

IRIS INSTITUTE FOR RESOURCE
INDUSTRIES AND SUSTAINABILITY



2nd **IRIS** POSTGRADUATE STUDENTS CONFERENCE:

Resourcing for the Future

PROOF

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The proposed research aim is to develop a toolkit of options available for a Distribution Network Service Provider, such as Ergon Energy to mitigate harmonics in the low voltage distribution network.

This entails a literature review encompassing national and international standards applicable to harmonics for distribution systems and for equipment connected to such systems. Then simulations will be developed with sections of Ergon Energy's low voltage network that replicates recorded power quality phenomena in the network. Next identification and modelling of the suitable harmonic mitigation techniques will be carried out. Based on these the suitable mitigation methods will be identified for Ergon Energy to minimise the future impact of harmonics in the Low Voltage distribution network, taking into account relevant facets such as a brief on design, costs, risks and operational issues.

Targeting resource investments to achieve sediment reductions and improved reef health

Megan Star, PhD candidate, CEM

The increased impact of excessive sediment loads entering the Great Barrier Reef lagoon has lead to further awareness of the importance of ground cover in grazing lands. Ground cover has been identified as an important factor in reducing sediment loads, and the most efficient and targeted method to improve ground cover has presented a difficult task for reef stakeholders in both the Fitzroy basin. To further inform these decisions an optimising linear programming model based on paddock scale information in conjunction with land type mapping was developed. This identifies at a catchment scale which land types allow the largest sediment reduction to be achieved at least cost. The results suggest that from the five land types modelled the lower productivity land types present the cheapest option for sediment reductions, and represent a large percentage of the reef catchments. The study allows more informed decision making for natural resource management organisations to target investments. The analysis highlights the importance of efficient allocation of natural resource management funds achieving sediment reductions through targeted land type investments.

Key Words: grazing, natural resource management, investment, linear programming, land type mapping, Great Barrier Reef.

