



6 November 2003

Mr Michael Buckley
General Manager Regulatory Affairs - Gas
Australian Competition and Consumer Commission
PO Box 1199
Dickson ACT 2602

FILE No:
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Dear Mr Buckley

Final Decision on the Access Arrangement for the Moomba to Sydney Gas Pipeline System

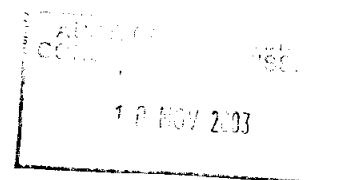
EAPL has provided the Commission with copies of the following materials in support of the revised Access Arrangement and submission which EAPL lodged on 23 October 2003:

- Report by NECG on *Key contentions on WACC components of ACCC decision*;
- Report by NECG *Final Decision on the Access Arrangement for the Moomba Sydney Gas Pipeline System – discussion on section 8.10 (k): HNET*; and
- Report by Venton & Associates concerning the contingency in the ORC estimate for the MSP.

At the time those reports were provided we advised that these should be treated as confidential as EAPL had not had the opportunity to review them for confidential material. EAPL has now had the opportunity to review the reports mentioned above for confidential material and we advise that they do not contain confidential material and may be made publicly available.

We also attach, in support of the submission EAPL lodged under cover of its letter on 23 October 2003, a copy of a note which deals with the relationship between the NERA and Agility formulations of NPV DORC. This note shows that the difficulties and uncertainties associated with the cost-based approach, do not arise. Starting with the NERA formulation, the note shows that, when relevant constraints are taken into account, the cost-based approach in fact reduces to the revenue-based NPV approach adopted by EAPL.

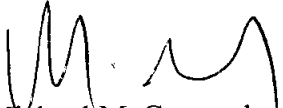
In addition, EAPL identified in section 8.2.4 of the submission lodged on 23 October (based on section 5.3 of the attached report by NECG on *Key contentions on WACC components of ACCC decision*) that a more accurate estimate of the quantum of the appropriate allowance for asymmetric risk could be developed with the benefit of more detailed modelling. In the time available, NECG was unable to undertake the detailed modelling necessary. However, EAPL commissioned NECG to undertake that estimate and prepare a report as soon as possible. EAPL anticipates that this report will be made available shortly and intends to



submit a copy of that report to the Commission in support of EAPL's 23 October submission.

If the Commission wishes to discuss any of these matters please contact Chris Harvey of Agility on 02 9922 8601.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Michael McCormack', with a stylized, cursive script.

Michael McCormack
General Manager – Commercial

THE RELATIONSHIP BETWEEN THE NERA AND AGILITY FORMULATIONS OF NPV DORC

Introduction:

In a paper prepared for the Commission in September 2002¹, NERA presented a formulation of DORC based on the NPV of future cost streams. EAPL provided a response to the NERA paper from Agility under cover of a letter dated 5 November, 2002. The Commission has referred to NERA's work and EAPL's response in its Final Decision at pages 44 to 46 in particular.

The Commission concludes that the potential difficulties and uncertainties associated with applying the cost-based formulation are such that it should adopt straight line depreciation of the ORC as a proxy for the true economic value of DORC.

In EAPL's submission to the Commission dated 23 October, 2003, reference is made to a paper which NERA prepared for NGC Holdings in August 2003 in connection with a Gas Control Inquiry being conducted by the New Zealand Commerce Commission.² In that paper NERA appear to have accepted the "tilted annuity depreciation" formulation of depreciation for DORC which is consistent with the revenue-based NPV approach adopted by EAPL. NERA also state, albeit in the context of the New Zealand review, that:

"the difficulties associated with determining an appropriate level of depreciation for the purposes of determining an ODRC valuation ... are likely to be much more manageable than the difficulties associated with undertaking an historic cost valuation." (NERA, 2003, p18)

These recent statements by NERA suggest that the Commission's reliance on NERA's 2002 Report in regard to the difficulties and uncertainties in the cost-based calculation may have been misplaced.

This note provides further analysis of the approach taken in the NERA 2002 Report. It shows that the difficulties and uncertainties associated with the whole-of-market-life analysis in the cost-based approach, do not arise. Starting with the NERA formulation, we show that, when relevant constraints are taken into account, the cost-based approach in fact reduces to the revenue-based NPV approach adopted by EAPL.

The revenue-based NPV approach produces the value of DORC that is consistent with the Hypothetical New Entrant construct. Implementation of that approach involves factors relating to the existing (DORC) and initial hypothetical replacement (ORC) assets alone. It does not require a whole-of-market-life analysis and so it is not subject to the difficulties and uncertainties of the cost-based approach.

¹ National Economic Research Associates 2002, *Depreciation Within ODRC Valuations, A Report for ACCC*, September

² National Economic Research Associates 2003; *Asset Valuation for the Gas Control Inquiry -- A Report for NGC Holdings*; August

The relationship between the NERA and Agility formulations of NPV DORC:

NERA state that:

"the DORC valuation should balance the net present value (NPV) of the expected future costs associated with a decision to purchase a new asset and those associated with using the existing asset. Under this definition, the depreciation adjustment should reflect the differences in future costs associated with new and existing assets.

The appropriate period of calculation will be the period over which the firm's cash flows are expected to be affected by its decision. Whether the firm chooses to purchase existing or new assets, it will not expect to face any associated cashflows beyond the economic life of the market served by these assets, therefore the period of analysis should be the economic life of the market under consideration." (NERA, 2002, p2)

The proposition is that DORC is defined by equating costs over the life of the "market" for two alternatives: continue with the existing/old asset, or replace the existing asset with an optimised new asset. In both scenarios, assets are replaced/renewed at the ends of their lives in perpetuity or, where the market is finite, until the end of the market's life. NERA go on to present the concept mathematically in equation 1, p7:

$$\text{DORC} + \text{NPV}(\text{Capex}_{\text{Old}}) + \text{NPV}(\text{O \& M}_{\text{Old}}) = \text{NPV}(\text{Capex}_{\text{New}}) + \text{NPV}(\text{O \& M}_{\text{New}})$$

DORC is the balancing item.

While NERA have chosen to define DORC by reference to the life of the market, it is unnecessary to do so. As is shown below, when relevant constraints are taken into account, the analysis reduces to a consideration of factors relating to the DORC and ORC investments alone -- subsequent renewal investments are not relevant.

Each side of the above equation can be separated into two components:

1. An "initial investment" ("i") component:
 - a) DORC and its associated O&M costs ($\text{O\&M}_{\text{Old},i}$) on the left hand side; and
 - b) ORC and its associated O&M costs ($\text{O\&M}_{\text{New},i}$) on the right hand side.
2. A "remainder of life" ("+") component:
 - a) $\text{Capex}_{\text{Old},+} + \text{O\&M}_{\text{Old},+}$ i.e. costs incurred after the end of the life of the existing (DORC) asset, on the left hand side; and
 - b) $\text{Capex}_{\text{New},+} + \text{O\&M}_{\text{New},+}$ i.e. costs incurred after the end of the life of the first (ORC) asset built by the Hypothetical New Entrant (HNE), on the right hand side.

Substituting and reading each term as a NPV:

$$\begin{aligned} & (\text{DORC} + \text{O \& M}_{\text{Old},i}) + (\text{Capex}_{\text{Old},+} + \text{O \& M}_{\text{Old},+}) \\ & = (\text{ORC} + \text{O \& M}_{\text{New},i}) + (\text{Capex}_{\text{New},+} + \text{O \& M}_{\text{New},+}) \end{aligned}$$

However, an investor will invest only if the NPV of net cash flows generated by the investment is at least equal to zero i.e.:

$$NPV(\text{Revenue}) - NPV(\text{Costs}) \geq 0$$

In fact this relationship must hold for each investment (and re-investment) in each of the two scenarios, as well as in total. The decision by the hypothetical new entrant to build a new asset for ORC or purchase the existing asset for DORC today does not carry with it any commitment (in either scenario) to renew the assets at the ends of their lives as implied by NERA -- any renewal decision will be made when required based on forward-looking assessments made at that time. Those future decisions will be made without regard to the basis on which the initial ORC versus DORC asset decision was made. Conversely the NPV of the ORC versus DORC decision cannot be affected by renewal investment decisions to be made independently in the future.

In a competitive market the expectation is that:

$$NPV(\text{Revenue}) - NPV(\text{Costs}) = 0$$

where revenues and costs are matched, and costs include capital costs which include DORC (or ORC) in the current context.

As with costs, Revenues can be separated into "initial investment" and "remainder of life" components. Then continuing with the nomenclature from above and assuming Revenues are set just to recover costs, the NERA formulation becomes:

$$\begin{aligned} & R_{\text{Old},i} - (\text{DORC} + \text{O \& M}_{\text{Old},i}) + R_{\text{Old},+} - (\text{Capex}_{\text{Old},+} + \text{O \& M}_{\text{Old},+}) \\ = & R_{\text{New},i} - (\text{ORC} + \text{O \& M}_{\text{New},i}) + R_{\text{New},+} - (\text{Capex}_{\text{New},+} + \text{O \& M}_{\text{New},+})^3 \\ = & 0 \end{aligned}$$

Then, applying the that $NPV(\text{Revenue}) - NPV(\text{Costs}) = 0$, and matching:

$$\begin{aligned} & R_{\text{New},i} - (\text{ORC} + \text{O \& M}_{\text{New},i}) = 0 \\ & R_{\text{New},+} - (\text{Capex}_{\text{New},+} + \text{O \& M}_{\text{New},+}) = 0 \\ & R_{\text{Old},i} - (\text{DORC} + \text{O \& M}_{\text{Old},i}) = 0 \\ \text{and} \quad & R_{\text{Old},+} - (\text{Capex}_{\text{Old},+} + \text{O \& M}_{\text{Old},+}) = 0 \end{aligned}$$

³ Note that this equation can be rearranged to be the same as the formulation given more recently by The Allen Consulting Group i.e.

$$ODRC_0 = ORC_0 \sum_{t=1} \frac{Serv_{New,t} - Serv_{Existing,t}}{(1+r)^t} - \sum \frac{Cost_{Existing,t} - Cost_{New,t}}{(1+r)^t} \quad (\text{p22})$$

The Allen Consulting Group 2003, *Methodology for updating the regulatory value of electricity transmission assets*, report to the Australian Competition and Consumer Commission, August.

Rearranging the third of these equations:

$$\text{DORC} = R_{\text{Old},i} - O \& M_{\text{Old},i}$$

But, in terms of the HNE construct, DORC is defined by the maximum revenue that the existing asset can obtain year by year over the remainder of its life while avoiding bypass. This is in turn equal to the minimum revenue that the HNE would require over that period to sustain his investment in the ORC asset. It follows that:

$$\text{DORC} = R_{\text{New},n} - O \& M_{\text{Old},i}$$

where $R_{\text{New},n}$ is the NPV of the HNE's revenue requirement over the first "n" years of the ORC asset's life, and "n" is the remaining life of the existing (DORC) asset. It is reasonable to assume that the HNE's revenue requirement will follow a rational profile e.g. based on competition depreciation or straight line depreciation, and will reflect the lower operating costs of the new (ORC) asset. This is the Agility NPV DORC formulation.

Conclusion:

The calculation of a DORC value that is consistent with the HNE construct involves factors relating to the existing (DORC) and initial hypothetical replacement (ORC) investments alone -- it is unnecessary to consider subsequent renewal investments which will be justified on the basis of assessments made at the appropriate time in the future, and can be assumed to contribute nothing in NPV terms to the values of the initial DORC and ORC alternatives. It follows that the difficulties and uncertainties associated with long term estimation of the timing and costs of renewal and replacement investments do not arise in the NPV DORC calculation.