EEA Asset Management Forum 2018

Our Earthquake Readiness Journey

Introduction

- WELL submitted a “streamlined” CPP application in November 2017.
- In March 2018, the Commerce Commission granted WELL its request of $ 31.2m.
- The expenditure is for:
  - Emergency OH hardware
  - Mobile substations and switchboards
  - Critical emergency spares
  - Enhanced communication systems
  - Strengthening of substations.
- This presentation provides an overview into this process and discusses the development of the application.

What was approved

- $31.2m of readiness expenditure over three years.
- Funding sits on top of existing DPP.
- No change to SAIDI/SAIFI quality standards.
- Additional quality standards measuring delivery against plan:
  - Revenue penalties
  - Breach mechanism
- Programme includes seismic strengthening of substations, storing emergency spares and equipment, and improving communication systems.

History

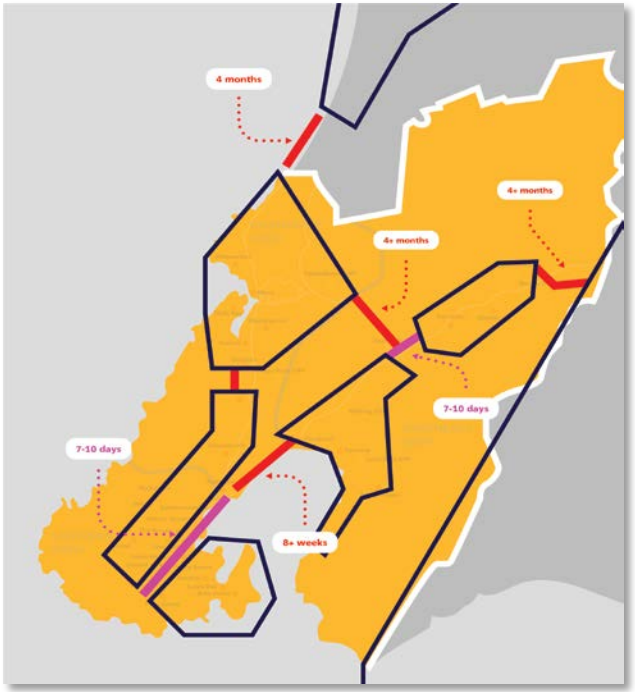
- The “streamlined” customised price-path (SCPP) application was a long time in the making.
- WELL began flagging a need for investment in its 2011 AMP in terms of the risk of Wellington to a major earthquake.
- This was as a result of the Christchurch earthquakes.
- Over the years, WELL’s progress proceeded under DPP allowances:
  - R&D into damage of fluid filled cables
  - Seismic strengthening of buildings

Lifelines

- Lifelines published reports in 2012 & 2013
- Operational Restoration Times:
  - Roading – 60 to 120 days
  - Gas – 60 to 80 Days
  - Power – 40 to 95 Days
  - Water – 25 to 75 Days
- Vulnerabilities investigated
- Flow on effects
- Interdependency conversation
  - Roading, Water, Telco's

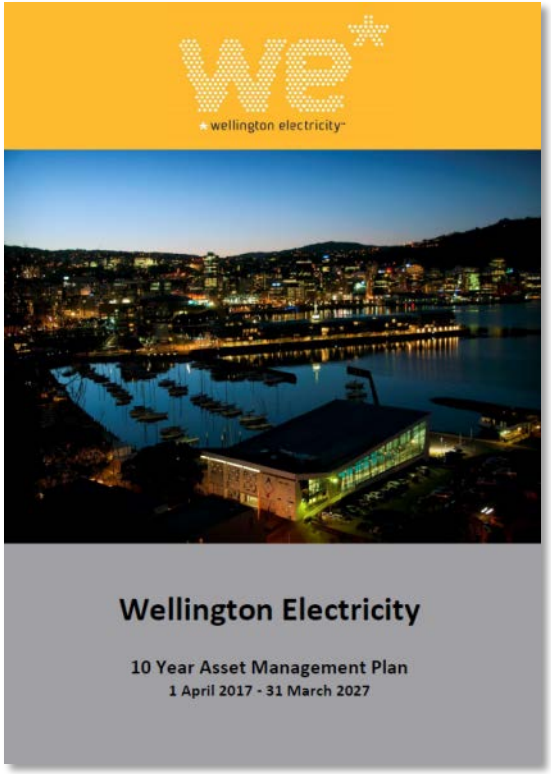
Lifelines

- WELL identified via its Lifelines work how important electricity is to the overall recovery plan of the Region:
  - Interdependencies with Lifelines
  - Unquantifiable benefits
- The Lifelines work also identified a significant difference between the Wellington and Christchurch experience – the 7 islands.
- WELL 2014 submission for 2015 DPP earthquake funds declined



The role of Nov ‘16

- Greater perceived risk after 2016 Kaikoura earthquake (due to possibility of significant aftershocks).
- WELL included a high level expenditure table in it’s AMP 2017.
  - Short term $28m expenditure for reduction of impact.
- Behind the scenes, WELL had also been working on a Business Case to support this expenditure.



A SCPP?

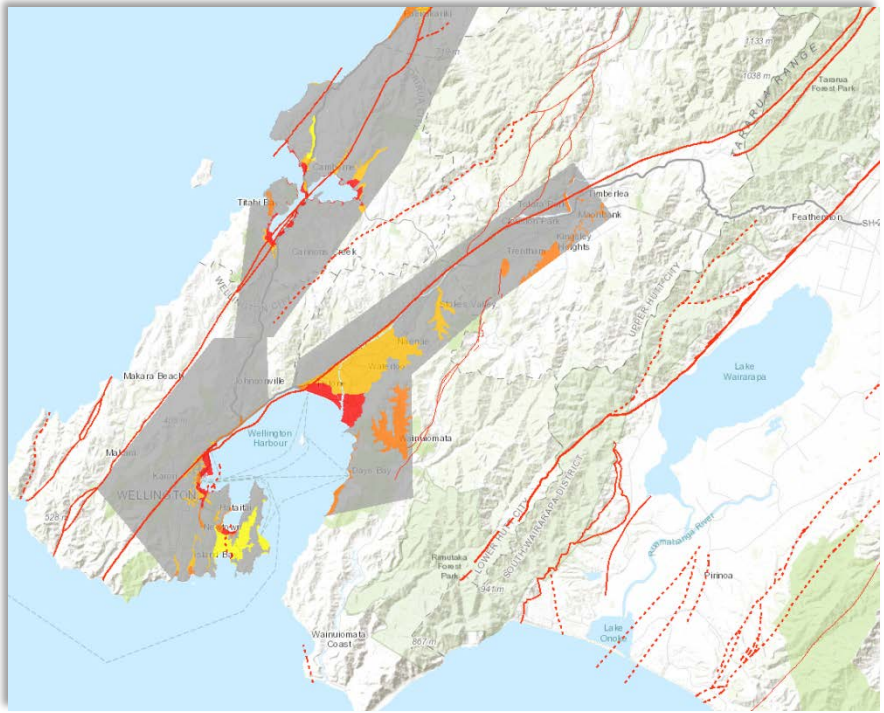
- Central government approached WELL, asking what it was doing and what else could be done.
- Government Policy Statement issued in September 2017.
- CPP application submitted November 2017.
- Decision published March 2018.
- Many talks were held between WELL and the Com Com to enable this whilst still maintaining the due diligence and evaluation demanded by the CPP process.
- Very compressed timeframe – achievable only because of positive engagement between WELL and the Commission, input from Orion, support from central and local government and lifelines.

The Case

- The SCPP process involved lawyers, consultants, economists, and accountants on both ends.
- The core of the process was the need for a strong business case to support the expenditure.
- Process needed to be rigorous and transparent, to ensure value for money for customers.
- Business case externally reviewed by Jacobs

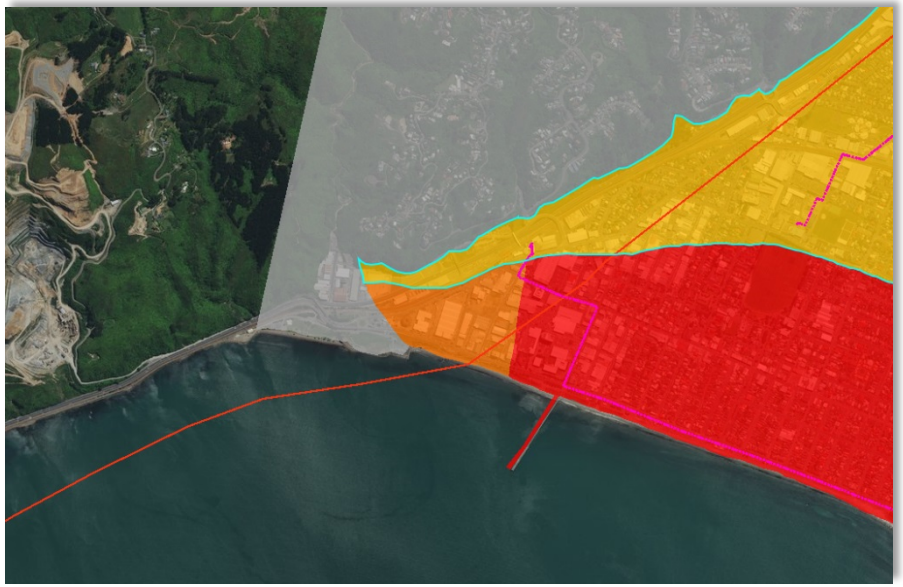
The Scenario

- Scenario was a 7.5 magnitude earthquake due to Wellington Fault Line.
- Return period chosen was 1:300.
- No Tsunami modelled in the scenario.



The impact

- GNS maps were overlaid on our existing network.
  - Ground Shaking
  - Liquefaction
  - Slope Failure
- Damage estimates made based on type of equipment and hazard exposure.
- Took into account interdependencies on other Lifelines.
- Took into account experience of Orion.



The options

- Went through a long listing exercise
- Criteria for our business case:
  - Had to be something we could accomplish in 3 years
  - Total expenditure was expected to be around $30m
- After long listing, we began a process of short listing and option selection
  - Based on the criteria
  - Based on cost benefit (primarily used VoLL)
  - **<u>Unquantifiable benefits….</u>**

Readiness

- Readiness trumped resilience
  - Spares selected
  - Improve readiness and ability to respond

The final cut

- Zone Substations
  - Risk – loss of entire sub
  - Solution – 2 x Mobile Substations
- Switching Stations
  - Risk – Loss of switchboard
  - Solution – 1 x mobile switchboard
- Distribution Substations
  - Risk – Damage to Dx transformers & switchgear
  - Solution – 12 x transformers & 30 x 11kV switchgear
- Sub Tx network (33 kV)
  - Risk – Damage to fluid filled cables
  - Solution – 20km x emergency OH lines
- 11 kV cable network
  - Risk – Damage to buried cables
  - Solution – Joint kits, cable & fault finding equipment
- Comms network
  - Risk – loss of comms across the Region
  - Solution – Data Centers, Radios & Phones

Conclusion

- The overall process was very robust
- We had been preparing for this for a long time
- Lots of work done in damage estimates and quantifying benefit
- Connections to Lifelines & GNS was key in understanding the scenario
- Work not over – lots to still do:
  - Deliver these items within the allocated timeframe and at the indicated cost
  - Develop deeper connections with MCD and Local Defence Force and detailed plans as to how the management of the scenario will occur
  - Build Resilience into the network

“We have a responsibility to prepare… not for the world we currently live in, but rather, for the world we will find ourselves in…”

- Bradley Singh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