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6 April 2011

Nick Alcevski 355 Ruttleys Road MANNERING PARK NSW 2259

Attention: Nick Alcevski

Dear Nick

RE: PROPERTY LOT 1 DP 603830 NO 355 RUTTLEY ROAD, MANNERING PARK

As requested Coffey Information Pty Ltd have been asked to assess the above lot for the presence of Acid Sulphate Soil.

The site is situated on the eastern side of Ruttley's Road on residential soil profile.

Two boreholes were performed to 0.6mm depth and were characterised by Silty Sandy Topsoil to 0.2m over residual Gravelly Sandy Clay.

The Soil Conservation Acid Sulphate Risk Map for Catherine Hill Bay indicates that the site is on an area of no known occurrence of acid sulphate soil. This assessment concurs with screening test performed on samples recovered from the boreholes performed on site

For and on behalf of Coffey Information Pty Ltd

Alan Cullen Principal Geotechnician – Laboratory Manager

Acid Sulphate Results Site Plan



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ACID SULFATE SOILS - BACKGROUND INFORMATION

Background

Acid Sulfate Soils (ASS) are soils containing significant concentrations of pyrite, which when exposed to oxygen in the presence of sufficient moisture, oxidise resulting in the generation of sulfuric acid. Unoxidised pyritic soils are referred to as <u>potential</u> ASS (PASS). When the soils are exposed, the oxidation of pyrite occurs and sulfuric acids are generated, and the soils are said to be <u>actual</u> ASS (AASS).

Pyritic soils typically form in waterlogged, saline sediments rich in iron and sulfate. Typical environments for the formation of these soils include tidal flats, salt marshes and mangrove swamps below about RL 5m AHD. They can also form as bottom sediments in coastal rivers and creeks.

ASS soils occur across about 40,000km² of low lying coastal lands in every state of Australia (Sammut 2000), and mostly formed in the Holocene period (10,000 years ago to present day) predominantly in the 7,000 years since the last rise in sea level. It is generally considered that pyritic soils which formed prior to the Holocene period (greater than 10,000 years ago) would already have oxidised and leached during periods of low sea level which occurred during ice ages, exposing pyritic coastal sediments to oxygen.



Significance of ASS

In their natural setting, ASS soils are buried beneath the water table and have a healthy vegetation cover. Any localised areas of acid generation are typically diluted by water runoff or neutralised by tidal flows of alkaline seawater.



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Disturbance or poorly managed development and use of acid sulfate soils can generate significant amounts of sulfuric acid, which can lower soil and water pH to extreme levels (generally less than 4) and produce acid salts, resulting in high salinity. The low pH, high salinity soils can reduce or altogether preclude vegetation growth and can produce aggressive soil conditions which may be detrimental to concrete and steel components of structures, foundations, pipelines and other engineering works.



oron and other naturally occurring elements from the otherwise stable soil matrices. High concentrations of some such elements, coupled with low pH and alterations to salinity can be detrimental to aquatic life. In severe cases, affected waters flowing off-site into aquatic ecosystems can have a detrimental effect on these ecosystems.

This background information sheet was compiled by the Coffey. Acid Sulfate Soil - Centre of Specialist Knowledge.

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