11.0 land and water management

11.1 acid sulfate soils

Objective

Minimise disturbance and impacts to the environment from acid sulfate soil.

Why is this important?

Acid sulfate soils (ASS) are naturally occurring sediments and soils containing iron sulfides which occur across Tasmania, refer to the acid sulfate soil map. When acid sulfate soils are exposed to air they oxidise through a series of chemical reactions which produce sulfuric acid.

This sulfuric acid can cause fish kills, groundwater contamination and corrosion of infrastructure.

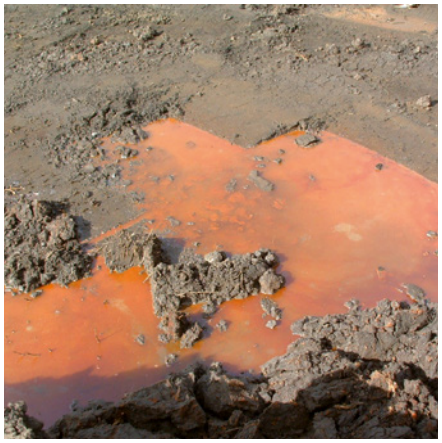
'Switch on' to your responsibilities;

Look for the following possible signs of acid sulfate soil:

- Yellow mineral deposits or shells in the soil
- Iron staining (rust colour) in water bodies or drains
- Milky blue-green water
- Sulfurous (rotten egg) smell from disturbed soils.

In areas **suspected** to have acid sulfate soils:

- Cease work immediately
- Contact your Team Leader and the HSE Team who will engage a NATA certified laboratory to analyse suspect acid sulfate soil, if present a site specific Acid Sulfate Soil Management Plan will be prepared.



An obvious indicator of ASS is iron coloured water. Source: Land Conservation Branch, DPIPWE

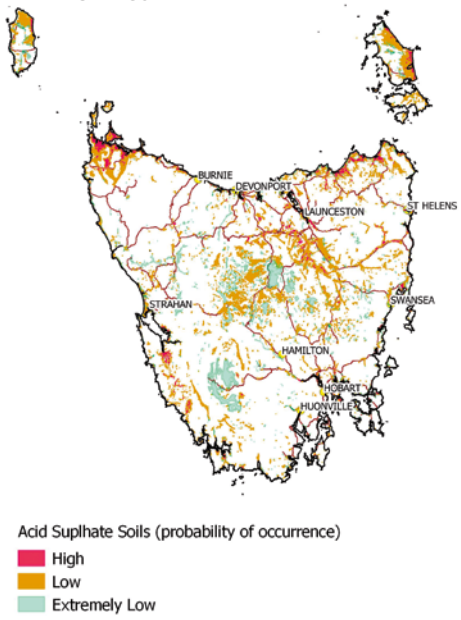
In areas known to have acid sulfate soils use the following controls:

- Avoid the disturbance of known acidsulfatesoilswherepracticable
- Refer to the site specific Acid Sulfate Soil Management Plan if one has been developed for the project
- Minimise the use of heavy machinery or keep excavation as shallow as possible
- Consider horizontal directional drilling in areas of acid sulfate soils
- Avoid stockpiling acid sulfate soil where possible
- Establish a separate stockpile area and cover with a tarpaulin if soil must be stockpiled
- Install sediment fences and diversion banks around stockpiles
- Aim to re-bury soil at the same depth from which it was excavated. Do not mix soils from different depths
- For mitigation measures such as treatment pad design and neutralizing agents refer to Tasmanian Acid Sulfate Soil Management Guidelines, DPIPWE, 2009.

ASS can be identified by rust coloured surface soil. Source: Land Conservation Branch, DPIPWE

Further information:

- *Tasmanian Acid Sulfate Soil Management Guidelines, DPIPWE, 2009*
- *HSE Team.*



DID YOU KNOW?

An estimated 214,500 ha of coastal land in Tasmania may contain acid sulfate soils.

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11.0 land and water management (continued)

Work should immediately cease if broken asbestos is uncovered

Care should be taken to look out for contaminated soil when working around high risk areas such as service stations

11.2 contaminated land

Objective

Manage contaminated soil and groundwater to minimise public exposure and impact on the environment.

Why is this important?

Soil, surface water and groundwater may be contaminated from current or historic activities. These contaminants require special disposal methods and if not properly managed may pose a risk to the community, environment and create a future liability.

'Switch on' to your responsibilities:

- Watch out for indicators of potentially contaminated soil or groundwater such as: oil sheen, bad odour, asbestos waste in imported fill, unusual colour and buried containers or underground storage tanks, site history (e.g. old landfill, service station, laundromat)
- Stop work immediately if you suspect that you have been or could be exposed to contaminated soil or water and follow the **ONE HOUR RULE**
- Notify your Team Leader and HSE Team who should engage a NATA certified laboratory to analyse suspect soil or groundwater to classify level of contamination. Refer to Information Bulletin 105 for sampling and analysis requirements
- Do not move contaminated materials until approvals have been obtained
- Excavate, store, reinstate and/or remove material in a manner which avoids off-site environmental harm and in compliance with permits, licensed waste facilities and licensed transporters
- Following classification of soil determine if soil can be remediated or reused instead of, or prior to, disposal.

Further information

- *Environmental Considerations - Distribution Lines - Design, Construction and Decommissioning HSEQ Operational Procedure*
- *Waste Management HSEQ Operational Procedure*
- *The ZoNe – Asbestos Management Plan*
- *Information Bulletin No. 105 – Classification and Management of Contaminated Soil for Disposal DPIPWE 2012*
- *HSE Team*

Sediment entering the stormwater system leads to turbid and unhealthy waterways Source: Derwent Estuary Program

11.3 erosion and sediment control

Objective

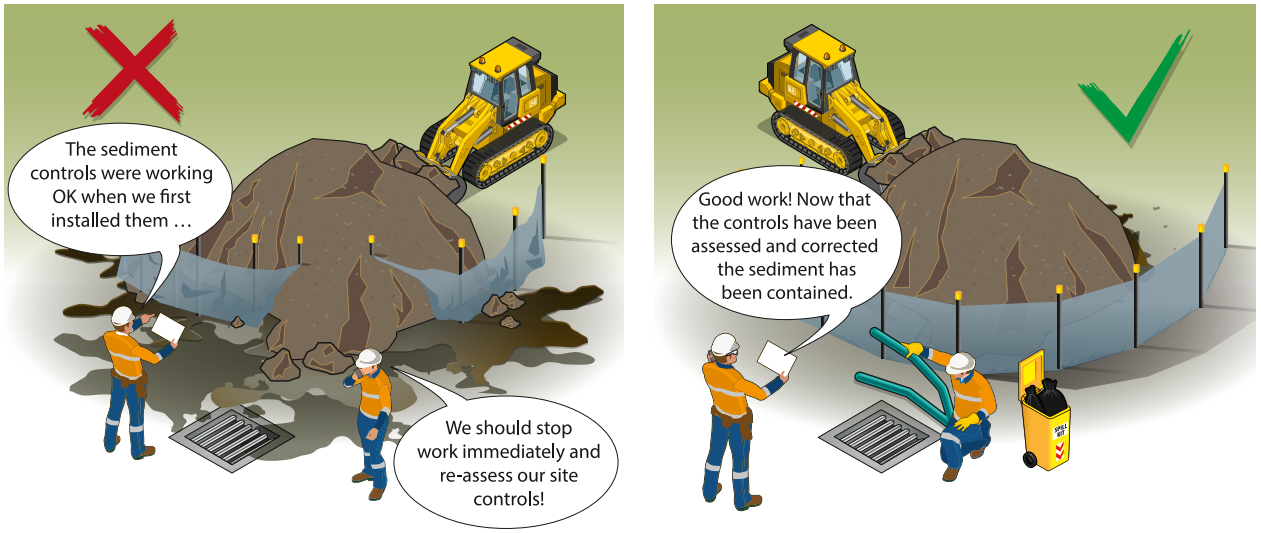
Prevent polluted water discharge to waterways by using appropriate controls to contain soil within the work site boundary through planning, containment and maintenance measures.

Why is this important?

Causing water pollution is an offence under the Environmental Management and Pollution Control Act 1994. Water pollution can be defined as "any matter other than clean rainwater entering or with the potential to enter a waterway or stormwater system".

Work activities have the potential to cause erosion including: excavation, trenching, clearing vegetation to bare soil, earthworks and access track maintenance. Sediment entering waterways can carry nutrients that degrade receiving waters.

11.0 land and water management (continued)



'Switch on' to your responsibilities for SMALL jobs:

- Divert surface water around exposed areas
- Cover drains with geofabric to prevent sediment entering stormwater drains and remove when work is complete
- Install temporary sediment control devices, for example drain socks and straw bales, downstream of disturbed areas before works starts and remove when work is complete
- Sweep soil from gutters, walkways or other hard surfaces at the completion of each work day
- **Do not** cause disturbance during wet weather.

'Switch on' to your responsibilities for LARGE jobs:

- Assess the site and proposed works for erosion and sedimentation risks for example surface water flows, existing tunnel erosion, slopes, soil type, drainage lines, steep areas which may be sediment sources
- Implement measures to prevent soil erosion, for example minimise removal of vegetation:
  - Minimise vehicle access points to one
  - Divert surface water around exposed areas
  - Minimise soil stockpiles and cover where practicable
  - Place soil stockpiles on uphill side of excavations or trenches to prevent surface water from carrying sediment
  - Install a sediment fence on the downstream side of any stockpiles left longer than one day
  - Ensure all run-off from disturbed areas is directed towards sediment controls (silt fencing, drain socks and/or straw bales) and controls are sufficient to handle more than expected sediment volumes
  - Place controls so sediment is trapped as close to the source as possible.
- Maintain effective site security by barricading off open trenches which can be a hazard to children if filled with water and to prevent people from falling in
- Employ good site management: clean-up and rehabilitate as you go; and strip and segregate topsoil for use in rehabilitation
- Inspect and maintain controls weekly during dry periods and daily during wet periods. Only clean water should be leaving the site
- Remove erosion controls once the site has re-established
- Rehabilitate disturbed areas with grass seed or geo-fabric
- When conducting work involving cutting concrete:
  - Ensure slurry runoff is contained on the work site using sandbags, sediment socks or booms
  - Sweep or shovel slurry into a contained area before the slurry dries
  - Remove slurry into a waste bin and dispose appropriately.
- **Do not** leave concrete slurry on-site due to its alkalinity
- **Avoid**, where practicable, ground disturbance during wet weather.

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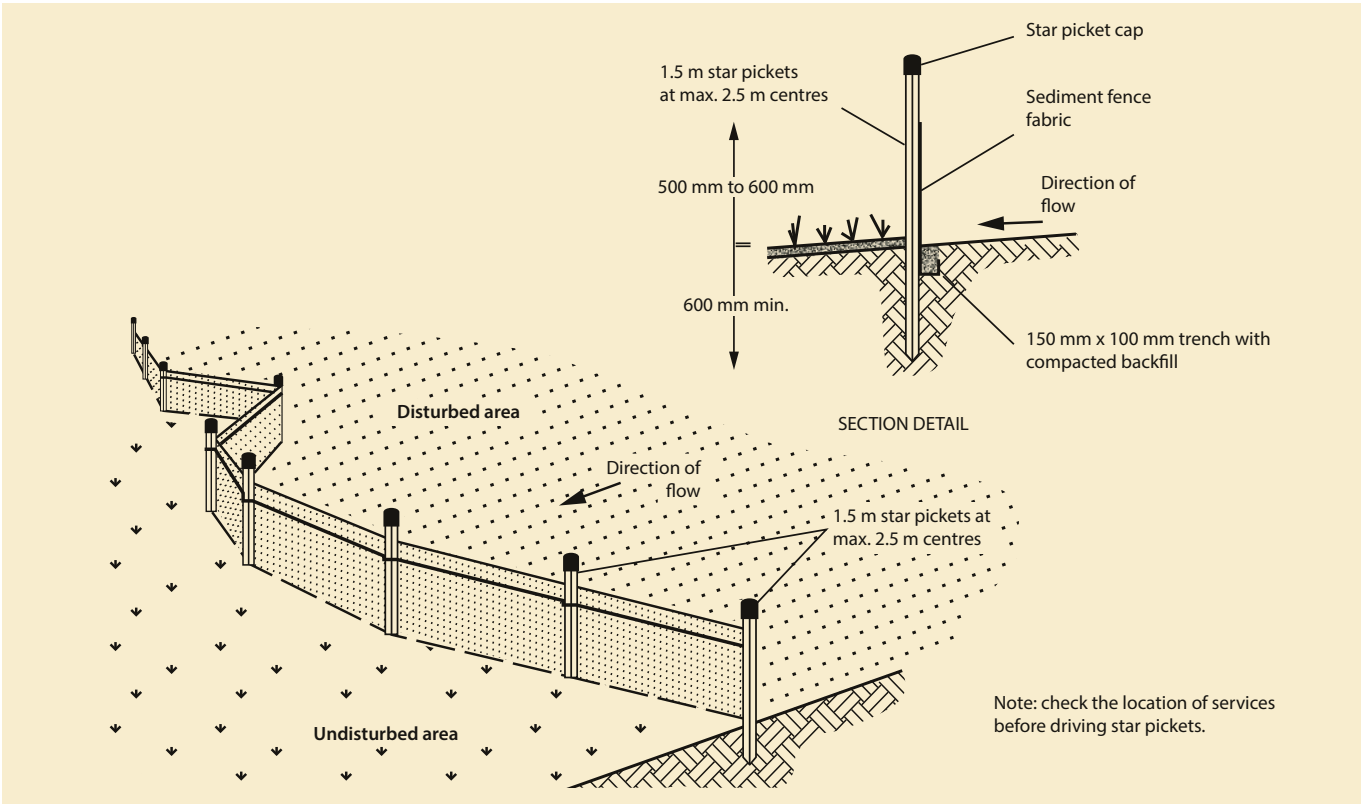
11.0 land and water management (continued)

how to install a sediment fence

1. Identify the natural surface water flow and appropriate location to install the fence to intercept the maximum water run-off from the site
2. Dig a 150 mm deep trench immediately above the proposed location of the fence
3. Place the bottom edge of the sediment fabric into the bottom of the trench and run the fabric up the down-slope side of the trench
4. Backfill the trench and compact to secure the fabric
5. Check the location of services before driving star pickets
6. Drive 1.5 m tall star pickets 0.6 m into the ground approximately 2 to 2.5 m apart to provide a structure for the sediment fence fabric. Ensure star pickets are capped
7. Tension the sediment fabric to the up-slope side of star pickets using cable ties or tie wire



Correct method for installing a sediment fence Source: Derwent Estuary Program

Further information:

- *The ZoNe – Environmental Considerations – Distribution – Design and Construction and Decommissioning HSE Operational Procedure*
- *Soil and Water Management on Building and Construction Sites, Derwent Estuary Program*
- *Forest Practices Code 2015 D1 Soils and D2 Water quality and flow*
- *The HSE Team.*

DID YOU KNOW?

It has been calculated that approximately 7,900 tonnes of sediment reaches the Derwent Estuary each year from urban storm water runoff.

11.0 land and water management (continued)

11.4 removal of waste water from work sites

Objective

Ensure that the removal of accumulated stormwater from substations, excavations and trenches does not pollute water.

Why is this important?

Rain and stormwater accumulating in substations, open trenches or excavations must be prevented or appropriately and regularly removed. Causing water pollution is an offence under the Environmental Management and Pollution Control Act 1994.

'Switch on' to your responsibilities:

- Minimise the amount of water requiring removal by placing sand bags, sediment socks or hay bales around open excavations and trenches
- Check for signs of pollution before commencing de-watering. Obvious signs include unnaturally discoloured water, unusual odour and oily sheen
- Arrange for contaminated water to be suctioned by a licensed liquid waste truck and disposed to an authorised disposal facility
- Discharge clean water onto public land with vegetation to enable water to filter slowly into soil.

Where possible a licensed liquid waste tanker should be used to pump out accumulated stormwater. Source: Derwent Estuary Program

Dewatering pumps must be kept in the clear surface water to prevent pumping bottom sediment Source: Derwent Estuary Program

11.5 working in and around watercourses

Arthurs Lake Substation

Objective

To ensure that watercourses are protected from pollution and unnatural inputs.

Why is this important?

Pollution including sedimentation must be prevented from entering watercourses which is an offence under the *Environmental Management and Pollution Control Act 1994.*

'Switch on' to your responsibilities:

- Be aware of watercourse sensitivity and requirements of Councils and the Forest Practices Authority
- Check if a Forest Practices Plan has been attained or if one is required.
- Check NetMaps to determine the Class of watercourse and associated riparian buffer as noted below:
  - Class 1 – rivers, lakes, artificial storages (other than farm dams) and tidal waters require a 40 m streamside reserve
  - Class 2 – creeks and streams, from point where catchment exceeds 100 ha, require a 30 m streamside reserve
  - Class 3 – watercourses, with running water most of the year and in 50-100 ha catchments, require 20 m streamside reserve
  - Class 4 – all other watercourses carrying water for part or all of the year for most years require machinery exclusion zone of 10 m with exceptions specified in the Forest Practices Code. For example, clearing machinery is permitted within 10 m under certain conditions at defined crossing points and to undertake thinning.

Further information:

- *Forest Practices Code 2015 – D2 Water quality and flow*
- *ENA 019-2014 Land Management Guidelines, Energy Networks Australia*
- *HSE Team.*

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