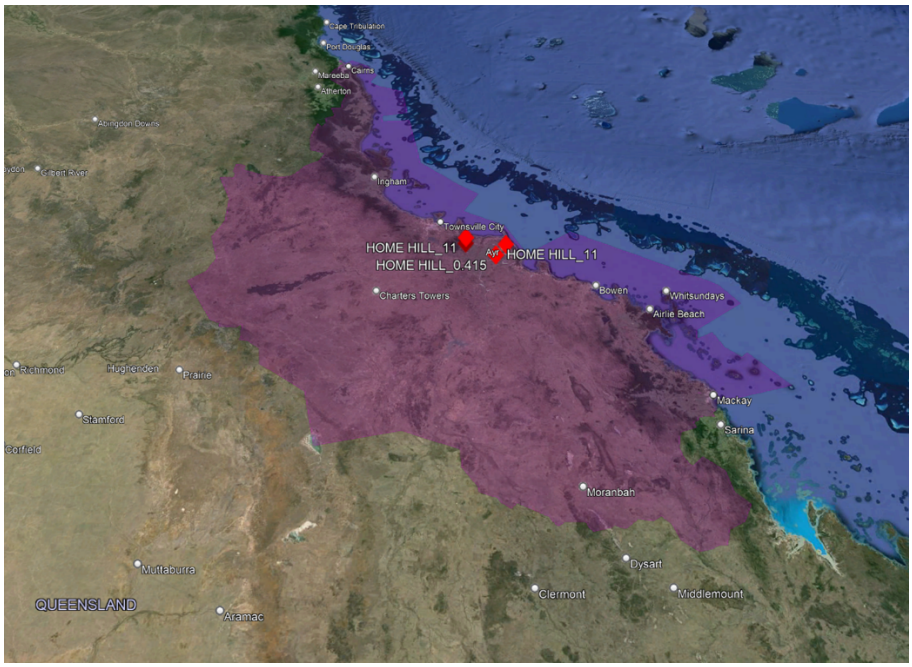
Attachment 3: Use of polygons to identify affected areas and assets

Ergon Energy Network Cost Pass Through Application
Tropical Cyclone Kirrily - Cost Analysis Approach

Item	Description
Document Purpose	To explain the methodology applied by Ergon Energy Network to verify costs captured during restoration efforts, following Tropical Cyclone Kirrily (Event), were solely the consequence of the Event and do not include business-as-usual costs.
Data Sources	Major Event Tool (MET) – Web Application • Also known as the Disaster Recovery Analytics Tool (DRAT) • Records the name of the Event • Records the Start and End time of the Event • Records Depots affected by the Event • Records Customer Outage Information 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 Repex 5.1 Tool (ArcGIS Web App) • Records Planned Replacement (Repex) Program of Work – Ability to filter by FY • 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. Ergon Ellipse (Enterprise Resource Planning System) • Works Request Table (MSF541): Records Repex WR raised date, WR required by date and WR closed dates.
Methodology	This approach involved the generation of spatially explicit shapes (or polygons) which encompass Ergon Energy's network assets damaged during the Event, resulting in unplanned power outages (Event impacted polygon (EIP)). The EIP was analysed against the geographic locations of Ergon Energy's planned programs of work for network replacement or refurbishment (Repex Polygons). <u>Processing Steps</u>: 1. Spatial Processing: • The analysis spatially linked Planned Repex Replacement Work (Repex polygons) to Depots and information recorded in the Major Event Tool (MET). 2. Temporal Processing: • Ensuring that date ranges of Planned Repex work and the Event date range aligns: o Repex Works cannot be closed before the Event start date; o Repex Works planned date cannot be opened after the Event. • Disaster Recovery Work o Recovery works must be related to the same equipment;

	o Test to make sure the created 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.
Images	Google Earth Views of Polygons and Assessment Areas The areas impacted by the Event are coloured purple in the picture below.  4 locations were identified as potential areas of spend overlap and these are the shaded areas in the pictures below. 

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The table below provides the assessment results.

Major Event Tool Assessment Results

SOURCE	SITE_ID	PRIORITY	LOCATION	EVENT	EVENT_START	EVENT_END	RPX_RAISED	RPX_RBD	RPX_COMP	OVERLAP	RESULT
MET	5210833	P1	HOME HILL	TC Kirrily	20240131	20240125	20230710	20250930		1	Priority emergency works to restore power – No reduction in future planned Repex works
MET	5102480	P1	HOME HILL	TC Kirrily	20240131	20240125	20230119	20250331		1	Priority emergency works to restore power – No reduction in future planned Repex works
MET	5065685	P1	HOME HILL	TC Kirrily	20240131	20240125	20230731	20251231		1	Priority emergency works to restore power – No reduction in future planned Repex works
MET	5087591	P1	HOME HILL	TC Kirrily	20240131	20240125	20230915	20260630		1	Priority emergency works to restore power – No reduction in future planned Repex works

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 Ergon Energy'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.