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Friday 20 August 2004

Submissions on Revised Draft ODV Handbook  
Network Performance Group  
Commerce Commission  
PO Box 2351  
**WELLINGTON**

Emailed to: [electricity@comcom.govt.nz](mailto:electricity@comcom.govt.nz)

### **Follow-up submission on revised draft ODV Handbook –Version for Public Disclosure**

Orion thanks the Commission for meeting with us in Wellington last Monday 16<sup>th</sup> August. Present were Commission staff - Calum Gunn, Paolo Ryan, and Alec Mladenovic, PBA Consultant Geoff Brown (via telephone) and Orion staff – Neville Ross, Rob Jamieson & Dennis Jones. We discussed some aspects of our 30 July 2004 submissions on the “*Revised Draft ODV Handbook for Consultation*”, dated 9 July 2004 and the “*Review of Optimised Deprivation Valuation Handbook – Replacement Costs of System Fixed Assets*”. This letter provides some data regarding our case for a multiplier to apply to the replacement costs of overhead lines built to withstand significant wind and snow loading. We also confirm our concerns regarding:

- Threshold for EV test, and
- Lighting circuits.

#### **1. Multipliers for wind and snow loading**

The Commission invited Orion to provide some data to support the introduction of multipliers to recognise the higher design and construction costs of lines in areas of high wind and snow loading.

In the short time available, we have not been able to develop a comprehensive analysis, but Orion and Powerco have considered the case of light 11kV lines and the results for Orion are summarised as follows:

Case	Parameters	Replacement Cost	Ratio
1 Areas subjected to winds, but no snow	83.3m spans, 48m/s winds.	\$24.0/m	1.00
2 Areas subjected to snow, but no wind	83.3m spans, 15mm ice.	\$24.3/m	1.01
3 Areas subjected to wind and snow	76.9m spans, 30m/s wind, 15mm ice.	\$27.2/m	1.13

[ ] We understand that Powerco's similar analysis has resulted in a multiplier of 1.19.

Please refer also to the appendix to this letter containing a memorandum from R. Fairweather of Opus International Consultants Limited, which explains the environmental differences for line construction in Canterbury. This complements the New Zealand loadings standard NZS 4203:1992<sup>1</sup> which identifies areas in New Zealand with significant wind and snow loading.

~~Please also find details of the designs in further files attached, as follows:~~

- ~~• Orion 1<sup>st</sup> case in "11kV 001"~~
- ~~• Orion 2<sup>nd</sup> case in "11kV 002"~~
- ~~• Orion 3<sup>rd</sup> case in "11kV 003"~~
- ~~• Summary of the parameters of Orion's three cases in "Orion Summary"~~
- ~~• [ ]~~
- ~~• [ ]~~

Having now looked more closely at these line costs and the parameters that affect them, Orion recommends the introduction of one new multiplier in clause A.9. It is clear that the combination of wind and snow factors, rather than each factor on its own, results in the requirement for enhanced design. To allow for the extra costs to design and build overhead lines in areas with significant combined wind and snow loading, a suitable range would be from 1.0 to 1.2.

## 2. Threshold for EV test

We confirm our concern over the revised draft handbook clause 2.59 which prescribes a threshold EV adjustment of 1% of the ODRC to determine whether a comprehensive EV test is required. Orion suggests a threshold value of at least 3%, as was used by the Commission in the recalibration of the 2001 ODVs, because:

- In practical terms, at 1%, many companies will still have to undertake substantial EV testing to ensure that they don't pass the threshold "filter" – at a 3-5% level many companies will be in a position to say quite clearly whether they need to undertake an EV test, and to know that any outcome would have some significance.
- Common commercial practice allows for materiality in financial reporting of up to 5%, recognising that valuation is a "judgement" and not a "science". The NZ Institute of Chartered Accountants' Statement of Concepts, para 6.5 states that something is material if "it is of such an amount or nature that its disclosure, or the methods of treating it.....is likely to influence users of financial reports in making decisions or assessments." Given the number of assessments which already are incorporated within the valuation – eg, replacement costs, quantities, ages, MEAs, optimisation etc – it is highly unlikely that adjusting for the result of the EV test if it falls below a 3% or even a 5% threshold will influence users.
- The Commission, when deciding on 3% for the recalibration tolerance, must have received advice accordingly.
- From a cost-benefit perspective, a 1% "test" is unlikely to be defensible.

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<sup>1</sup> Standards New Zealand, *Code of practice for General Structural Design and Design Loadings for Buildings*, published 14 December 1992

Therefore, in the context of establishing an ODV, Orion considers a 1% tolerance for the EV adjustment to be impractically tight, and firmly recommends at least 3%.

### 3. Lighting circuits

We confirm our concern that lighting circuits, according to our understanding of the discussion at the meeting, are to be excluded from Orion's ODV on the basis that the Commission intends to regard Orion's 5<sup>th</sup> circuit on its low voltage network (used for lighting) as part of the lighting control.

We consider that the 5<sup>th</sup> circuit conveys electricity to the streetlights and therefore has a distribution function, not a control function. Orion's lighting circuits for distribution are split approximately as follows:

	ODV
980km of 5 <sup>th</sup> core underground cable	\$4.7M
990km of 5 <sup>th</sup> wire overhead line	\$1.3M
619km of separate 2-core / neutral screen lighting cable	\$7.3M

From our discussion, we understand that only the last item would be included in the ODV. You suggest that Orion would have to value the 5<sup>th</sup> circuits as separate assets that relate to Orion's incremental or non-regulated business activity, and charge for them separately.

Orion strongly objects to this proposed exclusion of lighting circuit assets because:

- The streetlighting subnetwork is integrated with Orion's low voltage network and cannot be physically or electrically separated. All loads share the use of the low voltage neutral conductor. The lighting subnetwork is managed as a natural monopoly lines business activity, the revenue is included in regulatory assessments and the value must be recognised in the regulatory ODV.
- Our method of connection is the most efficient way to meet the quality of supply criteria indicated by the customer in terms of timing and reliability of switching. The alternative involves adding many connections to the main LV conductors, reducing reliability.

The suggested exclusion will achieve little, other than to move a portion of Orion's streetlighting service outside the framework of Orion's regulated lines business activity. New prices will need to be developed to represent the split between the newly un-regulated lighting circuits and the remaining regulated lighting circuits. The implications of this pricing split are:

- unnecessary complexity in pricing, in all respects – derivation, publication and application;
- the possibility of cross-subsidisation between regulated and unregulated activities;
- the opportunity for Orion to increase the prices in respect of the unregulated portion;
- the reduced price in relation to the remaining regulated portion will appear as a price reduction under the Commerce Commission's price path assessment (providing the opportunity for Orion to increase other prices); and
- added complexity in terms of application of charges (invoicing), revenue allocation, disclosure of line lengths, and financial and regulatory reporting.

With these issues in mind, Orion points out to the Commission that we are willing to accept the provision of all lighting circuits as a regulated lines business activity. We strongly recommend that the exclusion in the proposed Handbook clause 2.7 be restricted to "street light control relays and other equipment that is used exclusively for street light switching". This provision would then only restrict the switching mechanism for separation as a contestable activity.

We trust that these further comments and data are helpful. We thank you again for meeting with us and allowing all to constructively work through these issues.

Your sincerely

Neville Ross  
**Commercial Contracts and Pricing Manager**

## Appendix – Memorandum from Opus International Consultants Limited

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TO Orion  
COPY  
FROM Robert Fairweather  
DATE 19 August 2004  
FILE DK318.00/385SC  
SUBJECT **ORION: OVERHEAD LINE COSTS**

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Orion,

After our discussion earlier today regarding overhead line costs, my thoughts are as follows.

Basic assumptions:

- ◆ Rural flat terrain
- ◆ Inline poles
- ◆ Even spans
- ◆ 1 kilometre length

Orion's overhead line costs are higher than other Lines Companies around NZ – this is principally due to ice and snow effects. For other regions, wind loading controls the line design (including poles and foundations). Canterbury has the highest snow loading according to relevant New Zealand Standards and needs to be considered at all altitudes above Mean Sea Level (MSL).

The critical design requirements for snow and ice conditions are as followings

- ◆ Snow loads in still air at 0°C
- ◆ Ice loads co-incident with light wind conditions at -10°C

	<b>Wind (Rest of NZ)</b>	<b>Ice and Snow Effects (Canterbury)</b>	<b>Additional Requirements</b>
Average design storm re-occurrence interval	50 years	20 to 25 years	Pole likely to be subjected twice to a "design event" during its service life.
Loading Direction	Transverse (perpendicular to lines)	Along line	Significant loads on cross arms & hardware
Loading Duration	Short term (3 seconds)	Sustained Loading < 3 days	Timber poles need to be larger (the poles ability to support loads is related to the duration of loading). About 25% increase in pole capacity required above equivalent load due to wind loading. Foundation depth needs also to be increased (foundation capacity reduces with increased duration of loading).
Uneven spans	Generally conductor tension balanced due to swing	Conductor tension different either side of pole	<ul style="list-style-type: none"> <li>◆ Spans must be consistent.</li> <li>◆ More "strain" structures used.</li> </ul>
Overhead Line Spans	Maximum tension in conductor, separation to adjacent conductors	<ul style="list-style-type: none"> <li>◆ Increased wind area on conductors due to build up of ice</li> <li>◆ Increased sags due to snow/ice weight.</li> <li>◆ Pole (foundation) settlement due to increased vertical loading</li> </ul>	<ul style="list-style-type: none"> <li>◆ Transverse pole loads about up to about 30% larger than wind loading alone (i.e. stronger poles required or smaller spans)</li> <li>◆ Span length reduced to cater for increased vertical loads on poles (foundations)</li> <li>◆ Install poles with larger embedment.</li> </ul>
Clearances	Minor permanent stretch of Conductors	Large permanent "stretch" in conductors after event	Retensioning required after storm event, or increased clearances and separations, i.e. higher pole required to maintain clearances after snow event.
Pole Movement	Transverse movement	Lateral and Transverse movement (compromised clearances etc)	<p>Need to control pole movement using stronger stays and/or improved foundation capacity</p> <ul style="list-style-type: none"> <li>◆ Blocking</li> <li>◆ Gravel collars</li> <li>◆ AP40 + Cement</li> </ul>
Uneven loading	Minor	Large, especially uneven build-up of snow/ice and shedding of snow/ice off lines	Prevent line cascade effect by providing strong point (a stayed "strain" pole) every 10 <sup>th</sup> pole along line

Clearly in the urban area, the effects of snow and ice are even more pronounced.

Regards

Robert Fairweather

**Opus International Consultants Limited**