JBS&G 60539-136377
L01 P/ASS Advice and Desktop Investigation, Kemps Creek (Rev 0)

31 March 2021

Tom Flaconer
The GPT Group
Via email: Tom.Falconer@gpt.com.au

c/o:
Matias Braga
Pells Sullivan Meynink
Via email: Matias.Braga@psm.com.au

L01 – Potential Acid Sulfate Soil Advice and Desktop Investigation, GPT Mamre Road Warehouse Estate, 754-786 Mamre Road, Kemps Creek, NSW

Dear Tom and Matias,

JBS&G Australia Pty Ltd (JBS&G) was engaged by Pells Sullivan Meynink (PSM) to provide environmental consulting services associated with the completion of an Acid Sulfate Soils (ASS) Desktop Investigation to facilitate the redevelopment of the GPT Mamre Road Warehouse Estate, located at 754 to 786 Mamre Road, Kemps Creek, NSW, herein referred to as 'the site'.

As part of the preparation of the State Significant Development Application (SSDA) for the redevelopment of the site, it is understood by JBS&G that consideration to the potential presence of potential and/or actual acid sulfate soils (P/ASS) within, or in proximity to the site, is required.

Acid sulfate soils (ASS) is a common name given to naturally occurring sediments and soils containing iron sulfides (generally as iron sulfide or iron disulfide). These soil profiles are typically located in coastal, low-lying alluvial or estuarine areas such as mangroves, salt marshes, coastal rivers and creeks, estuaries, tidal lakes and coastal floodplains where historical iron rich sediment deposition in the presence of a sulfate source (commonly salt water), organic matter and microbial action over time has resulted in the formation of particular environmental conditions. Acid sulfate soils are predominantly encountered in areas with an elevation of less than 5 m AHD.

Changes in environmental conditions which result in the exposure of these materials to air, via excavation or drainage of subsurface soils, can lead to the reaction of the iron sulfides with oxygen, causing the generation of sulfuric acid. This may result in significant environmental and infrastructure damage if the produced acid is spread by groundwater or surface water.

Acid Sulfate Soils (ASS) consist of two major categories:

- Actual Acid Sulfate Soils (AASS) are soils that have been exposed to oxygen which has caused the oxidation of iron sulfides to form sulfuric acid. Some of this acid is commonly neutralised by other soil particles in a process known as buffering, however the excess acid is spread by water movement through the soil; and
- Potential Acid Sulfate Soils (PASS) are soils which contain iron sulfides, but which have not been oxidised. These soils are generally kept from contact with air by permanent waterlogging or the density of the soil profile and so are relatively stable, or in equilibrium. In this state the soils are generally non-acidic and are considered harmless to the environment. However, oxidation of such soils through disturbance has the potential to generate acidic conditions.

Commonly, an acid sulfate soil profile will consist of a combination of both AASS and PASS material as a result of ongoing chemical reactions in response to environmental changes including groundwater fluctuations and seasonal soil moisture changes.

In NSW, development of land subject to P/AASS occurrence is managed at a planning level in accordance with the Acid Sulfate Soil Manual (1998) prepared by the Acid Sulfate Soil Management Advisory Committee (ASSMAC). Local Environmental Plans (LEP) provide a regulatory regime for the sustainable management of acid sulfate soils in the coastal zone. The ASS Manual provides guidance on the assessment of acid sulfate soil conditions and appropriate management strategies for development of ASS identified land.

A review of the Acid Sulfate Soil Risk Map for Liverpool[1] (applicable to Kemps Creek) indicates the site is within an area of 'no known occurrences' of P/ASS, indicating P/AASS are not known to exist, or are not expected to occur in these environments. The site is located approximately 16km northwest from the nearest P/AASS occurrence (Georges River, Liverpool).

Further, the geological setting comprising Triassic Bringelly Shale bedrock, and the elevation of the site being greater than 40 m AHD, are such that there is not expected to be P/ASS at the site, consistent with the ASS Risk Mapping.

With consideration to the geological, soil/rock physical characteristics and classification, topography and development, management of potential ASS is not considered necessary.

Should you require clarification, please contact the undersigned on 02 8425 0300 or by email ddenaro@jbsg.com.au.

Yours sincerely:

Ruby Chapman
Project Scientist
JBS&G Australia Pty Ltd

Reviewed/Approved by:

Matthew Bennett, CEnvP-SC
Senior Principal
JBS&G Australia Pty Ltd

[1] Acid Sulfate Soil Risk Map (Second Edition) Liverpool 1:25 000. NSW Department of Land and Water Conservation, 1997 (DLWC 1997)