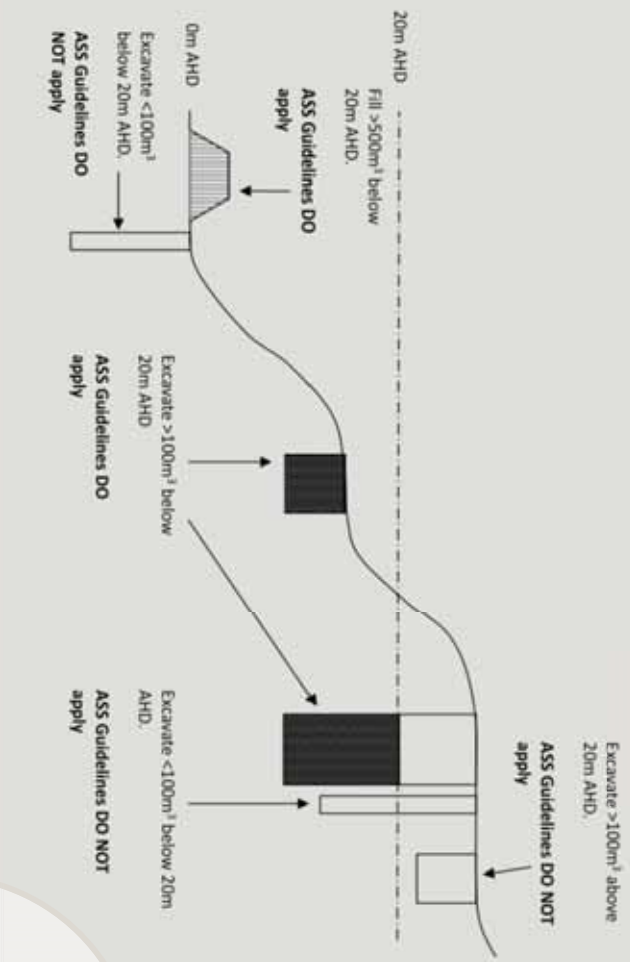
PROPOSED CRITERIA FOR DEVELOPMENTS REQUIRING AN ASS MANAGEMENT PLAN



The diagram above indicates the size and relative position (elevation) of developments likely to require preparation on an ASS management plan.

LINKS AND OTHER INFO

For detailed information on planning requirements see *Tasmanian Acid Sulfate Soil Management Guidelines*. Maps identifying the predicted distribution of ASS are available on the web at www.thelist.tas.gov.au.

Additional information is available through the Land Conservation Branch of DPIPWE and on http://www.dpipwe.tas.gov.au/inter.nsf/ThemeNodes/EKOE-4ZG66F?open

A wide variety of information has been published on the web by most other State and Territory agencies. A national strategy for the Management of Coastal Acid Sulfate Soils has been developed and is downloadable as a pdf document from www.environment.gov.au/coasts/cass/index.html

The information provided in this leaflet is intended for general information only. For more information on planning requirements in ASS affected areas and specific guidance on the management of ASS please contact either your local authority or DPIPWE.

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Tasmania
Explore the possibilities

What are Acid Sulfate Soils?

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Tasmania

WHAT ARE ACID SULFATE SOILS?

Acid sulfate soils (ASS) are naturally occurring soils that contain iron sulfides usually in the form of iron pyrite. Two forms of acid sulfate soil occur – those in which the pyrite remains in a reducing environment (saturated with water and described as potential acid sulfate soils or PASS) and those in which the pyrite has been oxidised through exposure to the air resulting in the formation of sulfuric acid (actual acid sulfate soils or AASS).

WHY ARE THEY A PROBLEM?

In their natural waterlogged state PASS are harmless as the acidity remains locked up in the soil and pHs may typically be 6.5 to 7.5 or even higher. When disturbed, through excavation or drainage, oxidation of the pyrite occurs leading to the formation and release of sulfuric acid. The release of significant quantities of acid can rapidly lower pH values of soil and drainage water to pH 2 or less. If left untreated this can result in a range of environmental, engineering, infrastructure and health related impacts.

WHERE DO THEY OCCUR?

Acid sulfate soils form naturally where sulfate rich materials mix with materials containing iron and organic matter. In Tasmania these conditions are often found in coastal landscapes at elevations below
20 m AHD (above sea level) and are typically associated with dark organic rich muds and peats found in tidal zones, estuaries, swamps and wetlands. It is predicted that about 5000 ha of land in Tasmania may be affected by ASS. Recent investigations by DPIPWE have also revealed the presence of ASS associated with inland lagoons and swamps.

Around Tasmania significant areas of ASS are known to occur across the north coast including Mella Swamp, Tamar Estuary, Waterhouse, King and Flinders Islands and parts of the east coast including St Helens, Moulting Lagoon and Swansea. Additional areas of sub-aqueous sediments likely to contain sulfides occur in the Tamar estuary, Georges Bay, Pitt Water, Blackmans Bay, Derwent Estuary and Macquarie Harbour.

HOW DO ASS FORM?

Acid sulfate soils form where there is an accumulation of sulfur and organic matter in a reducing, or waterlogged, environment. These waterlogged environments are ideal for the formation of sulfide-containing minerals, such as iron sulfide, which can, when exposed, react with oxygen in the air, or dissolved in water, to produce sulfuric acid. Coastal landscapes have the greatest quantities of stored pyrite due to deposition of sediments during times of higher sea level or in current tidal sediments and estuaries.

While sea water is often the main source of sulfur, ASS can also be found in inland areas where the necessary environmental characteristics are met. Thus areas of swamps, marshlands and peats have the potential to generate ASS.

RECOGNISING THE INDICATORS OF ASS

The presence of ASS is hardest to identify prior to any disturbance occurring. Vegetation cover may give clues as to the occurrence of bogs and swamps. These might include paper bark trees, couch grasses and rushes. Soil materials may include sticky grey to bluish grey sediments (possibly streaked with orange or yellow) and gooey black sediments that may have formed at the bottom of drains or similar wet areas. Surface scalds may occur where the top soil is acidic.

Once the soils have become AASS the evidence is often much clearer – but it is also often much harder to correct. Obvious indicators may include:

- field pH indicators that typically reveal pH of below 4.
- Rotten egg gas smell from freshly exposed soils.
- Soil materials with orange material or prominent yellow mottles.

Water in drains and creeks may change colour due to increased levels of iron or aluminium that become more soluble at lower pHs:

- Crystal clear waters, high in aluminium that can cause soil particles to drop to the bottom of the creek or drain.
- Blue green or milky white water – caused by aluminium flocculants depending on the pH of the water.
- Yellowish brown water containing high levels of iron that often deposits on the bottom or banks of a creek or drain leaving reddish brown deposits (iron staining).
- Reddish brown colouration caused by the flocculation of iron.