Attachment 3: Use of polygons to identify affected areas and assets

Energex Cost Pass Through Application
2023-2024 Severe Storms – Cost Analysis Approach

Item	Description
Document Purpose	To explain the methodology applied by Energex to verify costs captured during restoration efforts, following the 2023 Severe Storms (Event), were solely the consequence of the Event, and do not include business-as-usual costs.
Data Sources	Energex Outage Management System • Records Customer Outage locations and durations Damage Assessment Tool (DAT) – ArcGIS (Survey123) Application • Records the cause of the damage and the type of damage to network equipment. • Records the date when damage occurred to network equipment. • Records the point location of damaged network equipment EnerGISe Tool (GIS App) • Records Planned Replacement (Repex) Program of Work • Records Planned Repex Work Request (WR) ID (number), WR created dates, a description of work to be performed. • Visualises polygons representing each planned Repex Works locations.
Methodology	This approach involved the generation of spatially explicit shapes (or polygons) which encompass Energex network assets damaged during the Event, resulting in unplanned power outages (Event impacted polygon (EIP)). The EIP was analysed against the geographic locations of Energex's planned programs of work for network replacement or refurbishment (Repex Polygons). <u>Processing Steps:</u> 1. Step 2: Spatial Processing: • The analysis identified all Outages records during the Event and spatially identified Planned Repex Replacement Work (Repex polygons). 2. Temporal Processing: • Analysis undertaken to ensure date ranges of Planned Repex work and the Event date range aligns: o Repex Works were not closed before the Event start date; o Repex Works planned date was not opened after the Event. • Disaster Recovery Work o Recovery works must be related to equipment in the Event Impact areas; o Test to make sure the date of damage is greater than the Event start date; o Test damage created date is from the start of the Event, to the end of the Event, plus 1 month (30-days).
Assumptions	The 30-Day post event period was determined to be a reasonable time period to include any recovery after the Event.

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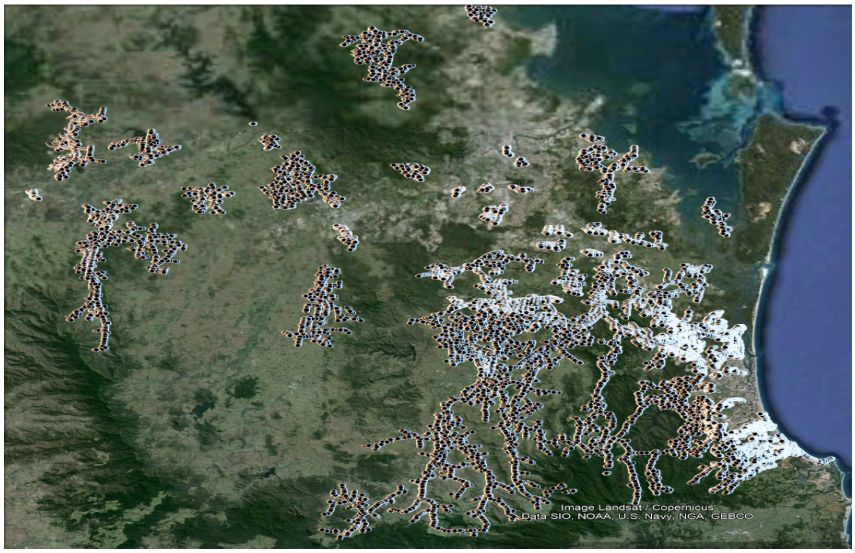
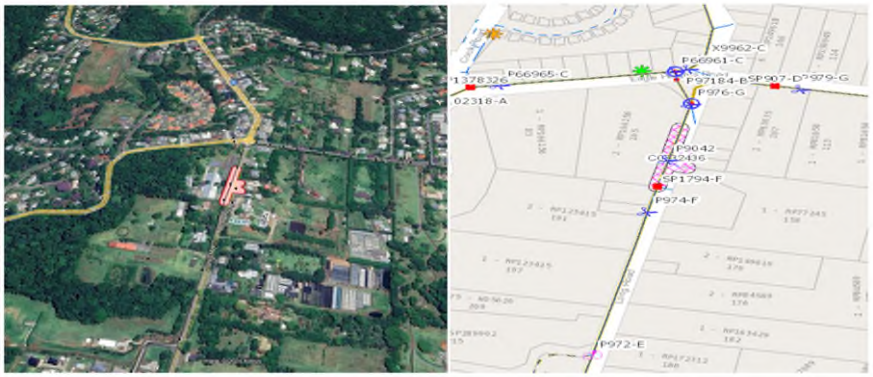
Item	Description
Images	The feeders visible in the picture below were impacted by the 2023 Severe Storm Event.  The photos and diagrams below are examples of spatial analysis of planned work vs the storm Event. In each instance, no Event damage was recorded.  

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Major Event Assessment Results

The results of the spatial polygon analysis confirmed that there was no overlap of unplanned emergency works performed in areas where planned Repex works were scheduled. Similarly, the emergency vegetation clearance following the Event were not in Energex's forward maintenance plans. Therefore, all the restoration costs incurred were entirely incremental costs.

All emergency works were undertaken to safely restore power to impacted customers and ensure the reliability of future electricity supply.