

Acid sulfate soil maps (risk)

Landowners and earthmoving contractors should consult ASS maps of their area before any works are attempted. ASS maps are available from local councils and on their websites (Fig 1), while ASS risk maps are available from OEH (Fig 2). Council officers can advise of requirements in areas of PASS/ASS and further information about ASS in NSW can be obtained on the websites of the Office of Environment & Heritage and the Department of Primary Industries (DPI). This brochure has been prepared as a guide only, the latest advice should be obtained first prior to planning earthworks in ASS.

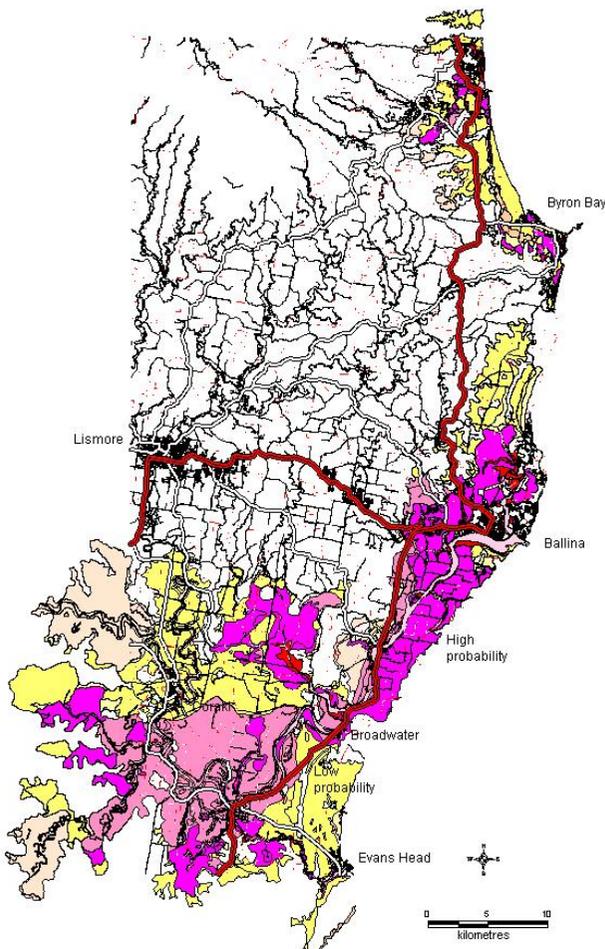


Figure 2: Acid sulfate soil risk map for Evans Head to Ocean Shores (OEH).

More information

Ballina Shire Council:
Phone: 02 6686 4444;
Email: council@ballina.nsw.gov.au
Acid sulfate soil maps available under Environment/Floodplain management/Acid Sulfate Soils from website: <http://www.ballina.nsw.gov.au>

Office of Environment & Heritage. Acid sulfate risk maps, available from website:
<http://www.environment.nsw.gov.au/acidsulfatesoil/index.htm>

Department of Primary Industries:
Phone: 02 6626 1200;
Email: wollongbar.office@dpi.nsw.gov.au
Website: <http://www.dpi.nsw.gov.au/land-and-water/soils/ass>

Lismore City Council:
Phone: 1300 87 83 87;
Email: council@lismore.nsw.gov.au
Acid sulfate soil maps link under Planning & Development/LEPs & DCPs/Lismore Local Environment Plan 2012 – Maps: www.lismore.nsw.gov.au

Rous County Council:
Phone: 02 6623 3800;
Email: council@rous.nsw.gov.au
Website: www.rous.nsw.gov.au

Richmond Valley Council:
Phone: 02 6660 0220;
Email: council@richmondvalley.nsw.gov.au
Acid sulfate soil maps under Environment/Acid Sulfate Soils available from website: <http://www.richmondvalley.nsw.gov.au/>

Publications

Owers, G. Storer, A., 2017, Guidelines to legislation requirements for earthmoving contractors for works in actual or potential acid sulfate soils, Richmond River catchment NSW, Rous County Council, Lismore.

Tulau, M.J. (2007). Acid Sulfate Soils Remediation Guidelines for Coastal Floodplains in New South Wales, Office of Environment & Heritage.

Disclaimer

The information contained in this publication is based on knowledge and understanding at the time of writing, however users are reminded of the need to ensure that the information upon which they rely is current.

G Owers, A Storer 2017
Rous County Council, Lismore NSW



Guidelines for landowners seeking to excavate

for works in areas of actual or potential acid sulfate soils

Richmond catchment NSW

2017





Photo 1: Wetland plants with high water table.

Photo 2: Bare acid scald.

Photo 3: Yellow acid water in drain.



Photo 4: Clear acid water with orange iron floc.

Photo 5: Blackwater.

Photo 6: Fish kills caused by blackwater.



Earthworks in acid sulfate soils

This brochure has been produced to assist landowners, managers and earthmoving contractors in low elevation coastal floodplain areas to recognise potential or actual acid sulfate soils (PASS/ASS) and understand the implications of disturbing them. Legislation has been enacted to reduce the disturbance of ASS and failure to follow these could result in negative environmental impacts and potentially, fines for landowners, managers and earthmoving contractors.

Recognising acid sulfate soils

ASS normally occurs in low lying coastal areas with a high water table and subject to occasional flooding. The soil may be located at varying depths ranging from the surface to several metres deep. If left undisturbed these soils are relatively harmless, however if exposed to air through excavation, draining, dredging or dewatering, oxygen in the air reacts with pyrite in the soil to produce sulfuric acid. Sulfuric acid can dissolve metals in the soil such as iron and aluminium and contaminate waterways. Acid water corrodes concrete and aluminium, rusts steel, kills water bugs, causes red spot disease in fish and contributes to fish kills. Plant nutrients are restricted and toxic metals may kill plants or reduce growth.

Excavated soil ranges from black gel to dull grey clay to grey sands and peat and may contain yellow or orange streaks. Vegetation may consist of water tolerant species such as sedges, rushes or paperbark (Photo 1) or in extreme situations the soil could be scalded bare and coloured red, orange or yellow (Photo 2). Water in drains or creeks may be clear, white, yellow, orange or blue/green (Photo 3), while orange iron floc (Photo 4) or black sediment may be present.

Monosulfidic black ooze

Drainage in ASS can lead to deposition of monosulfidic black ooze (MBO) on drain bottoms and sides. MBO has a black gel-like appearance and if mixed with water from flood flows or mechanical disturbance it can form inorganic blackwater (Photo 5), stripping all dissolved oxygen from water within minutes, killing fish and aquatic organisms (Photo 6). Large fish kills may also be the result of organic blackwater from rotting vegetation on the floodplain during a summer flood.

Steps to minimise risk

1. Consult ASS maps for your property – available from your local council. ASS is classed as 1 to 5 on ASS maps, with each lower class requiring greater care (Fig 1). Large scale ASS risk maps (Fig 2) are available from the Office of Environment & Heritage (OEH) website – see 'More information' section.
2. Observe ASS indicators – low ground, vegetation, scalds, water, sediment, local knowledge.
3. If any of the above indicate ASS may be present it is best not to disturb soil.
4. If you intend to disturb less than one tonne of ASS it may require lime to be mixed in as directed by field testing and runoff avoided.
5. If disturbing over one tonne of PASS/ASS or causing the water table to be lowered, a preliminary assessment, development application (DA) and ASS management plan may be required to direct works in accordance with the ASS Manual (contact local council).
6. Cane farms with a Production Area Entitlement (PAE) may qualify for certain exemptions under drain management plans, however this does not apply to land zoned E2 (Environmental Conservation), SEPP 14 (wetlands) or major acid drains (contact NSW Sugar / local council).
7. Other approvals may be required.

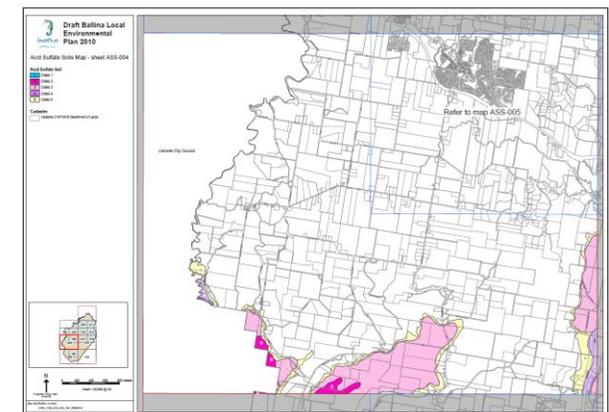


Figure 1: ASS map for northern section of Tuckean swamp showing ASS areas and classes.