Greening grey infrastructure: potential of Sydney rail reserves for carbon sequestration & sustainability co-benefits

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Rail reserves: an underutilised asset

• Sydney Trains manages a metropolitan transport network including 412 kilometres of rail corridors, varying from narrow cuttings to substantial easements

• Some sections host important remnant indigenous plant communities, including rare and endangered species

• The majority of this land is degraded and underutilised, but has the potential for significant revegetation and enhancement

• Utilising this potential could access benefits including carbon sequestration, pollution mitigation, urban heat island reduction, biodiversity enhancement and improved human wellbeing
Example: City of Port Phillip “Nature Links”
Sydney Trains pilot project

- This pilot project is intended to evaluate the baseline sustainability performance of a selected rail reserve, investigate the potential for restoring locally indigenous vegetation and estimate the increased ecosystem services consequent on this intervention.
- This will enable modelling of the carbon storage and sequestration potential (and co-benefits) of further indigenous vegetation planting on underused rail land with a view to securing in the long term, commercial carbon credits for Sydney Trains.
- The pilot study will take place in an inner-Sydney rail reserve selected by Sydney Trains.
Pilot project: methodology

• Combination of field-based data collection, analysis of digital plans, aerial imagery, use of LICOR plant canopy analyser and i-Tree Canopy vegetation survey and analysis software [www.itreetools.org/canopy](http://www.itreetools.org/canopy/)

• The i-Tree Canopy and GIS/LiDAR* analysis will provide land cover areas and percentage distributions in different ground land cover categories such as grass/herbaceous, trees/shrub, impervious buildings, impervious road, impervious other, soil/bare ground…

• And also annual CO\textsubscript{2} sequestration by trees, total carbon storage potential and other greenhouse gas benefits of the trees within the project site

*See next slide
Section of the aerial transect flown for Matthias Irger’s PhD research on urban microclimate; this includes LiDAR imagery for the pilot project site alongside McDonaldtown Station.
Anticipated outcomes

- It is envisaged that these data will provide the basis for a “live” revegetation project involving members of the local community.
- Key outcomes of the research will include baseline and potential carbon benefits, potential co-benefits (additional ecosystem services) incident on revegetating underutilised land, and a practical example of greening existing “grey” infrastructure.
- Support for implementation of the findings will be sought from the horticultural and landscape industry, and potentially, crowdsourcing.

Need to obtain a “young person”!