Project:

The trigger event for this Proposed Contingent Project is either:

- the receipt by TransGrid of an application to:
    - connect a new power station with a generating capacity in excess of 400 MW, or
    - increase the generating capacity of an existing power station by more than 400 MW,

  in relation to TransGrid's transmission network located in the north or west of New South Wales; or
- agreement with Powerlink concerning the proposed development of the Queensland network interconnection which enables the import capability into NSW to be increased by more than 400 MW; or
- the receipt by TransGrid of an application to connect a spot load in the Newcastle area exceeding 200 MW; or
- the receipt by TransGrid of an application to increase an existing spot load in the Newcastle area by more than 200 MW, and

in each case, the relevant application or development, causes a network limitation to arise on the 330 kV network between Liddell/Bayswater and Tomago/Newcastle.

## Demonstration of Compliance with Rule 6A.8.1

TransGrid considers that the Proposed Contingent Project should be accepted as a Contingent Project for the next regulatory control period as it:

(a) *Is reasonably required to achieve the capital expenditure objectives.*

The expenditure is required so that TransGrid can continue to achieve its reliability obligations in relation to the provision of prescribed transmission services (as those obligations are defined

by the NER and related statutory requirements) when transmitting bulk energy from power stations to the main NSW load centres.

(b) *The proposed contingent capital expenditure is not otherwise provided for in the total forecast capital expenditure.*

The works proposed are not included in the ex ante capex proposal because the trigger event will require events to occur that are beyond the assumptions made when it developed its network planning scenarios, and the timing is unknown.

(c) *The proposed contingent capital expenditure reasonably reflects the capital expenditure criteria noting that the costs are an estimate at this point.*

It is reasonable to assume that the most efficient response to the occurrence of this trigger event will be to bring forward works that are consistent with long term network development plans for the area. This will of course be tested after the trigger event occurs via the process outlined in clause 5.6.6 of the NER and the application of the regulatory test.

(d) *The proposed contingent capital expenditure exceeds the contingent project threshold of $33.4 million*.

The occurrence of the trigger event will initiate works estimated to cost $300 million.

(e) *The Proposed Contingent Project and the proposed contingent capital expenditure complies with the submission guidelines.*

(f) *The trigger event for the proposed contingent project is appropriate having regard to the matters listed in clause 6A.8.1(c).*

The trigger event is reasonably specific and is capable of objective verification.

If the trigger event occurs it will be reasonably necessary to undertake the Proposed Contingent Project in order to achieve the capital expenditure objectives (for example, to maintain the reliability of prescribed transmission services).

The occurrence of the trigger event will generate increased costs that relate to various specific locations as compared to the entire transmission network as a whole. Clause 6A.8.1(c)(3) of the NER would not in our view be interpreted narrowly and would clearly extend to cover more than one specific location.

The trigger event has been described in terms which mean that the occurrence of the trigger event is all that is required for the revenue determination to be amended by the AER under clause 6A.8.2 of the NER.

The occurrence of the trigger event during the next regulatory control period is probable but is not sufficiently certain because it depends on the outcome of these commercial negotiations and the finalisation of the clause 5.6.6 process and the regulatory test.

# QNI upgrade – line series compensation project

## TransGrid's Original Proposal

TransGrid proposed two alternative events that may act as a trigger event for this Proposed Contingent Project. These were:

- market benefits test support indicate development is needed; or
- under NER clause 5.6.4 and the regulatory test.

The first of these is the same trigger event as was applied to the QNI contingent project in the current regulatory control period[17], and was also adopted as the trigger event for Powerlink Queensland's share of the works in its current regulatory control period.

We note that the Contingent Project at that time was not as well-defined as it is now.

## TransGrid's revised submission

TransGrid considers that this Proposed Contingent Project is likely to be one of National significance in the context of the evolving energy market changes and greenhouse gas reduction strategies. It is therefore vital that provision be made in both TransGrid's and Powerlink's revenue determinations for this Proposed Contingent Project to be undertaken at the time which maximises net economic benefit and minimises the cost of implementing this network augmentation option.

The Queensland – NSW Interconnector (QNI) was commissioned in 2000, and since then it has been heavily utilised to achieve market efficiency. It does this by permitting the transfer of energy from the marginal-bid power station in the lower cost region to supply demand in the other region. As the relative production costs of marginal generators change, so the direction of power transfer changes. The power transfer across QNI frequently reaches its maximum capacity, at which point dispatch constraints are applied by NEMMCO, so limiting QNI's contribution to market efficiency.

[17] For the QNI project and the Yass – Wagga transmission line, the trigger specified by the ACCC was: "These projects need to be justified against a net benefit criterion as set out in the Regulatory Test". Reference: NSW and ACT Transmission Network Revenue Cap TransGrid 2004 – 05 to 2008 – 09, Final Decision, Date: 27 April 2005, p 218.

The QNI upgrade Proposed Contingent Project will install series capacitors in lines that form QNI to raise to the maximum power transfer capacity in both directions by an amount in the range 150 to 200 MW. This will allow higher transfers when constraints would otherwise apply.

Powerlink and TransGrid have commissioned market simulation studies to determine the amount this would contribute to market efficiency. Those studies have determined that the annual benefit would be likely to exceed the annualised cost. However the results are variable, and the optimal timing that would maximise the ratio of benefit to cost varies according to the rates of demand growth in each State and the location and cost structure of power stations (including some that have been modelled but are as yet uncommitted).

In particular the benefit depends strongly on the demand growth forecast. The same conclusion was reached by NEMMCO when it conducted the 2008 Annual National Transmission Statement (ANTS).

There are therefore strong indications that this Proposed Contingent Project will satisfy the requirements of the regulatory test, either in the next regulatory control period, or early in the following one. In either case major capital expenditure will be required in the 2009/10 to 2013/14 regulatory control period.

This Proposed Contingent Project will require coordinated works by TransGrid and Powerlink, who own the different lines that comprise QNI. If the Proposed Contingent Project proceeds each will carry out works within its own network. However the optimal location of the works, and consequently the sharing of cost, is yet to be finalised.

A Proposed Contingent Project of this nature, but with a less-defined scope, was included as a Contingent Project in TransGrid's previous revenue decision, and this was carried over into Powerlink's decision. For TransGrid, the trigger event depended upon justification against a net benefit criterion as set out in the regulatory test. This trigger event was also referred to in Powerlink's decision.

The AER has interpreted clause 6A.8.1(c) of the NER as requiring that the trigger event must by definition occur before the TNSP undertakes the regulatory test and clause 5.6.6 processes. In our view there is nothing in clause 6A.8.1(c) of the NER which would justify this approach (particularly where the relevant Proposed Contingent Project is not being undertaken to meet a service standard that is linked to a regulated technical requirement).

In the case of a Proposed Contingent Project which involves the establishment of new large transmission network assets other than for the purpose of meeting a service standard that is linked to a regulated technical requirement, the TNSP will request the AER to make a determination that the new large transmission network asset satisfies the regulatory test.

In our view this type of trigger event is clearly appropriate having regard to the matters listed in clause 6A.8.1(c) of the NER. In particular, it is reasonably specific and is clearly capable of objective verification.

Under the AEMO arrangements that are currently being developed, TransGrid understands that this type of Contingent Project would be initiated through some function of the National Transmission Planner (NTP) who is to be responsible for publishing an annual National Transmission Network Development Plan (NTNDP). It is further understood that this would happen ahead of the application of a revised Regulatory Investment Test for Transmission (RIT-T).

The following form of words assumes that the currently unapproved framework is implemented within an appropriate time-frame to ensure that this project can be implemented in a timely manner.

TransGrid recommends the following terms for the AER's approval of this Proposed Contingent Project as a Contingent Project for the purpose of clause 6A..8.1(b):

- The driver for this Proposed Contingent Project is the need to ensure that the capacity of the QNI is developed in a timely manner so that power transfer capability is optimised relative to transmission service costs. There is no one market development that will cause the current capacity to be considered insufficient. Rather, this requires ongoing assessment as regional demands and power sources evolve, using market simulation tools.

- The scope of the Proposed Contingent Project is the augmentation of the power transfer capacity of QNI by the commissioning of series capacitors in transmission lines within the ownership of both TransGrid and Powerlink. The indicative cost to achieve a 150 – 200 MW increase in capacity is a total of $120 million, of which $60 million will be expended by TransGrid if half the works are required in NSW. The remainder will be a contingent project managed by Powerlink. This

balance of responsibility might change when cost and performance is optimised at the approvals stage.

- The trigger event is the publication by the NTP of formal advice to the effect that augmentation of QNI to the extent of this capacity increment should be pursued within a time frame that would require capital expenditure during the 2009/10 to 2013/14 regulatory control period.

  However, TransGrid requests that if the introduction of the NTP is delayed, or if the arrangements turn out to be different, the following trigger event should apply.

  If the introduction of the NTP is delayed, or if the arrangements turn out to be different then at some point in time during the next regulatory control period TransGrid is likely to make a decision based on its analysis of these above factors that this contingent project is likely to satisfy the regulatory test. At that stage TransGrid would be likely to initiate a clause 5.6.6. process in relation to this contingent project.

  TransGrid would not incur any capital expenditure in relation to this project until such time as this process is successfully completed via the making of a determination by the AER that the new large transmission network assets which make up this Proposed Contingent Project satisfy the regulatory test.

This is clearly an appropriate (alternative) trigger event in the event that the introduction of the NTP is delayed, or if the arrangements turn out to be different.

It is reasonably specific, capable of objective verification and satisfies the other requirements set out in clause 6A.8.1(c). For example, a determination by the AER that the new large transmission network assets which make up this Proposed Contingent Project satisfy the regulatory test is a clear indication that the capital expenditure objectives will be achieved by undertaking the Proposed Contingent Project (because the services provided by a new large transmission network assets which satisfies the net economic benefit regulatory test must be definition be prescribed transmission services).

In addition, this is also clearly an appropriate time to apply to the AER to amend the TransGrid's revenue determination to reflect the increased

forecast capital expenditure required for this Proposed Contingent Project and the balance of the regulatory control period because most of the information needed to initiate this process would have been generated via the completion of the clause 5.6.6 process.

## Demonstration of Compliance with Rule 6A.8.1

TransGrid considers that the Proposed Contingent Project should be accepted as a Contingent Project for the next regulatory control period as it:

(a) *Is reasonably required to achieve the capital expenditure objectives.*

The expenditure is required so that TransGrid can continue to achieve its security, reliability and quality obligations in relation to the provision of prescribed transmission services (as those obligations are defined by the NER and related statutory requirements) by responding to national planning initiatives in its geographical area of responsibility.

(b) *The proposed contingent capital expenditure is not otherwise provided for in the total forecast capital expenditure.*

The works proposed are not included in the ex ante capex proposal because there is no formal commitment to the trigger event, the trigger event will require events to occur that are beyond the assumptions made when it developed planning scenarios and the timing is unknown.

(c) *The proposed contingent capital expenditure reasonably reflects the capital expenditure criteria noting that the costs are an estimate at this point.*

It is reasonable to assume that the most efficient response to this trigger event will be to bring forward works that maximise the net economic benefit to all those who produce, consume and transport electricity in the National Electricity Market and are consistent with long term network development plans. In the case of the second or alternate trigger event, this will be tested after the trigger event occurs via the process outlined in clause 5.6.6 of the NER and the application of the regulatory test.

(d) *The proposed contingent capital expenditure exceeds the contingent project threshold of $33.4 million.*

The occurrence of the trigger event will initiate works in NSW and Queensland that are estimated to cost $120 million, of which TransGrid's share is expected to be about half.

(e) *The Proposed Contingent Project and the proposed contingent capital expenditure complies with the submission guidelines.*

(f) *The trigger event for the proposed contingent project is appropriate having regard to the matters listed in clause 6A.8.1(c).*

The trigger event is reasonably specific and is capable of objective verification.

If the trigger event occurs it will be reasonably necessary to undertake the Proposed Contingent Project in order to achieve the capital expenditure objectives (for example, to maintain the reliability of prescribed transmission services by responding to national planning initiatives in its geographical area of responsibility).

The occurrence of the trigger event will generate increased costs that relate to various specific locations as compared to the entire transmission network as a whole. Clause 6A.8.1(c)(3) of the NER would not in our view be interpreted narrowly and would clearly extend to cover more than one specific location.

The trigger event has been described in terms which mean that the occurrence of the trigger event is all that is required for the revenue determination to be amended by the AER under clause 6A.8.2 of the NER (because the clause 5.6.6 and regulatory test process would have already been completed).

The occurrence of the trigger event during the next regulatory control period is probable but is not sufficiently certain because it depends on a range of factors that are beyond the usual assumptions which are applied when developing network planning scenarios.

Finally, this Proposed Contingent Project would also be a project of national significance.

# Victorian Interconnector Development

Project No. 4338

## PB's assessment

PB stated that:

*"TransGrid has proposed two alternative events that may act as a trigger. These are:*

- *market benefits test support indicate development is needed*
- *Under NER clause 5.6.4 and the regulatory test.*

*TransGrid originally proposed that this project would cost $33m. This is below the limit set by the NER. TransGrid has stated that the cost has not been defined at this stage, therefore the cost is not known."*[18]

## TransGrid's revised submission

TransGrid considers that there is evidence that this Proposed Contingent Project is likely to be one of National significance in the context of the evolving National Transmission Planning framework, energy market changes and greenhouse gas reduction strategies. It is therefore vital that provision be made in TransGrid's revenue determinations for this Proposed Contingent Project to be undertaken at the time which maximises net economic benefit and minimises the cost of implementing this network augmentation option.

This Proposed Contingent Project is part of a composite project to raise the power transfer capability of the interconnection between NSW and Victoria in both directions by about 180 MW. It specifically addresses export from NSW to Victoria, and consequently will contribute to economic and reliable supply to Victoria/ South Australia. Other parts of the composite project require works in Victoria to raise the export capability from Victoria to NSW.

This composite project was identified by NEMMCO in the 2008 ANTS report as having a net positive benefit for all scenarios studied, and as being the highest rated of several projects to raise the NSW – Victoria transfer capability. However the ANTS analysis must be treated as indicative and more analysis is required to confirm that the net economic benefit is robust for changing generation patterns, and to determine the optimal timing.

[18] PB, TransGrid Revenue Reset Appendices An Independent Review (AER_TG2009Reset_Appendices_v4_0.doc), page A169.

As both the benefit and timing of the Proposed Contingent Project still requires robust verification, it is appropriate that it be included as a Contingent Project.

The ANTS analysis has helped to clarify the minimum scope of works required, although there are still uncertainties. However, it has been confirmed by TransGrid that the indicative cost exceed TransGrid's threshold for Proposed Contingent Projects.

The driver of this Proposed Contingent Project is the need to ensure that the capacity of the interconnection between NSW and Victoria is developed in a timely manner so that power transfer capability is optimised relative to transmission service costs. There is no one market development that will cause the current capacity to be considered insufficient. Rather this requires ongoing assessment as regional demands and power sources evolve, using market simulation tools.

The specific application of this driver is the need to raise the total power transfer capability between the Snowy area and northern Victoria, without building additional transmission lines. The Victorian import capability is partly governed by the rating of the two 330 kV transmission lines between Murray (Snowy area) and Dederang (Victoria). The longer path from Snowy to Dederang via Wagga, Jindera (Albury) and Wodonga currently carries less power relative to its potential rating. The Proposed Contingent Project would raise the total import capability by raising the relative power flow through the Lower Tumut – Wagga – Jindera - Wodonga - Dederang transmission loop.

The scope assumed for the Proposed Contingent Project involves installation of series capacitor compensation in the Lower Tumut to Wagga and Wagga to Jindera 330 kV transmission lines, uprating the Lower Tumut to Wagga transmission line by replacement of terminal equipment, replacement of other equipment that has insufficient fault level capacity, and the installation of a shunt capacitor bank at a total cost of $35 million[19]. This Proposed Contingent Project has not been optimised, so

[19] This cost is quoted from the 2008 ANTS statement by NEMMCO. Reference, Section 9, Network Project, Table 9.3 Conceptual Augmentations, p 9.8. The total cost of an alternative means of raising the power flow via Wagga and Jindera – the installation of a phase angle regulator instead of series capacitors – was found to have a slightly higher indicative cost, but the difference is within the margin for error, so that this remains an option.

that the component of the works that are to be located in TransGrid's area of responsibilities might change[20].

Under the AEMO arrangements that are currently being developed, TransGrid understands that this Proposed Contingent Project would be initiated by the National Transmission Planner, who is to be responsible for publishing an annual National Transmission Network Development Plan (NTNDP). It is further understood that this would happen ahead of the formal application of a revised Regulatory Investment Test for Transmission (RIT-T).

TransGrid therefore recommends the following the trigger event for the AER's approval under clause 6A..8.1.

The trigger event is the publication by the NTP of formal advice to the effect that augmentation of the NSW to Victoria interconnection to the extent of this capacity increment (approximately 180 MW above the current capacity of 1900 MW) should be pursued within a time frame that would require capital expenditure in the 2009/10 to 2013/14 regulatory control period.

This definition of the trigger event assumes that the currently unapproved AEMO/NTP framework is implemented within an appropriate time-frame to ensure that this proposed contingent project can be implemented in a timely manner.

If the introduction of the NTP is delayed, or if the NTP arrangements turn out to be different, TransGrid submits that the following trigger event should apply.

If the introduction of the NTP is delayed, or if the NTP arrangements turn out to be different then at some point in time during the next regulatory control period TransGrid is likely to make a decision based on its analysis of the above factors that this Proposed Contingent Project is likely to satisfy the regulatory test. At that stage TransGrid would be likely to initiate a clause 5.6.6. process in relation to this Proposed Contingent Project.

TransGrid would not incur any capital expenditure in relation to this Proposed Contingent Project until such time as this process is successfully

[20] For example the shunt capacitor bank could be located at Jindera, near the Albury load centre or at nearby Wodonga in Victoria. As no provision has been made in the Victorian revenue decision for a capacitor bank it has been included at Jindera.

completed via the making of a determination by the AER that the new large transmission network assets which make up this Proposed Contingent Project satisfy the regulatory test.

This is clearly an appropriate (alternative) trigger event in the event that the introduction of the NTP is delayed, or if the NTP arrangements turn out to be different.

This alternate trigger event is reasonably specific, capable of objective verification and satisfies the other requirements set out in clause 6A.8.1(c). For example, a determination by the AER that the new large transmission network assets which make up this Proposed Contingent Project satisfy the regulatory test is a clear indication that the capital expenditure objectives will be achieved by undertaking the Proposed Contingent Project (because the services provided by a new large transmission network assets which satisfies the net economic benefit regulatory test must be definition be prescribed transmission services).

In addition, this is also clearly an appropriate time to apply to the AER to amend the TransGrid's revenue determination to reflect the increased forecast capital expenditure required for this Proposed Contingent Project and the balance of the regulatory control period because most of the information needed to initiate this process would have been generated via the completion of the clause 5.6.6 process.

**Demonstration of Compliance with Rule 6A.8.1**

TransGrid considers that the Proposed Contingent Project should be accepted as a Contingent Project for the next regulatory control period as it:

(a) *Is reasonably required to achieve the capital expenditure objectives.*

The expenditure is required so that TransGrid can continue to achieve its security, reliability and quality obligations in relation to the provision of prescribed transmission services (as those obligations are defined by the NER and related statutory requirements) by responding to national planning initiatives in its geographical area of responsibility. There was no provision made for the smaller Victorian component of the works in the Victorian Revenue decision.

(b) *The proposed contingent capital expenditure is not otherwise provided for in the total forecast capital expenditure.*

The works proposed are not included in the ex ante capex proposal because there is no formal commitment to the trigger event, the trigger event will require events to occur that are beyond the assumptions made when it developed planning scenarios and the timing is unknown.

(c) *The proposed contingent capital expenditure reasonably reflects the capital expenditure criteria noting that the costs are an estimate at this point.*

It is reasonable to assume that the most efficient response to this trigger event will be to bring forward works that maximise the net economic benefit to all those who produce, consume and transport electricity in the National Electricity Market and are consistent with long term network development plans. In the case of the alternate trigger event, this will be tested after the trigger event occurs via the process outlined in clause 5.6.6 of the NER and the application of the regulatory test.

(d) *The proposed contingent capital expenditure exceeds the contingent project threshold of $33.4 million.*

The occurrence of the trigger event will initiate works in NSW and Victoria that are estimated to cost $61.5 million, of which TransGrid's share is expected to be about $35 million.

(e) *The Proposed Contingent Project and the proposed contingent capital expenditure complies with the submission guidelines.*

(f) *The trigger event for the proposed contingent project is appropriate having regard to the matters listed in clause 6A.8.1(c).*

The trigger event is reasonably specific and is capable of objective verification.

If the trigger event occurs it will be reasonably necessary to undertake the Proposed Contingent Project in order to achieve the capital expenditure objectives (for example, to maintain the reliability of prescribed transmission services by responding to national planning initiatives in its geographical area of responsibility).

The occurrence of the trigger event will generate increased costs that relate to various specific locations as compared to the entire transmission network as a whole. Clause 6A.8.1(c)(3) of the NER would not in our view be interpreted narrowly and would clearly extend to cover more than one specific location.

The trigger event has been described in terms which mean that the occurrence of the trigger event is all that is required for the revenue determination to be amended by the AER under clause 6A.8.2 of the NER (because the clause 5.6.6 and regulatory test process would have already been completed).

The occurrence of the trigger event during the next regulatory control period is probable but is not sufficiently certain because it depends on a range of factors that are beyond the usual assumptions which are applied when developing network planning scenarios.

Finally, this Proposed Contingent Project would also be a project of national significance.

# Yass to Wagga 500 kV double circuit transmission line

Project No. 6009

## AER's draft decision

The AER's draft decision is that:

*"The driver for this project is the possibility that TransGrid will not be able to meet the power transfer capability between the Yass area and Victoria and the Wagga area.*
*This applies in two situations:*

- *high power flows towards the NSW west area and Victoria*
- *high import from Victoria and Snowy towards NSW.*

*The scope of this project involves developing a new double circuit 500 kV (operating at 330 kV) between Yass and Wagga largely on the route on the existing Yass – Wagga 132 kV line. The indicative cost of this project is $329 million.*

*The triggers for this project are:*

*1. A set of coal-fired or gas-fired[21] generators, with a combined output exceeding 200 MW, is committed for connection to the network in the following southern areas of the NSW system south of the Yass/Canberra area:*
*Wagga*
*Jindera*
*Buronga / Broken Hill area*
*Snowy area.*

*Or*

*2. The Victorian export capability to Snowy and NSW is increased by 200 MW above the present capability.*

*And (for either of these triggers)*

*The generation development or increased export capability causes a network limitation to arise on the system between Murray and Upper Tumut/Lower Tumut and[22] between Upper Tumut/Lower Tumut and Yass/Canberra."*[23]

[21] Words underlined by TransGrid to assist identification
[22] Words underlined by TransGrid to assist identification
[23] AER, Draft Decision TransGrid transmission determination 2009-10 to 2013-14, page 279.

## TransGrid's revised submission

TransGrid provided further information to PB regarding the trigger event, namely that the trigger event should extend to:

- Wind farm developments output exceeding 200 MW;
- Extended area to include Snowy area

The AER has included the second of these points, but not the first.

In respect of the first proposal PB advised that:

> *"TransGrid has extended the requirement of a generator with an output exceeding 200 MW from a coal-fired or gas-fired generator to the concatenation of wind farms with a combined output of 200 MW. In PB's view an increase in the generating capacity of 200 MW over and above the scenarios identified in the forecast scenarios is a specific and verifiable trigger and meets the requirements for a contingent project."*[24]

TransGrid submits that it is important in the context of encouraging renewable resources that generators that employ wind or other technologies should not be discriminated against. In addition, the critical determinative factor for this trigger event is an increase in generation output located within the nominated area in excess of 200 MW. The technology used to generate the increased output is irrelevant.

Consequently it is suggested that the first limb of trigger event should either omit reference to "coal-fired or gas-fired" or amend this to "coal-fired, gas-fired, wind or hydro."

The qualifier for the first and second limb of the trigger event is that a limitation must arise on two sets of transmission lines. TransGrid advises that these sets of transmission lines are in series, and that if the power flow was constrained so that the limitation on one set was not exceeded there is no possibility that the limitation would occur on the second set. The difference between the loadings on the two sets of transmission lines is a complex function of the power output of the Upper Tumut and Lower Tumut power stations.

Consequently TransGrid recommends that the sentence be amended to "causes a network limitation to arise on the system between Murray and Upper Tumut/Lower Tumut or between Upper Tumut/Lower Tumut and Yass/Canberra".

[24] PB, TransGrid Revenue Reset Appendices An Independent Review (AER_TG2009Reset_Appendices_v4_0.doc), page A183.

# Bannaby – Yass reinforcement

Project No. 4342

## AER's draft decision

The AER's draft decision is:

> *"The driver for this project is the possibility that TransGrid will be unable to transfer the required power from the south at Snowy or from Victoria due to line rating constraints.*
> *The scope of this project involves the uprating of the Bannaby to Yass (No. 39) 330 kV line and the Marulan to Yass (No. 4 and No. 5) 330 kV lines to 100 degree Celsius design conductor clearance. The indicative cost of this project is $45 million.*
> *The triggers for this project are:*
>
> *1. A set of coal-fired or gas-fired[25] generators, with combined output exceeding 200 MW, is committed for connection to the network in the following southern areas of the NSW system south of the Bannaby/Marulan area:*
> - *Yass*
> - *Canberra*
> - *Wagga*
> - *Jindera*
> - *Buronga/Broken Hill area*
> - *Snowy area.*
>
> *Or*
>
> *2. The Victorian export capability to Snowy and NSW is increased by 200 MW above the present capability.*
>
> *And (for either of these triggers)*
>
> *The generation development or increased export capability causes a network limitation to arise on the system between Yass and Bannaby*."[26]

## TransGrid's submission

TransGrid submits that it is important in the context of encouraging renewable resources that generators employing wind and other technologies should not be discriminated against. Consequently, it is suggested that the first limb of the trigger event should either omit

[25] Words underlined by TransGrid to assist identification
[26] AER, Draft Decision TransGrid transmission determination 2009-10 to 2013-14, page 281.

reference to “coal-fired or gas-fired” or amend this to “coal-fired, gas-fired, wind or hydro.”

# New 500/330 kV substation at Richmond Vale

Project No. 6005

## AER's draft decision

The AER's draft decision is:

*"The drivers for this project are either major load development in the Newcastle area or by generation development in NSW[27]. In particular, the need for this project may arise if:*

- *a significant industrial load is required in the Newcastle area, such as an aluminium smelter, and there is a need to reinforce the 300 kV[28] system supporting the Newcastle area*
- *the 330 kV supply to the Newcastle area needs supporting due to the 500 kV line development between the Hunter Valley and the coast.*

*The scope of this project involves the establishment of a 500/330 kV substation at Richmond Vale. The indicative cost of this project is $80 million.*

*The trigger for this project is two fold:*

*1. The environmental consent authority determines that a 500 kV transmission line between the Hunter Valley and Eraring must utilise the route of an existing 330 kV line that supplies the Newcastle area in order to be approved.*

*And*

*2. The project including the 500/ 330 kV substation satisfies the regulatory test."*[29]

## TransGrid's submission

TransGrid recommends that the first sentence be amended to refer in addition to "or **upgrading of QNI**", so that this trigger is consistent with the trigger event for the 500 kV line development. It is also recommended that "300" in the first point be amended to "330"

TransGrid suggests that the second limb of the trigger event could be amended to read as follows:

[27] Words underlined by TransGrid to assist identification
[28] Words underlined by TransGrid to assist identification
[29] AER, Draft Decision TransGrid transmission determination 2009-10 to 2013-14, page 282.

"2. The 500 kV transmission line construction causes a network limitation to arise on the system between the Hunter Valley and Tomago/Newcastle due to the thermal ratings of the remaining 330 kV transmission lines."

# Proposed Contingent Project Triggers and Indicative Costs

**(Costs exclusive of risk and escalation)**

| Project name | Triggers | Indicative capital cost |
|---|---|---|
| CBD and Inner Metropolitan Area Supply | The trigger event for this Proposed Contingent Project is the receipt by TransGrid of a written notification from Energy Australia that:<br>- it is proposing to retire more than two of the four 132 kV cables listed below two or more years before the predicted November 2017 commissioning date for the next 330 kV cable to be constructed to the Sydney CBD by TransGrid; and<br>- as a consequence, Energy Australia will be unable to meet its reliability of supply obligations in relation to the Sydney CBD.<br><br>Cable number — Cable name<br>929 or 919/3 — Lane Cove to Dalley St via Willoughby<br>92L/3 — Lane Cove to Dalley Street<br>92M/3 — Lane Cove to Dalley Street<br>928/3 — Lane Cove to Dalley Street | $98m, by advancement of $500m |
| Gadara/Tumut Load Area | The trigger event for this Proposed Contingent Project is the lodgement with TransGrid of a request to increase the agreed maximum demand for the relevant industrial load by more than 20 MW and the subsequent acceptance by the operator of the relevant industrial load of TransGrid's offer to connect via the execution of the related connection documentation. | $54m |
| Orange 330/132 kV substation | The trigger event is the lodgement with TransGrid or Country Energy of a request to increase the agreed maximum demand for the relevant mine by more than 40 MW and the subsequent acceptance by the operator of this mine of TransGrid's or Country Energy's offer to connect via the execution of the related connection documentation. | $46.8m |

# Appendix J – Proposed Contingent Projects

| Project name | Triggers | Indicative capital cost |
|---|---|---|
| Reactive Support at Seven Sites | The trigger event for this Proposed Contingent Project would be:<br>- the receipt of offers from each of the relevant Generator for the provision during the next regulatory control period of the network support services which are required to maintain the power transfer capability from power stations to the main NSW load centres and to meet TransGrid's related reliability obligations; and<br>- the determination (via the completion of the clause 5.6.6 process and the regulatory test) that the installation of shunt capacitor banks at or near any of the relevant power stations constitutes a least cost option for meeting TransGrid's specific reliability obligation in relation to the power transfer capability from that power station to the main NSW load centres (as compared to the option of acquiring reactive power network support services from that power station at the offered price). | $36m |
| QNI upgrade – line series compensation project | The trigger event for this Proposed Contingent Project is the publication by the NTP of formal advice to the effect that augmentation of QNI to increase the maximum power transfer in both directions by an amount in the range of 150 to 200 MW should be pursued within a time frame that would require capital expenditure during the 2009/10 to 2013/14 regulatory control period.<br>However, if the introduction of the NTP is delayed, or if the NTP arrangements turn out to be different at some point in time during the next regulatory control period, the trigger event would be the making of a determination by the AER that the new large transmission network assets which make up this Proposed Contingent Project satisfy the regulatory test. | Expected half of $120m.<br><br>Share with Powerlink to be determined. |

# Appendix J – Proposed Contingent Projects

| Project name | Triggers | Indicative capital cost |
|---|---|---|
| Victorian Interconnector development | The trigger event for this Proposed Contingent Project is the publication by the NTP of formal advice to the effect that augmentation of the NSW to Victoria interconnection to the extent of this capacity increment (approximately 180 MW above the current capacity of 1900 MW) should be pursued within a time frame that would require capital expenditure during the 2009/10 to 2013/14 regulatory control period.<br><br>However, if the introduction of the NTP is delayed, or if the NTP arrangements turn out to be different at some point in time during the next regulatory control period, the alternate trigger event would be the making of a determination by the AER that the new large transmission network assets which make up this Proposed Contingent Project satisfy the regulatory test. | $35m |

# Appendix J – Proposed Contingent Projects

The following four projects were included in the AER draft determination but some minor changes are proposed by TransGrid in this revised Revenue Proposal.

| Project name | Triggers | Indicative capital cost |
|---|---|---|
| Hunter Valley – Central Coast double circuit 500kV line | The trigger event for this Proposed Contingent Project is either:<br><br>- the receipt by TransGrid of an application to:<br><br>(1) - connect a new power station with a generating capacity in excess of 400 MW, or<br><br>(2) - increase the generating capacity of an existing power station by more than 400 MW,<br><br>in relation to TransGrid's transmission network located in the north or west of New South Wales; or<br><br>- the receipt of confirmation from Power link concerning the proposed development of the Queensland network interconnection which enables the import capability into NSW to be increased by more than 400 MW; or<br><br>- the receipt by TransGrid of an application to connect a spot load in the Newcastle area exceeding 200 MW; or<br><br>- the receipt by TransGrid of an application to increase an existing spot load in the Newcastle area by more than 200 MW, and<br><br>in each case, the relevant application or development, causes a network limitation to arise on the 330 kV network between Liddell/Bayswater and Tomago/Newcastle. | $300m |

# Appendix J – Proposed Contingent Projects

| Project name | Triggers | Indicative capital cost |
|---|---|---|
| Yass – Wagga double circuit 500kV line | The trigger event for this Proposed Contingent Project is:<br>1. A set of generators, with a combined output exceeding 200 MW, accepts TransGrid's offer to connect to its transmission network in the following southern areas of the NSW system south of the Yass/Canberra area:<br>• Wagga<br>• Jindera<br>• Buronga / Broken Hill area<br>• Snowy area.<br>Or<br>2. The Victorian export capability to Snowy and NSW is increased by 200 MW above the present capability.<br><br>And (for either of these trigger events) the generation development or increased export capability causes a network limitation to arise on the system between Murray and Upper Tumut/Lower Tumut or between Upper Tumut/Lower Tumut and Yass/Canberra. | $329m |
| Bannaby – Yass reinforcement | The trigger event for this Proposed Contingent Project is:<br>1. A set of generators, with combined output exceeding 200 MW, accepts TransGrid's offer to connect to its transmission network in the following southern areas of the NSW system south of the Bannaby/Marulan area:<br>• Yass<br>• Canberra<br>• Wagga<br>• Jindera<br>• Buronga/Broken Hill area<br>• Snowy area.<br>Or<br>2. The Victorian export capability to Snowy and NSW is increased by 200 MW above the present capability.<br><br>And (for either of these trigger events) the generation development or increased export capability causes a network limitation to arise on the system between Yass and Bannaby. | $45m |

# Appendix J – Proposed Contingent Projects

| Project name | Triggers | Indicative capital cost |
|---|---|---|
| New 500/330kV substation at Richmond Vale | The trigger event for this Proposed Contingent Project is:<br>1. The environmental consent authority determines that a 500 kV transmission line between the Hunter Valley and Eraring must utilise the route of an existing 330 kV line that supplies the Newcastle area in order to be approved.<br>And<br>2. The 500 kV line construction causes a network limitation to arise on the system between the Hunter Valley and Tomago/Newcastle due to the thermal ratings of the remaining 330 kV lines. | $80m |