Acid Sulfate Soils Priority Investigations



for the Lower Hunter River Estuary

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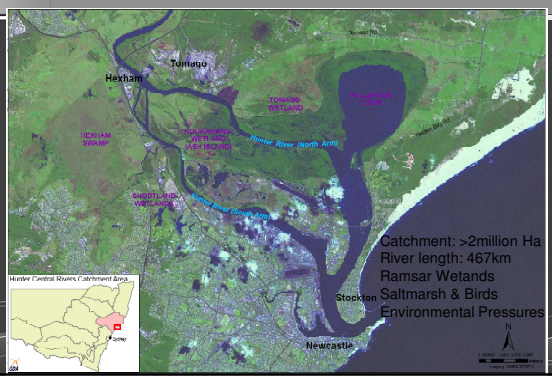
Presentation Outline

- Project Location and Aims
- ASS Assessment Methods
- Results and Recommendations
- Questions

Location – Hunter Estuary



Project Aims

- Identify ASS high risk areas
- Assess impacts on Lower Hunter Ramsar wetlands
- Field & lab. testing for ASS
- Provide management options for mitigating ASS
- Communicate outcomes


Project Methods

1. Undertake soil coring and describe profiles


Project Methods

2. Peroxide Field Test

Project Methods

3. Laboratory testing of soil samples

- Electrical Conductivity (EC) (Method 3A1 Rayment & Higginson, 1992)
- Soil pH ($CaCl_2$) (Method 4B1 Rayment & Higginson, 1992)
- Chromium Reducible Sulfur (S_{Cr}%) (Method 22b ASSMAC, Ahern et al, 2004)
- Total Actual Acidity (TAA) (Method 21F ASSMAC, Ahern *et al*, 2004)
- Soluble Chloride
- Soluble Sulfate
- Exchangeable Aluminium

Project Methods

4. Water Quality Testing

- Ground and surface water pH
- Electrical conductivity
- Chloride : Sulfate Ratio

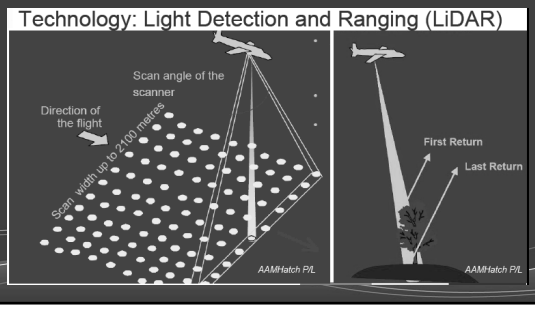
Project Methods

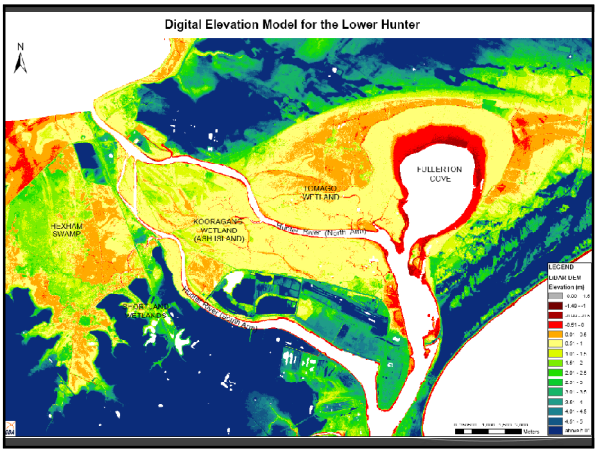
ASS Risk Rating, determined by:

- AASS and PASS depth
- pH & Total Actual Acidity
- Sulfate in groundwater
- Exchangeable Aluminium
- Current Management

Project Methods

5. LiDAR data



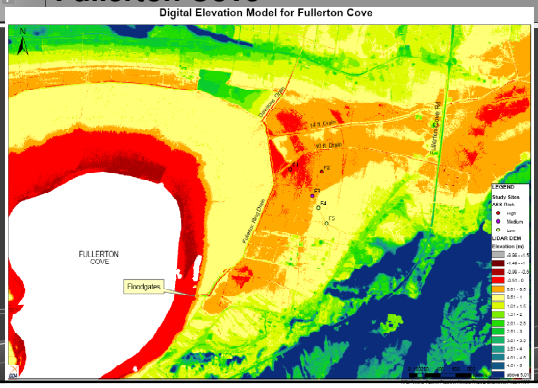


Results and Recommendations

Site by site:

- Fullerton Cove
- Tomago Wetland
- Hexham, Kooragang and Shortland

Fullerton Cove



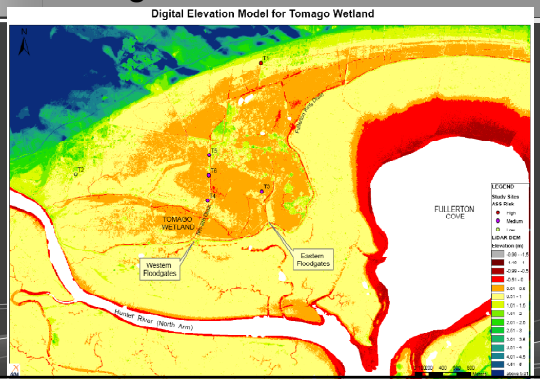
Fullerton Cove

- AASS (Jarosite) at 35cm depth
- PASS at 50cm of surface
- Groundwater pH 3.5
- TAA up to 180 moles H+/tonne
- Exchangeable Aluminium up to 26%

Fullerton Cove - Recommendations

- Drainage of surface water NOT groundwater
- Floodgate management – tidal flushing/ neutralisation
- Associated levee works
- Liming spoil piles

Tomago Wetland



Tomago Wetland

- PASS below -1m AHD
- Surface sulfide accumulation
- Groundwater pH 3.5 to 4
- High TAA along northern perimeter

Tomago - Recommendations

- No additional drains, especially in the north
- Manage surface sulfides
- Open floodgates (saltmarsh restoration)

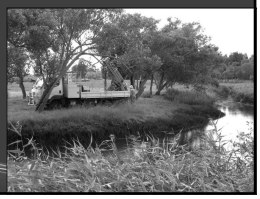
Tomago - Recommendations

Hexham, Shortland, Kooragang

- Lower priority sites (including Ramsar Wetlands)
- Maintain groundwater above ASS
- Manage surface sulfide accumulation
- Manage floodgates - tidal flushing & neutralisation

Recommendations

- Prevention is better than cure
- Use a range of soil and water tests to identify ASS
- Use existing infrastructure to beneficially manage ground water and tidal exchange
- Improve land manager awareness & education



Communication

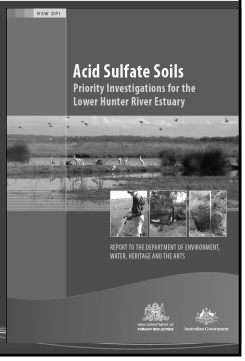
- Raise community awareness of ASS issues
- Wet Pasture Management Workshops
- Keep soils wetter for improved pasture production

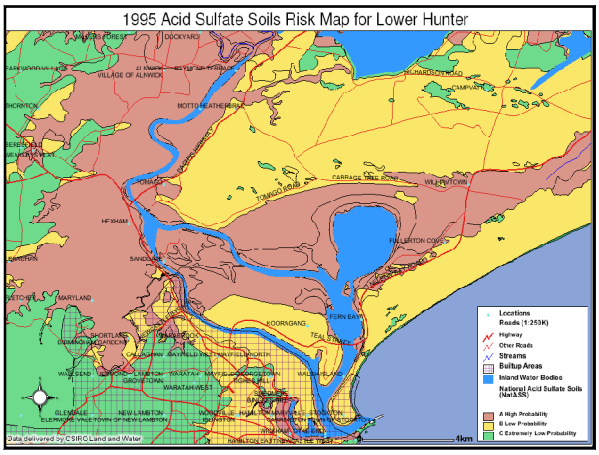
Outputs

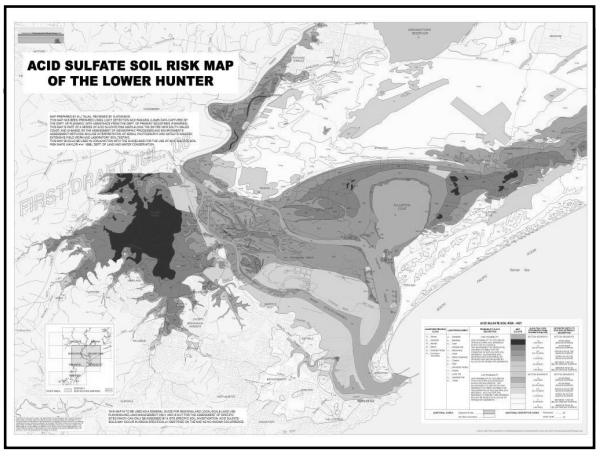
- Final report

Website: http://www.dpi.nsw.gov.au/fisheries/habitat/publications/threats/acid-sulphate-soils

- National ASS Atlas







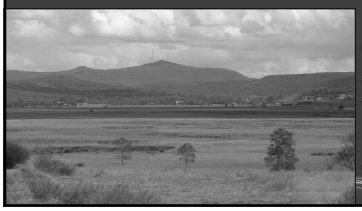
Thanks to….

Funded by Australian Government Coastal Catchments Initiative

Project Steering Group

Site managers and landholders

DPI staff for field assistance and editorial comments



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