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Attention: The Trustees

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## **State of the Network Report 2018**

As a requirement of the Deed Recording Essential Operating Requirements (DREOR), Vector management is required to provide a report from an independent expert to advise on the state of the Auckland Electricity reticulation assets.

The scope of work required is to prepare a report on:

- The state of Vector's electricity assets across its Auckland and Northern networks with regard to maintenance programmes and the appropriateness of expenditure levels;
- Any need for the upgrading of Vector's electricity assets, taking into account what is already being planned by Vector management;
- The capacity of Vector's electricity assets in relation to forecast demand; any security risks to Vector's electricity lines network;
- Any investment risk with the traditional approach, understanding of the issues Vector is balancing including the transition from the traditional network model to a new network solutions and customer focus business model;
- High Impact Low Probability (HILP) events;
- Underlying data;
- Sustainability; and
- Business-As-Usual asset management.

DuPont (Australia) Ltd was engaged by Vector Energy to undertake the 2018 review on behalf of Entrust. DuPont is a 216-year-old global company that has invented and manufactures many of the products that have changed the way people live and work (including Nylon, Kevlar, Lycra, Teflon). During our long history, we have strived to constantly improve the way operational risk, such as the reticulation of electricity, is managed. Our 'Commitment to Zero', is a personal pledge to this ambition for our 65,000 employees, even during the current merge with DOW.

The professional services division of DuPont, DuPont Sustainable Solutions (DSS) conducted the review and prepared this report. DSS is a global leader in Operational Risk Management, Operational Excellence, Innovation and Digital services.

The review team consisted of Chartered Engineers and senior consultants with a background in many industries including utilities, in process safety, sustainability consultancy and auditing. We included organizational culture change specialists to allow coverage of both engineering and human factors.

In the period since the last State of the Network report, a number of factors have had influence on the areas covered by the scope of work. These factors include:

- Implementation of Health and Safety at Work Act 2015, specifically the cessation of all live work and the shutdown of circuits in response to reporting of potential live lines from the community
- A series of extreme weather events which tested the reliability and resilience of the network. A notable example of that was the destructive 10th April wind-storm with gusts of up to 215km/h, which impacted 180,000 homes and businesses, primarily as a result of tree damage to lines
- Adapting business operations to manage the new levels of performance in relation to System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI) metrics
- Reviewing and improving operational standard to enhance the quality of the service and contractor management
- Continuing investment in new network solutions and customer focus business model (eg: battery technologies)

Strengths observed during the Vector visit were the obvious alignment of the Vector network leadership team to a common vision and goals for a new energy future. All business units we met were able to provide data driven strategies that articulated their contribution to this vision. This leadership commitment cascaded into other levels of the business who demonstrated the same dedication to customer service, collaboration and innovation.

We continue to support Vector's decision to improve public safety and reduce workplace risk by eliminating live line work. Vector and its Field Service Providers have reviewed their works management processes to maximize the use of planned system outages that should improve unplanned outages as system improvements are installed. However, Vector's performance against the regulated targets for SAIDI and SAIFI has deteriorated as a consequence and new targets are still to be agreed with the Commerce Commission.

Significant work to establish a more proactive asset management system has created the capability to forecast maintenance-related OPEX and CAPEX expenditure driven by quality data. As a result, Vector is able to provide a clearer picture of future cost trends to support the regulator in setting a Default Price Path that should secure the funding required for the targeted performance to be agreed.

Vector is addressing the reality of the dynamic energy market and changing customer preferences, coupled with an unprecedented fast pacing adoption of new technologies (e.g. solar panels, batteries and electric vehicles) with plans for more elaborate risk-based scenario planning. Regulatory certainty is still needed to set the appropriate level of investment in technologies to improve SAIDI and SAIFI performance.

We note that Vector has undertaken significant work to develop and improve the business processes required to identify and manage the controls associated with lowering the likelihood and consequence of HILP events. In our view, this important area of performance requires Vector to sustain its established commitment to a never-ending journey of continual improvement in assets, systems and leadership and we note Vector's progress is supported by the new Asset Management System and sophisticated risk assessment tools.

Observations carried out in the field at Warkworth and St Heliers demonstrated a high standard of workplace safety and customer support from field crews both in Northern and Auckland networks.

The underlying company culture supporting Vector's operations, asset management and planning processes, as resulted from interviews with personnel and contractors appears aligned with the organization vision, mission and future aspiration.

Based on the application of our 22 Elements Operational Risk Framework and on comparison (where appropriate) with other industrial and utility players, Vector represents good practice in asset management and operational risk management.

From the information presented, assessment of operational risk management, in field observations and subject to the matters raised in the report, we find that processes, strategies and initiatives underway or in development are appropriate for managing the security, investment, maintenance and operation of the Auckland and Northern networks in their current state.

We thank Vector and its Field Service providers for their support and assistance to enable the preparation of this report, and also Entrust for the opportunity to undertake this engagement.

Yours sincerely,



Michele Villa  
Director, Global Practices Leader and Australia & New Zealand Regional Leader  
DuPont Sustainable Solutions