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Coastal Erosion Indicators - Long-Term Shoreline Change Analysis

Tools: PostgreSQL with PostGIS · SQL / T-SQL · ArcGIS Pro · Arcade

Overview: Led spatial data development to support access to long-term shoreline change insights derived from drone and modelled datasets.

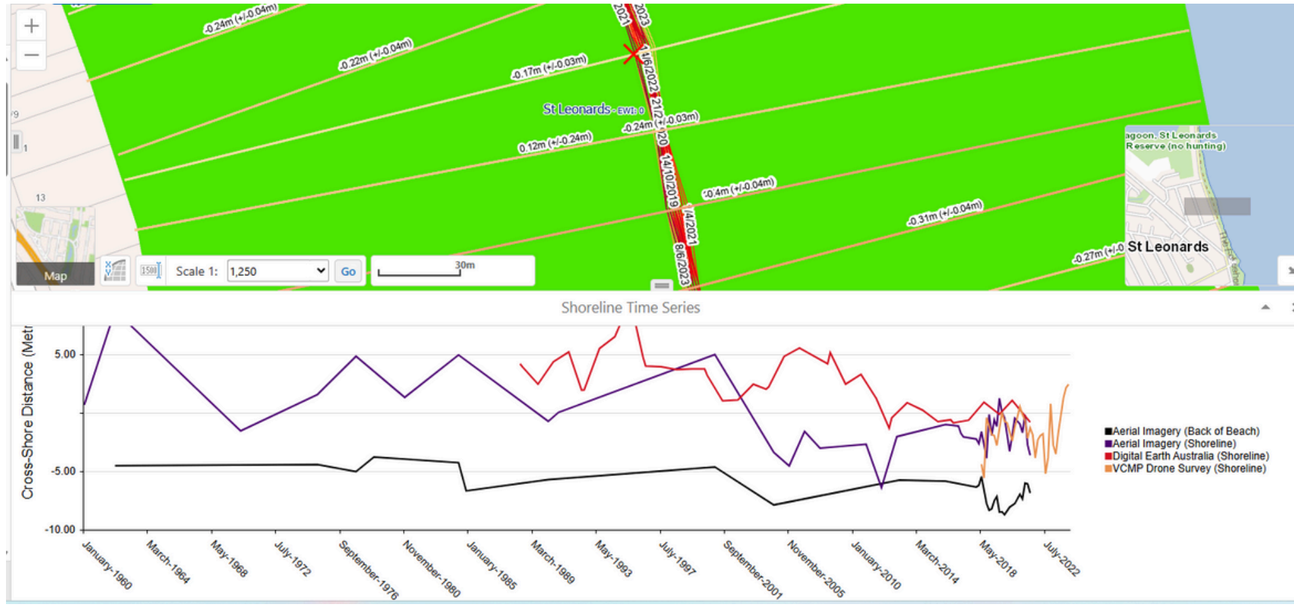
Challenge: Needed high-resolution erosion trend analysis and accessible outputs for planners, ecologists, and public users.

Solution:

- Designed PostgreSQL data model (tables, views, materialised views).
- Developed T-SQL/PostGIS erosion metrics and transect queries.
- Applied Arcade symbology in ArcGIS Pro for clear spatial trends.
- Published REST APIs and integrated into CoastKit web mapping app.
- Enabled shoreline transect selection and interactive charts showing erosion trends over time.
- Refined products based on stakeholder feedback.

Impact:

- Reusable pipeline as new data loads don't require rewriting logic.
- Faster, clearer erosion insights to help planners and scientists visualise long-term erosion rates at specific sites.
- Received positive feedback from monitoring program manager on faster data loading and quality of outputs.



Shoreline trend visualisation and corresponding chart (Cowes site, 2014–2024) integrated into CoastKit web mapping app.