National acid sulfate soils identification, assessment and management short course

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Abstract
Acid sulfate soils characteristically underlie many of our nationally significant coastal floodplains and wetlands and must be managed appropriately to avoid severe environmental degradation on site and to receiving waters. When mismanaged acid sulfate soils can severely degrade the quality of coastal water via acidification, deoxygenation, and metal toxicity. Where a development is planned in these landscapes, legislation often requires a management plan be prepared to ensure the environmental impacts are minimised. An acid sulfate soil identification, assessment and management short course has been developed and is specifically designed to ensure that these resources are managed appropriately to protect our nationally significant coastal areas. A Federal Government Community Coastcare grant will fund a project to deliver the course to all Australian states and the Northern Territory.

Key Words
Acid sulfate soil, management plan, short course, sustainable land management

Introduction
A survey of Local Government clearly identified a need for professional development training in the assessment and management of acid sulfate soils. The acid sulfate soil identification, assessment and management short course developed by Southern Cross GeoScience is designed to meet this demand. The training instructs industry professionals in the development, assessment, implementation and monitoring of acid sulfate soil management plans. This instruction ensures professionals at all levels adopt a consistent approach that complies with legislative requirements.

The course was developed in collaboration with relevant regulatory authorities. This ensures management plans will be developed in a way that will expedite and simplify the assessment process. This course is designed to address the National Strategy for the Management of Acid Sulfate Soils two aims to:

- improve the management and use of coastal acid sulfate soils in Australia to protect and improve water quality in coastal floodplains and embayments, and
- assist governments, industry and the community in identifying and undertaking their roles in managing coastal acid sulfate soils.

Course structure
The 3 day course includes lectures, practical exercises and a field excursion.

- Day 1 – Introduction to acid sulfate soils. Topics include definitions, formation and distribution of acid sulfate soils, an introduction to relevant legislation and desk top identification using planning and risk maps. An excursion to a local acid sulfate soil site is included to identify field indicators of acid sulfate soils, examine monosulfidic black ooze and demonstrate appropriate sampling techniques and equipment.

- Day 2 - Assessment and management of acid sulfate soils. Assessment includes developing an appropriate sampling regime, conducting detailed laboratory analysis of samples, and understanding, interpreting and presenting results. A practical exercise covers the calculation of an acid base account and the liming requirement. Management of acid sulfate soils examines a range of options to mitigate and control adverse environmental impacts.

- Day 3 – Preparation of an acid sulfate soil management plan. This covers the elements of a complete acid sulfate soil management plan including a description of the development, laboratory assessment, detailed management options and a plan for monitoring the site. An example management plan is used to demonstrate how each of the elements should be presented.

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Despite the existence of appropriate acid sulfate soil management guidelines the pilot courses have highlighted an urgent national resource management problem. This problem is that despite the existence of appropriate acid sulfate soil management guidelines for each jurisdiction, the general level of skills and competence of experienced consultants and local government officers was severely inadequate. This lack of best management skills for acid sulfate soils is a national issue. Accordingly, a lack of best management skills in this area will impact detrimentally on water quality outcomes, nationally.

Southern Cross University was awarded a Federal Government funded Community Coastcare grant to deliver professional development training to all states and the Northern Territory. The project is designed to meet the Community Coastcare Priorities in:

- Coastal environments and critical aquatic habitats
- Community skills, knowledge and engagement
- Biodiversity and natural icons
- Natural resource management in remote and northern Australia

Conclusion

This project will develop and deliver training courses tailored for each state and territory on Acid Sulfate Soil Identification, Assessment and Management to government officers, consultants and regulators. The project will create a solid core of competent consultants and regulatory officers in each jurisdiction by providing them with the skills and knowledge necessary to develop (and assess) appropriate Acid Sulfate Soil Management Plans so as to avoid severe environmental degradation. The courses will provide a substantial contribution to environment and sustainable land management outcomes.