Delivery Status Update

Update on Aurora Energy's *WSP Action Plan*

to 31 March 2020

1 Summary

On 31 July 2019, Aurora Energy published its Action Plan for addressing asset risks identified in the *Aurora Energy Independent Review of Electricity Networks Report* prepared by WSP in November 2018.[1]

This *Delivery Status Update* document is the third quarterly progress update following the issue of the Action Plan.

In general, the Action Plan has been followed to date, and most of the WSP report recommendations are being addressed. In some less critical areas, there have been minor delays. These areas are marked in light yellow within the tables of this document.

We expect that the current COVID-19 pandemic will have an impact on the operational delivery of some work programmes. At this point in time, it is difficult to determine the scale of these impacts. Notwithstanding this uncertainty, we expect there will need to be some refinement of our work plans, at least for RY21. This may impact the extent to which the Action Plan (as currently set out) will be completed.

We expect to be able to provide further details on the implications of the pandemic in our annual Action Plan update, due to be published in July 2020.

2 Purpose of the Delivery Status Update

The WSP report recommended prioritised investments in several asset fleets, including:

- Secondary Systems (protection relays, protection coordination, instrument transformers, battery banks and chargers);
- Zone Substation Circuit Breakers;
- Zone Substation Transformers;
- Support Structures (high-risk poles and crossarms);
- Overhead Conductor (light copper conductor);
- Underground Cables (Cast-iron Potheads);
- Distribution Transformers; and
- Distribution Switchgear.

We developed an Action Plan to provide stakeholders with an overview of how these at-risk assets would be managed.

This *Delivery Status Update* report is a high-level update for stakeholders on our progress against the Action Plan. We will publish a more detailed report showing overall progress against the initial action plan in July 2020.

3 Progress Update

This update focuses on actions to improve our asset management approaches, and to reduce risks identified by WSP to tolerable levels. Action status (against our July 2019 Action Plan) is provided for the high-risk fleets, based on an assessment conducted in early April 2020.

[1] The WSP Risk Review is available here and the Action Plan can be found here.

3.1 Asset Risk Management Framework

We have been continuously improving our asset risk management framework. This enables us to better identify specific high-risk assets. The new approach takes into consideration both risk components – consequence (expressed as asset criticality) and likelihood (mostly dependent on asset health). With the new approach we can better narrow our focus to priority fleets and locations on our network.

Safety continues to be our top priority. Assessment of the likelihood of the worst, catastrophic outcomes of a safety event depends on the factors associated with the specifics of asset make and model, its installation environment and secondary physical or automatic protection.

Putting safety first is our most important objective. We aim to make sure that the safety of communities and personnel are never compromised. However, we acknowledge that for most of the fleets identified as high risk, this will take several years to address. We are working on risk controls that will target both the consequence and the likelihood of (safety) risks. Consistent implementation of effective controls requires time for precision planning and deployment, and we have achieved good results by defining key priorities and focusing on the delivery of related projects.

The approach outlined above will be continually refined and this may cause the priority of work and timeframes to shift to ensure that the highest risk is getting mitigated first.

3.2 Secondary Systems

Initiative Theme	Summary – Past 3 Months	Summary – Next 3 Months
Strategic Approach	Protection design philosophy standard approved and published in the centralised document system (CDS).	Completed.
Investment Planning	Protection systems have been prioritised and the works included in AMP work plans, either as part of primary asset replacements and upgrades, or as separate projects.	Monitor protection system project progress.
Operation and Maintenance	Monitoring of new contractor engagement, reviewed competence requirements for testing, and engaged contractors to secure additional resources	Continue to work with our contractors to understand the level and capability of resources required. This may be impacted by COVID-19
Programme Delivery	Most tasks planned for this quarter were actioned, any exceptions are being reprioritised into this regulatory year	Incorporate any works not completed into the wider business reprioritisation plan.

Further development of the initial protection design philosophy standard, created in the previous quarter, has been required in this quarter. These developments have now been approved and published in the centralised document system.

The protection coordination review scope was created, and prioritised works are included in AMP work plans, either as part of the primary asset's replacement or as separate projects. We will continue to monitor progress in conjunction with CPP investment planning and the wider business deliverables.

Our plan is to replace most electromechanical relays identified by WSP by 2024, except for those being actioned in conjunction with other projects – see previous status report for further detail. Any outstanding deliverables not met in this quarter will be reprioritised as part of our RY21 business plans.

3.3 Zone Substation Circuit Breakers

Initiative Theme	Summary – Past 3 Months	Summary – Next 3 Months
Strategic Approach	Tender evaluation for 11kV switchgear preferred supplier selected.	Complete.
Investment Planning	Finalised the coordination of switchgear projects with other asset fleets including protection renewal.	Complete.
Operation and Maintenance	Monitored effectiveness of maintenance, collected data.	Complete and continue to monitor.
Programme Delivery	Most tasks planned for this quarter were actioned, any exceptions are being reprioritised into this regulatory year.	Incorporate any works not completed into the wider business reprioritising plan.

We completed the development of a standard specification for 11kV zone substation switchgear. We evaluated tender responses for the new 3+2-year preferred switchgear supply and selected a supplier.

Design for Andersons Bay required adjustments after the 11kV Switchgear tender, and construction has been brought forward to RY21. Queenstown zone substation has been designed and is planned to commence in RY23 while the very high off load capability of Smith Street has facilitated the deferral of this project to allow acceleration of other higher priority sites.

We have developed our circuit breaker renewals plan for the CPP proposal, and this is currently under review by the Independent Verifier.

3.4 Zone Substation Transformers

Initiative Theme	Summary – Past 3 Months	Summary – Next 3 Months
Strategic Approach	Continued to develop contingency plans.	Finalise contingency plan.
Investment Planning	Developed our CPP program for ZS Transformers.	Refine our CPP proposal taking account of the Verifier's draft report.
Operation and Maintenance	High risk OLTCs were planned for maintenance, delayed due to outage restrictions	Schedule the outages and deliver works, assess ZS stock for gaps.
Programme Delivery	Most tasks planned for this quarter were actioned, any exceptions are being reprioritised into this regulatory year.	Incorporate any works not completed into the wider business reprioritising plan.

Risk management/contingency plans for zone substation transformers continue to be developed, supporting the delivery of prioritised transformer projects, and to identify and reduce associated risks.

Improvements to gathering accurate asset condition data were made in the previous quarter, including corrosion and oil leak failure modes.

On-load Tap Changer (OLTC) maintenance at Omakau has been completed; Clyde/ Earnscleugh was deferred due to challenges getting the zone substation out of service (extended customer outages and loading issues from generation). Aurora's operations team is working on scheduling a planned outage.

DGA and TCA testing programme is complete (DGA every year and TCA every four years), results were reviewed and included in modelling to inform our CPP and AMP work plans.

3.5 Support Structures

Initiative Theme	Summary – Past 3 Months	Summary – Next 3 Months
Strategic Approach	Continued pole strength testing, wooden pole/crossarm forensic and data capture.	Testing data capture will be impacted in the next quarter due to COVID–19 restrictions.
Investment Planning	Initial planning of defined outage zones and continued refinement of the application approach.	Draft defined outage zones and continue to monitor and rectify nuances that may arise in application approach.
Operation and Maintenance	Programs and works planning is on track.	Deliverables will be impacted by COVID–19, incorporate any works not completed into the wider business reprioritising plan.
Programme Delivery	Most tasks planned for this quarter were actioned, any exceptions are being reprioritised into this regulatory year.	Incorporate any works not completed into the wider business reprioritising plan.

The trial of the THOR pole test methodology appears to be successfully identifying poles requiring further testing/investigation. Although almost all wood poles have been tested within the 5-year cycle, we decided to retest wood poles that were tested under the old Xivic regime due to low confidence in the accuracy of results. During this quarter, testing and documenting of findings continued and approximately 20% of wooden poles remain to be tested by either the Deuar or Structured Lines Traditional test. We expect that access restrictions due to COVID – 19 will see a decrease in activity over the next quarter.

The newly created pole design standard is reducing rework, providing a consistent Aurora pole design model, ensuring designs are built to specifications correctly, first time. The design standard also creates the ability to outsource these designs at times when our resource capacity is low.

Our defects application is providing quality data, and further developments made to it this quarter enabled external contractor staff to update the application in real time with no internet access.

A separate crossarm remediation programme has been developed. Separating this programme from the pole testing programme will enable us to better target at-risk crossarms and ensure that the speed of the pole testing programme is not put at risk by the additional pole top inspections.

3.6 Overhead Conductor

Initiative Theme	Summary – Past 3 Months	Summary – Next 3 Months
Strategic Approach	Finalised interim strategy and defined failure modes.	Finalise strategy, proceed with defect rectification, define failure modes and causes, develop conductor inspection procedure.
Investment Planning	Finalised RY21 programme and interim risk and scoping approach.	Completed – will be refined late 2020 as part of development of full fleet strategy.
Operation and Maintenance	Localised conductor inspections were planned for late March 2020 but was unable to be carried out due to COVID–19 restrictions.	Incorporate any works not completed into the wider business reprioritising plan.
Programme Delivery	Most tasks planned for this quarter were actioned, any exceptions are being reprioritised into this regulatory year.	Incorporate any works not completed into the wider business reprioritising plan.

Overhead conductor is one of the critical fleets with elevated failure rates. We have defined a detailed risk-based prioritisation approach and subsequent scoping approach.

A full fleet strategy development is planned to occur in late 2020. Once completed, further improvements, including integration of the scoping template into the new planning and reporting project management tool (Sentient), will be undertaken.

Initial conductor testing results analysis is complete, and the report is being used to confirm maximum practical life figures. Once removed, end-of-life conductor is being forensically tested to inform and adjust the predominantly age-based identification of high-risk conductors.

Specific conductor testing for EK480, CE195 & Bridge Hill/Jolendale Park were completed in this quarter. Planned for the next quarter is AX168, approval of the Waldron Rd project work proposal. The Letts Gully project work proposal will also be approved in this quarter, following submission by the relevant contractor, with construction planned for quarter 1 of RY21.

3.7 Underground Cables (Cast-iron Potheads)

Initiative Theme	Summary – Past 3 Months	Summary – Next 3 Months
Strategic Approach	No action – strategy already complete to address high criticality zones first .	Develop standard designs for cast iron pot-head replacements.
Investment Planning	No action.	No further action required.
Operation and Maintenance	Continued application of operational risk controls.	Continued application of operational risk controls.
Programme Delivery	Progressing remediation of high criticality cast-iron potheads.	Within the constraints of COVID-19, continue to deliver remediation of high criticality cast-iron potheads.

Our replacement objective for cast-iron potheads remains consistent with our 2018 AMP. Cast-iron potheads (CIP) are being replaced based on criticality and in conjunction with pole,

conductor and cable replacement programmes. We are targeting RY25 for removal of all cast-iron potheads from the network.

This programme of work has fallen behind our targets for RY20 while we focussed on other higher priority works. We are now actively progressing this program of work to ensure that we can meet our safety objectives around cast-iron potheads.

The annual Action Plan update, due to be published in July 2020, will outline our overall progress on CIP removals.

3.8 Distribution Transformers

Initiative Theme	Summary – Past 3 Months	Summary – Next 3 Months
Strategic Approach	Developed draft standard for distribution transformer designs.	Finalise and publish in the centralised document system (CDS).
Investment Planning	No action – low priority – focus redirected to higher risk WSP audit deliverables.	No action planned – low priority - will be incorporated/refined late 2020 as part of development of full fleet strategy.
Operation and Maintenance	Inspections have been completed and baseline fleet condition established.	Prioritise work to be issued.
Programme Delivery	High risk platform transformers have been issued for replacement.	No further actioned planned at this stage.

Distribution transformers are being replaced in conjunction with the pole replacement programme and on a stand-alone basis in special cases. Further analysis will be conducted into the asset criticality within the fleet.

A strategic approach for the management of distribution transformers was developed this quarter and will be finalised and published within the CDS next quarter.

3.9 Distribution Switchgear

Initiative Theme	Summary – Past 3 Months	Summary – Next 3 Months
Strategic Approach	Fleet strategy development has been initiated.	Develop draft strategy.
Investment Planning	Prioritised worklist has been developed for RMUs.	Design review for RMUs.
Operation and Maintenance	Maintenance plan for ABS fleet has been developed.	Maintenance schedule developed.
Programme Delivery	No action awaiting fleet strategy and schedule of work.	Awaiting schedule of work.

The maintenance plan for the ABS fleet has been developed in this quarter and a schedule for works to be completed in the next quarter.

Replacement of distribution switchgear is being conducted and will be outlined in the AMP. Higher-risk Statter and Long and Crawford Switchgear continue to be monitored by maintenance and inspection programmes until they are replaced as a priority.

3.10 Vegetation Management

We continue to manage vegetation safety and reliability risks on our Network in alignment with the tree regulations.

We have completed and published (in our Controlled Document System) the Vegetation Management Strategy and the Vegetation Management Standard. Based on these, we have developed a plan which will bring Aurora's vegetation management to full compliance with the Tree Regulations over the next 3-5 years.

Our annual Action Plan update, due to be published in July 2020, will contain the yearly progress and a snapshot of the new vegetation management strategy.

4 Further Development

We continue to refine our implementation of asset risk management. This includes incorporating asset criticality criteria for safety, reliability and environment, and development of asset health formula based on asset condition and installation specifics. This will further our efforts to prioritise and target intolerable risks.

We have also committed to ISO55001 certification by 2023. This is now documented in our newly published Asset Management Policy.

Development of a set of fleet strategies is planned to take place in late 2020 and will incorporate/refine most WSP-related actions to date and those that have yet to be actioned.