IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of a notice of requirement issued by **WEL NETWORKS LIMITED** pursuant to section 168(2) of the Act for designations (3) to authorise the implementation of the Western Network Upgrade Project

STATEMENT OF EVIDENCE OF DAVID JOHN MOLLEKIN

1. INTRODUCTION

1.1 My name is David John Mollekin. I hold the degree of Bachelor of Engineering (Elect) (1985) from the University of Auckland and I am a Member of the Institution of Professional Engineers NZ (MIPENZ).

1.2 My experience covers over 30 years in the New Zealand electricity distribution and transmission industry in various roles. These roles have included operations, testing and management of electricity networks, planning and design and project management of large scale capital projects.

1.3 I am currently engaged by WEL Limited as Network Asset Investment Advisor and have been carrying out this role for 3 years.

1.4 In my current role I am responsible for electricity networks strategic planning, technical support and major projects development such as the Western Network Upgrade Project ("WNUP"). In that capacity, I am involved in complex strategic planning exercises (which I describe in my evidence) which has identified the need for reinforcement and upgrading of the power supply to the western part of the WEL's supply area. Since 2006, I have filled a project management role in identifying a line route; overseeing negotiations with landowners, key stakeholders (e.g., New Zealand Transport Agency, Environment Waikato and the Waikato District Council) and other potentially affected parties; and directing the processes to satisfy the requirements of the Resource Management Act 1991.

Purpose and scope of evidence

1.5 The purpose of my evidence is to outline how the relevant parts of WEL's electricity distribution network operate and comment on the rationale and need for the Western Network Upgrade Project.

1.6 Specifically, in my evidence, I propose to:

(a) Make some general comments about electricity system planning and WEL's planning processes to place the rationale for the current project into perspective (Section 3)

(b) Describe WEL's Western Area distribution network, outline the network planning which has been undertaken for WEL's Western Area and which demonstrates the clear need for substantial strengthening of the area (Section 4)

(c) Provide an overview of the overall upgrade project for WEL's Western Area and the components of that broader project that comprise the Western Network Upgrade Project which is the subject of the current NORs (Section 5).

(d) Outline the rationale for the location of the substations (Section 6).

(e) Outline the factors relevant to assessing route and equipment selection on the sub-transmission line route (Section 7).

(f) Outline issues relating to the construction and operation of the subtransmission line and substations (Sections 8 and 9).

(g) Comment on the officer's report and proposed conditions (Section 10).

1.7 A summary of my evidence is included in Section 2.

1.8 My evidence should be considered alongside the evidence of:

(a) John van Brink, which outlines the company's commercial and environmental responsibilities and objectives and the rationale for the WNUP; and

(b) Ron Jackson, which describes in detail the proposed line route and the rationale for the route at a micro-level.

1.9 I am authorised to present this evidence on behalf of WEL Networks.

2. SUMMARY OF MY EVIDENCE

Electricity network planning

2.1 Electricity supply authorities endeavour to operate their networks in a manner which achieves a certain level of security and reliability as required by the Electricity Regulations, standards set by the Electricity Engineers Association and industry best international practices.

2.2 Secure electricity supply is compromised with too much load on a zone substation or on a line. The potential consequences of inadequate alternative supplies in the event of a network failure are reduced voltage, brown-outs and/or black-outs, particularly during peak load periods. WEL's planning policy and security standard is based on industry best practices. The network is designed so that adequate alternative supplies are available to support the network load in the event of any equipment failure.

2.3 In order to maintain the security of supply standards, prudent lines companies undertake sophisticated planning processes having regard to a range of factors, including local authority planning instruments, growth rates, etc. WEL undertakes its network planning by feeding known future step load increases, expected population growth and other estimates of future load growth into the Network Load forecasting model. Where a future shortfall in required security levels is forecast, options available to restore the security levels are considered. Strengthening of a distribution network can be done by either increasing network capacity or by installing generation along the line, or both.

Planning for WEL's Western Area

2.4 WEL's Western Area network comprises a single 33kV circuit for 26 of 40kms. In that regard, if the single 33kV line is taken out of service for any reason, the main supply to Raglan will be interrupted and can take some time to restore governed by the repair time. This therefore represents a severe security constraint.

2.5 The Western Area, in particular Raglan Township that is serviced by the WEL network has experienced considerable growth in recent years and continues to do so. As a result this has triggered a requirement to move to higher a security (N-1) standard.

Proposed Western Area Upgrade and the WNUP

2.6 WEL has identified in its Asset Management Plan the need for an overall upgrade of the existing network in the Western Area, of which the works which are the subject of the current NORs form part. The Western Network will be strengthened by the installation of generation renewable energy and by increasing network capacity by upgrading to higher voltage, i.e. from 33kV to 110kV.

2.7 The WNUP is part of the broader Western Area upgrade. It comprises:

(a) A substation located at the Te Uku Wind Park for the purposes of transforming the electricity generated by the wind park to 110kV (for transmission to WEL's connection at Te Kowhai) and 33kV (for distribution within WEL's local Western Area network).

(b) A substation located adjacent to the existing Te Kowhai GXP for the purposes of:

(i) Transmitting electricity into WEL's network.

(ii) Injecting any surplus electricity generated by the Wind Park onto the National Grid (i.e., transforming 110kV to 220kV).

(iii) In the event of failure of the local 33kV network (or no output from the Wind Park), transforming electricity from 220kV (from the National Grid) to 110kV and into the 33kV Te Uku/Raglan network.

(c) A sub-transmission line which consists of 110kV line which will convey electricity generated by the wind park from the Wind Park substation to WEL's connection at the Te Kowhai substation and a 33kV line.

2.8 The WNUP will have the following outcomes:

(a) Creation of two sub-transmission (33kV) feeders to the Te Uku substation, thereby increasing security of supply and ability to meet load demand.

(b) Connection of the Te Uku Wind Park to the Te Uku substation and the Te Kowhai substation, enabling distributed generation (to Te Uku / Raglan and parts of Hamilton) and feed to the National Grid.

(c) Linkage of the Western Area to the Te Kowhai GXP via the 110kV line, increasing security of supply and ability to meet load demand.

Te Uku Wind Park Substation

2.9 The Te Uku Wind Park substation will transform the electricity generated by the Wind Park to a voltage that can be conveyed to WEL's connection at Te Kowhai and the 33kV local Te Uku/Raglan network. The Wind Park substation needs to be located close to the Wind Park itself.

2.10 The precise location of the substation within the Wind Park site was determined in consultation with the landowner and having regard to existing or consented infrastructure. The proposed site is an appropriate site because it is an unencumbered area, avoids sensitive ecological areas, is close to an access road, close to existing lines and cannot be seen from public places.

Te Kowhai substation

2.11 The relatively large power volumes generated by the Te Uku Wind Park will need to be distributed on to WEL's network or surplus injected into the National Grid at a Grid Exit Point ("GXP") or similarly large capacity substation. After considering all available options, WEL decided to install a 220kV/110kV transformer at the existing GXP at Te Kowhai (proposed option) mainly on the basis that the required infrastructure exists at that site - if the existing infrastructure at Te Kowhai substation was not used, it would have to be duplicated elsewhere.

2.12 Both of the substations will be constructed according to normal construction techniques and will incorporate state of the art systems to address any potential areas of risk in terms of hazardous substances management and storage, etc.

Factors relevant to assessing route and equipment selection on the subtransmission line route

2.13 WEL considered a broad range of alternatives in terms of line route, equipment and methodology having regard to a range of key factors including technical considerations, construction feasibility, environmental factors and issues raised by the owners and occupiers of land on and adjacent to the line route and submitters.

2.14 WEL's philosophy toward route selection was not to identify one optimal route and pursue that, but to identify a number of alternative routes based initially on technical requirements and a constraints mapping process and proceed to consultation with landowners and affected parties as to their feasibility. WEL engaged experts early on in the process in order to identify constraints and, as a result of that process, identified a number of possible alternatives that were able to be implemented, having regard to those constraints. 56 different combinations of routes were identified and considered.

Option selected and construction and operation of line

2.15 As a result of the process of consultation and consideration of options, WEL selected the proposed route which is 25 kilometres long and traverses 25 sites. The designation corridor provides for some flexibility in locating the 240 poles that will be required. The poles will be up to 17 metres in height but may be as low as 15.5 metres.

2.16 The selected route only traverses the property of two landowners who have not yet agreed in principle to the proposed route, being the Gibbs and Williamson properties. I am confident that WEL has adequately considered alternative routes. In that regard, the route selected is not the best route for WEL but the rationale for selecting that option is that it largely reflects the wishes of the community and is technically feasible from our point of view.

2.17 WEL has considered other methods and equipment but discounted those for reasons relating to technical feasibility and potential adverse effects.

2.18 Construction of the line will occur over a one year period and the methodology adopted will be determined by the contractor. It is expected that the poles will be constructed section by section, with the lines being constructed in their entirety before the lines are strung. WEL is prepared to comply with the noise abatement techniques set out in the Fly Neighborly guideline as recommended in the officer's report.

2.19 WEL is required to comply with NZECP 34:2001 (Electrical Code of Practice) in terms of minimum safe distance requirements in terms of appropriate clearances and to consult with Maritime New Zealand in respect of clearances over the Waipa River and conditions to that effect are not required.

2.20 The lines will be inspected one to two times a year during operation and maintenance scheduled where required. Where the line is severely damaged, WEL's normal call out practices apply.

Officer's report and conditions

2.21 WEL adopts the philosophy and approach reflected in the conditions recommended in the officer's report, with some minor amendments which will be addressed by other witnesses.

2.22 WEL prefers a lapse period of 10 years, rather than 7 as recommended in the officer's report. The rationale for that preference is that, while it is anticipated that the works will be undertaken within the next 2 to 5 years, WEL wishes to retain some flexibility in order to address any change in circumstances.

3. ELECTRICITY NETWORK PLANNING

3.1 This section of my evidence provides an overview of the performance standards/goals which apply to electricity supply authorities /lines companies and the type of network planning undertaken to identify the need for upgrades of existing or new capital works.

Security of supply

3.2 Electricity supply authorities endeavour to operate their networks in a manner which achieves a certain level of security and reliability as required by the Electricity Regulations, standards set by the Electricity Engineers Association and industry best international practices. WEL meets these standards as published in their Asset Management Plan, detailed in section 3.2.3.

3.3 Secure electricity supply is measured by reference to continuity and quality of supply. This is compromised with too much load on a zone substation or on a line which can cause extended supply interruption (black-outs), lower than normal supply voltage (brown-outs) and short-term disturbance to quality of supply (transients).

3.4 This level of load can occur when there is growth in an area which overloads existing substations or, in the case of rural environments, where voltage management (i.e. long lines) becomes impractical. When that occurs, it is necessary to identify an alternative source of supply either from other supply network feeders, improvement in supply equipment capacity or through major

network enhancement such as a new zone substation or new lines to improve the transmission capacity.

3.5 WEL's planning policy and security standard is based on industry best practices for the planning, design and operation of the network. The primary network feeders (sub transmission 110kV or 33 kV) and main distribution network feeders (11 kV) are designed so that adequate alternative supplies are available to support the network load in the event of any equipment failure. The potential consequences of inadequate alternative supplies in the event of a network failure are reduced voltage, brown-outs and/or black-outs, particularly during peak load periods.

3.6 For example, if there is only one electricity line serving an area, loss of that line (as a result of tree falling, traffic accident, etc.) will result in an inability to supply the area until the fault or damage is repaired. It is thus desirable to have more than one electricity line serving an area so that if one line fails, electricity can be supplied via the alternative line. This is what we call an "N – 1" security standard", where 'N' is the number of available feeders such that the loss of one feeder will not result in a complete failure to supply electricity. That standard is invariably achieved in urban areas but often not in rural areas due to the greater distances involved, which is why power interruptions are much more frequent in the country than in the city. As Mr van Brink noted, it is the improvement of the reliability of supply to the western part of WEL's supply area that lies at the heart of WNUP.

Network planning – philosophy and approach

3.7 In order to maintain the security of supply standards, prudent lines companies undertake sophisticated planning processes having regard to a range of factors including:

(a) Rural uses in applicable areas;

(b) Existing and proposed residential development;

(c) District plan for the respective area;

(d) Light industrial and commercial activities in the area;

(e) Proposed roading development;

(f) Any proposed territorial boundary changes;

(g) Growth rates;

(h) Potential generation connections;

(i) Existing network assets; and

(j) Obligations to connect new generation.

3.8 WEL undertakes its network planning by feeding known future step load increases, expected population growth and other estimates of future load growth into the Network Load forecasting model. The model is then used to compare the forecast levels of security versus the network security level requirements. Where a future shortfall in required security levels is forecast, the various options available to restore the security levels are identified, evaluated, costed and compared. Opportunities to enhance reliability of the network are also taken where it is economic to do so.

3.9 Strengthening of a distribution network can be done by either increasing network capacity or by installing generation along the line ("distributed generation").

3.10 Increasing network capacity is achieved by upgrading to a higher voltage, e.g. 33kV to 110kV, to enable more electricity which has been generated elsewhere to be conveyed to an area which is experiencing growth. This involves re-insulating and re-conducting existing lines or building new lines, thus enabling higher demand to be met, and can include the construction of new zone substations.

3.11 Options for installing new sources of electricity via generation along the line include creation of such as wind energy, micro-hydro or co-generation, and combinations of these.

3.12 A network upgrade can involve components of both options, as does the proposed upgrade of WEL's Western Area network.

Example of network planning – WEL's Central Waikato region

3.13 As an example of network planning, following a major review of medium and long-term security of supply within the Central Waikato region undertaken in 2001, WEL planned to expand and improve its network. This recently included working with Transpower to install a new point of supply west of

Hamilton at Te Kowhai to ensure that Hamilton City will have two strong supply routes providing long-term security of supply to the city.

3.14 Within the strategic plan to address future growth WEL has already invested over $40 million to expand the capacity of its network. This includes the construction of six new zone substations with a combined capacity of 106 MVA, and transformer capacity upgrades.

3.15 This programme currently has an annual investment in excess of $20 million a year to improve capacity, security, and reliability. Planning includes investment to accommodate load growth in the initial years with asset replacement increasing in subsequent years.

Te Uku Wind Park

3.16 The Wind Park at Te Uku is an integral part of expansion addressing both load growth and security through embedding into the local sub transmission 33kV network and further assisting in this regard by improving security at the Te Kowhai point of supply for Hamilton West and the Raglan supply area via the 110kV subtransmission line.

4. PLANNING FOR WEL'S WESTERN AREA

4.1 This section of my evidence describes WEL's Western Area network and the factors which were considered in deciding to proceed with an upgrading of that area, the majority of which WEL is seeking to authorise via the current notices of requirement.

Western Area network

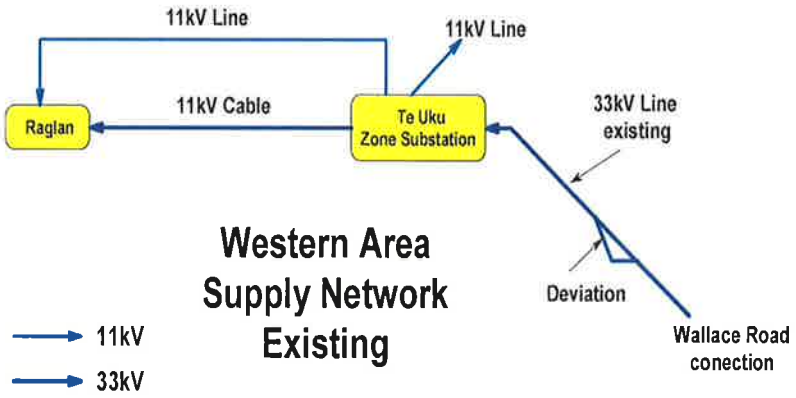
4.2 The existing network in the Western Area comprises that area of WEL's network to the west of The Deviation. The Western Area network services Te Uku and Raglan.

4.3 The Western Area network comprises a 33kV line from Te Kowhai, via the substation at Wallace Road to the existing Te Uku substation. This 33kV line becomes a double circuit when crossing The Deviation (known as the Northern 33kV line and the Southern 33kV line).

4.4 At the Te Uku substation, the 33kV sub transmission is transformed to 11kV and then distributed via one 11kV overhead line and one underground cable

to Raglan. The remaining areas west of Te Uku are also fed via 11kV overhead lines.

4.5 The existing Western Area network is represented in the diagram below.



Existing Western Area network – constraints and limitations

4.6 The existing Western Area network comprises a single 33kV circuit for 26 of 40kms. In that regard, if the single 33kV line is taken out of service for any reason, the main supply to Raglan will be interrupted and can take some time to restore governed by the repair time. This therefore represents a severe security constraint.

4.7 The Western Area, in particular Raglan Township, that is serviced by the WEL network has experienced considerable growth in recent years and continues to do so. As a result this has triggered a requirement to move to higher a security (N-1) under the security standard as previously mentioned.

Factors relevant to planning for the Western Area network

4.8 Applying the relevant network planning factors for the Western Area, I note the following:

(a) There has been significant load growth through subdivisional development and technology related installations of wide screen televisions and heat pumps.

(b) WEL has recently been granted consent for the Te Uku Wind Park, which will generate renewable energy for distribution on to the WEL network for use in the local area, with surplus being injected on to the National Grid. The Wind Park provides the opportunity to upgrade the