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31 August 2023

Attention: Adam Bower
Land and Housing Corporation
Level 5
219-241 Cleveland Street
Strawberry Hills NSW 2012
adam.bower@facs.nsw.gov.au
BY EMAIL

Dear Adam

Re: Preliminary Acid Sulfate Soils Assessment – Tolland Estate Renewal Project

1. I refer to the written request from yourself to prepare a Preliminary Acid Sulfate Soils Assessment report for the Tolland Estate Renewal Project in Wagga Wagga NSW. The intended recipient of this report is the Land and Housing Corporation, the Aboriginal Housing Office, Argyle Consortium, and Wagga Wagga City Council for a planning proposal to transform the existing Tolland housing estate in Wagga Wagga to provide a new mix of modern housing. Location maps of the site and the Tolland Estate Renewal Project staging masterplan can be seen in **Attachment A**.

2. The objective of this preliminary assessment is to determine if acid sulfate soils will be a constraint on planning at the catchment or local level and on land use and development options for the Tolland Estate Renewal Project.

3. The scope of this preliminary assessment is to:

a) Establish the general parameters of the proposed works.
b) Establish the general characteristics of the local environment.
c) Undertake an assessment of the likelihood of acid sulfate soils based on the Acid Sulfate Soils Planning Maps and the adopted geomorphic and site criteria.
d) Formulate guidance around a suggested assessment program during development and construction.
e) Conduct the assessment and prepare this report in line with the NSW Acid Sulfate Soils Management Advisory Committee (1998) Acid Sulfate Soils Assessment Guidelines.

4. The general parameters of the proposed works include:

a) The demolition and construction of houses.
b) Replacement of current and construction of new roads.
c) Replacement of current and construction of new above and below ground services.

d) The depth of soil disturbance is assumed to be no more than 1m for buildings and roads, and up to 3m for services.
e) Soil disturbance will be in the short-term during construction.

5. The general characteristics of the local environment are:

a) The Tolland Estate Renewal Project area lies on a north trending broad long waning piedmont slope below the Lloyd Hills at an elevation range of around 210 to 225m AHD.
b) Soils are typically deep Quaternary colluvial and alluvial sands, silts, and clays characterised as red Chromosols and brown Sodosols. These soils are possibly up to 10m thick.
c) Tolland is underlain by Undivided Ordovician metasedimentary bedrock which is highly variable over a short distance.
d) Tolland lies in the far western sub-catchment of the urban western catchment of Wagga Wagga. The hydrology of the surrounding local environment has been highly modified by urbanisation.
e) Depth to groundwater is typically 4-10m below ground level discharging into the unconsolidated alluvial sediments of the Murrumbidgee River floodplain to the north of Tolland.
f) An intermediate to localised groundwater system associated with the Ordovician metasediments exists in the underlying geology that is loosely defined by the topographic catchment. Interflow and throughflow in the colluvial and alluvial soils overlying the geology can also occur after periods of extended wet weather. Hydraulic conductivity is low and hydraulic gradient is a muted reflection of the surface topography. Water quality is marginal to poor.
g) The development is highly unlikely to create a permanent or temporary change in water table depth.

6. To establish whether acid sulfate soils are present on site the following has been considered:

a) Based on an inspection of the Acid Sulfate Soils Planning Maps (Department of Land and Water Conservation 2nd Ed 1998) the site is not in an area of known acid sulfate soils risk **Attachment B**.
b) The following geomorphic and site criteria has been used to assess if acid sulfate soils are present:
   i. There are no sediments of recent geological age (Holocene).
   ii. Soil horizons are unlikely to be less than 5m AHD.
   iii. There are no marine or estuarine sediments and tidal lakes.
   iv. There are no coastal wetlands or back swamp areas; waterlogged or scalded areas; interdune swales or coastal sand dunes (if deep excavation or drainage proposed).
   v. There are no areas where the dominant vegetation is mangroves, reeds, rushes and other swamp-tolerant or marine vegetation such as swamp mahogany (Eucalyptus robusta), paperbark (Melaleuca quinquenervia) and swamp oak (Casuarina glauca).
   vi. There are no areas identified in geological descriptions or in maps as bearing sulfide minerals, coal deposits or former marine shales/sediments.
   vii. There are no deep older estuarine sediments >10 metres below ground surface, Holocene or Pleistocene age (only an issue if deep excavation or drainage is proposed).

7. Based on the findings of this assessment, it is concluded that acid sulfate soils are unlikely to be present in the Tolland Estate Renewal Project area and should not be a constraint at the catchment or local level and on land use and development options. However, this conclusion should be validated by soil and groundwater sampling as part of an assessment program during development and construction as outlined below.

8. It is recommended that an assessment program is followed during development and construction that includes but is not limited to:

a) Testing of representative soil samples during geotechnical investigations for pH, where a pH of ≤4 may indicate acid sulfate soil.
b) Undertaking a visual and tactile assessment of soil during geotechnical investigations where jarositic, substantial iron oxide mottling, and unripened mud soils may indicate acid sulfate soil.
c) Testing of groundwater samples from the existing Council groundwater monitoring bore network in Tolland where groundwater with a pH of <5.5 and extensive iron staining may indicate acid sulfate soil.
d) An assessment of any scalded or bare low-lying areas and any corrosion of concrete and/or steel structures that may indicate acid sulfate soil.
e) Development of an Acid Sulfate Soil Management Plan if acid sulfate soils are confirmed.

If you have any queries about the contents of the letter format report, please contact the undersigned.

Yours sincerely

David McMahon CEnvP SC
BAppSc SA
GradDip WRM
MEnvMgmt
MALGA MEIANZ MSSA

List of attachments

A. Site location and Tolland Estate Renewal Project staging masterplan

B. Acid Sulfate Soils Planning Map Index

Attachment A : *Site location and Tolland Estate Renewal Project staging masterplan*

Tolland Estate Renewal Project Tolland NSW 2650

Acid Sulfate Soils Assessment
Report No. 9496
Google Earth image 2022

Legend
Boundary

A41
A20
Travers St
Hampden Ave
Byrnes Rd
Oura Rd
Eunony Bridge Rd
Docker St
Bayis St
Railway St
Coleman St
Ashmont Ave
Lorana St
Red Hill Rd
Glenfield Rd
Pinaroo Dr
Bourke St
Leavenworth Dr
Lake Albert Rd
Fay Ave
Kooringal Rd
Vincent Rd
Tasman Rd
Bakers Ln

Google Earth
Image © 2023 Airbus

N
3 km

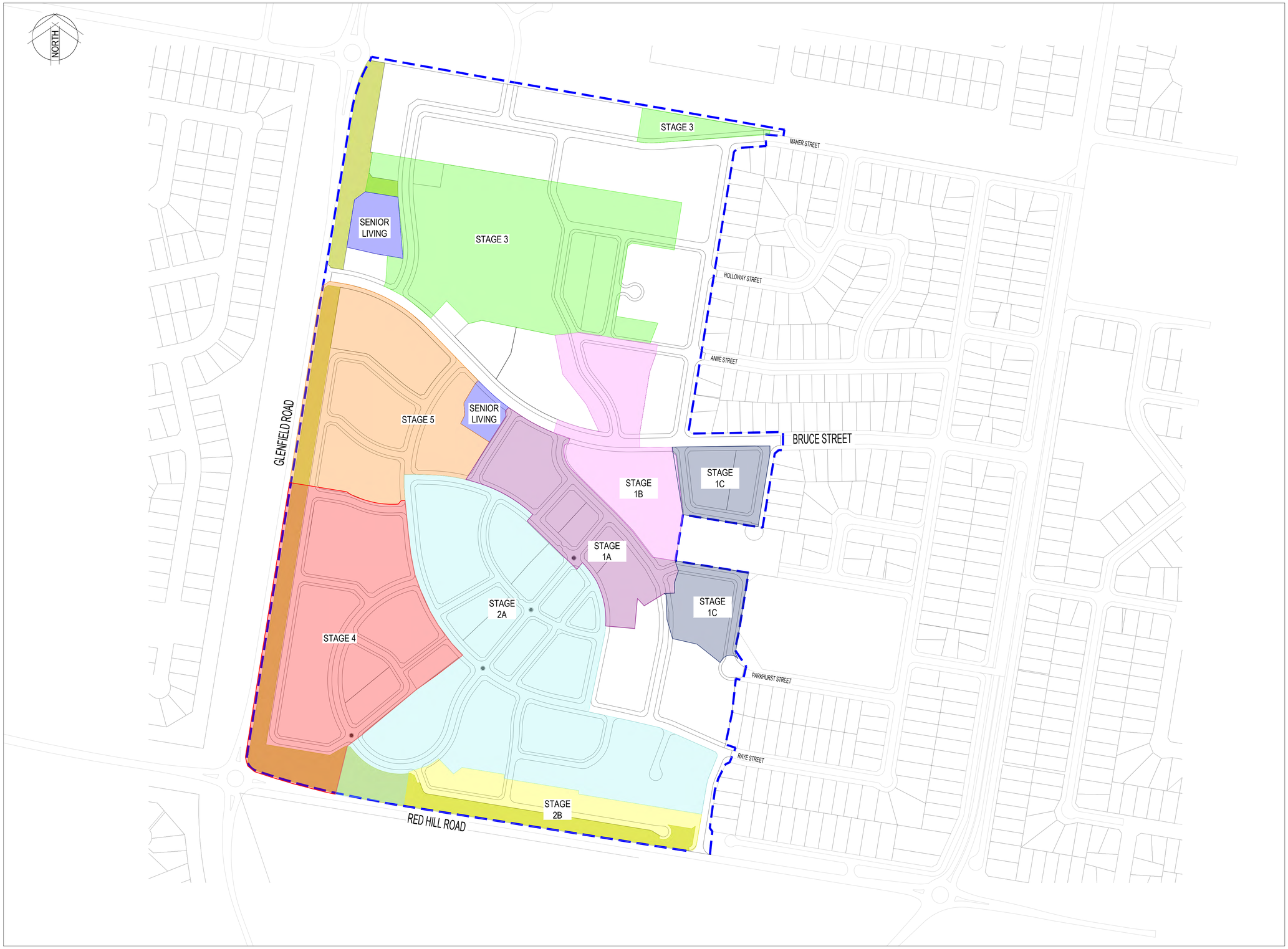
Tolland Estate Renewal Project Tolland NSW 2650

Acid Sulfate Soils Assessment
Report No. 9496
Google Earth image 2022

Legend
Boundary

N

400 m



LEGEND

- LIMIT OF WORKS
- STAGE 1A
- STAGE 1B
- STAGE 1C
- STAGE 2A
- STAGE 2B
- STAGE 3
- STAGE 4
- STAGE 5
- SENIOR LIVING

INDICATIVE TIMELINE	
STAGE	EXPECTED COMPLETION DATE
1A	2024
1B	2025
1C	2025
2A	2026
2B	2027
3	2028
4	2029
5	2030
SENIOR LIVING	2025

CONFIDENTIAL

0 50 100 150 200 250m

SCALE 1:2500 @A1

Rev.	Date	Description	Des.	Verif.	Appd.
A	16/03/2023	PRELIMINARY	ML/AS	JS	GZ

NSW GOVERNMENT Planning, Industry & Environment

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Drawn	DP	Date 16/03/2023
Checked	AS	Date 16/03/2023
Designed	TM/JS	Date 16/03/2023
Verified	JS	Date 16/03/2023
Approved	GZ	

Client: NSW DEPARTMENT OF PLANNING, INDUSTRY AND ENVIRONMENT

Project: TOLLAND RENEWAL PROJECT
TOLLAND, WAGGA WAGGA

Title: STAGING MASTER PLAN

SHEET 1 OF 1

Status: FOR CONCEPT APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Mar-23	AHD	Scale 1:2500	Size A1

Drawing Number: 50521067-C1015

Revision: A

Attachment B : *Acid Sulfate Soils Planning Map Index*

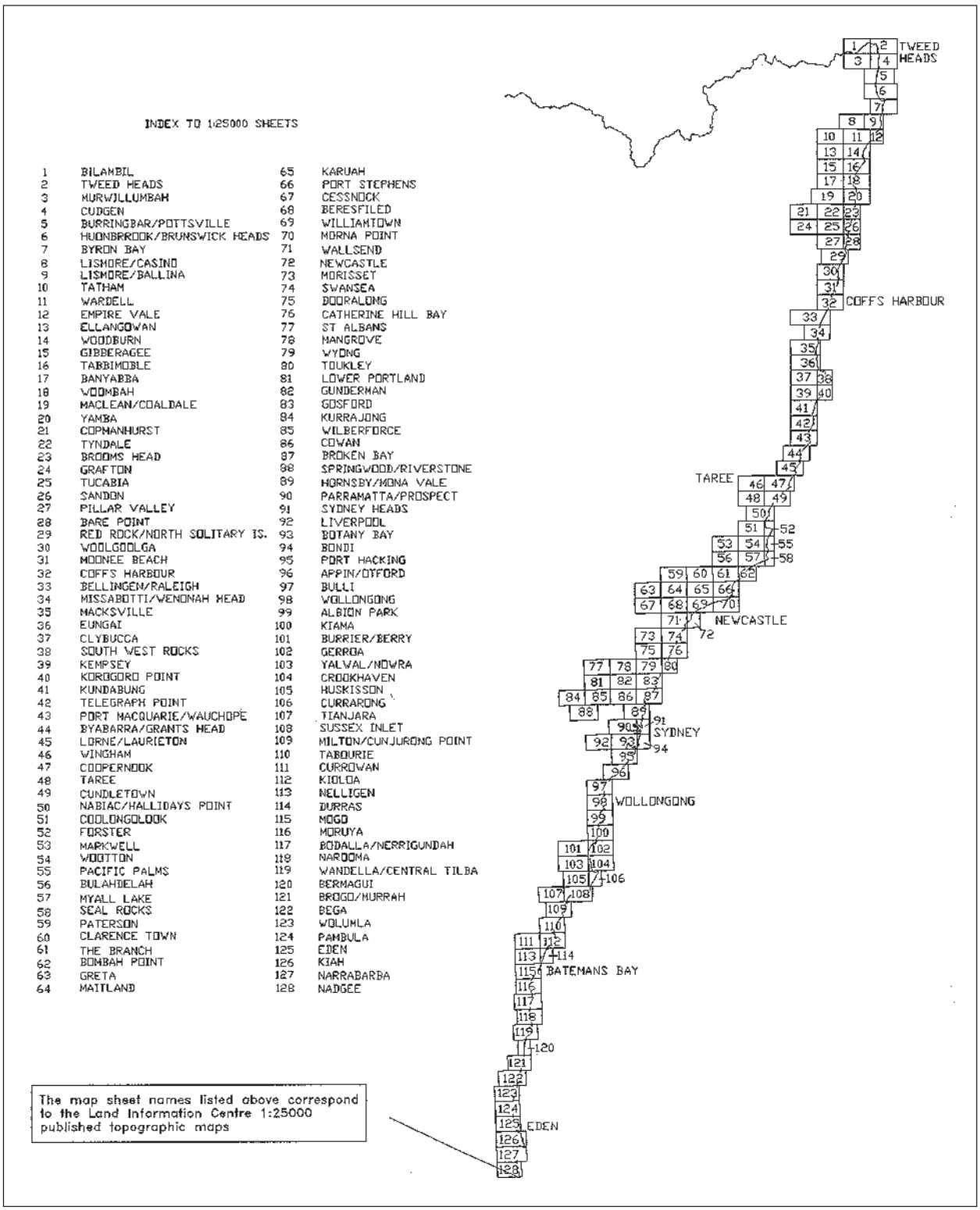

Figure 1 *- Index to Acid Sulfate Soil Risk Maps.*