



Maintenance Compliance

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 3. For any instructions on how to read this plan please refer to the legend at: www.wel.co.nz/every-day-home-safe/working-on-our-network/service-plans
 4. If any damage is incurred, WEL Networks Ltd is to be notified immediately.
 5. If 33kV cables are in the area, please contact a cable locator at WEL Networks Ltd on 0800 800 935 then press '2'
 6. Standard Trench offsets are: 0.4m and 2.7m from the nearest legal boundary.
 7. Warning: The standard duct colour for electrical cables is ORANGE; however, experience has shown electrical cables may be found in ducts of any colour. You must assume all ducts may contain live cables until positively proven otherwise.



Opex Heat Map

WEL's Opex heat map shows the maintenance activities which will be performed on WEL assets in reference to WEL's Maintenance Strategy programme. Maintenance activities have been selected and presented on the map based on the Maintenance Strategy requirements. The frequency (cycle) of maintenance tasks per asset class is determined in reference to the asset's last maintenance record in WEL's maintenance management system. The maintenance activities also consider compliance and regulatory requirements in accordance with established guidelines, specifications and legislations. There are no constraints for opex work.

Below is further detail on the maintenance activities included on the map:



Servicing (*Periodic maintenance*)

Periodic invasive type of maintenance which occurs on a pre-defined frequency. Servicing activities are primarily required on substation equipment such as circuit breakers and zone transformers where minor refurbishment tasks (i.e. replacement of gaskets in zone transformers) are undertaken to avoid failures, prevent rapid deterioration and prolong the service life of the equipment.



Inspection (*Asset Condition Assessment*)

Pre-defined maintenance which checks the asset's overall condition through condition monitoring regimes. WEL has developed specific routine inspection requirements for each asset type. These requirements are based on a combination of manufacturer's recommendations, industry practice and WEL's own experience. WEL's experience is based on asset type, duty, incidence of faults and the operating environment.



Testing (*Reliability and performance assessment*)

Routine maintenance taking into account plant performance, failure modes, operation and function through testing. Measurement points are entered as condition entries which will provide the overall asset's condition. Greater emphasis is being placed on non-intrusive diagnostic testing wherever practical. This work involves the adoption of new technology through the chemical analysis of transformer and switch oils, the use of infrared/thermal/corona cameras, ultra-sound discharge detection, partial discharge and other techniques.



Vegetation (*Vegetation Management*)

Routine maintenance to manage vegetation growth around power lines or other WEL assets through strategic cutting and trimming of trees or other types of vegetation. WEL's vegetation team uses a dedicated vegetation management tool that predicts tree growth so to prioritise the tree cutting or trimming programme.

Faults

Faults and Emergencies (corrective, 'fix when failed') are not shown on the map. These are maintenance tasks performed to identify, isolate and rectify a fault so that the failed equipment, asset, or system can be restored to an operational condition within the tolerances or limits established for in-service operations.