

Preliminary Acid Sulfate Soil Investigation

Location:

Lot 42 DP 868366 & Lot 1 DP 957677
1055 Bruxner Highway
Goonellabah NSW

Prepared for:

Nimble Estates Pty Ltd

Report:

HMC2022.1106.02

September 2022



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RE: Lot 42 DP 868366 & Lot 1 DP 957677, 1055, Bruxner Highway, Goonellabah NSW.

HMC Environmental Consulting Pty Ltd is pleased to present our report for a Preliminary Acid Sulfate Soil Investigation for the abovementioned site.

We trust this report meets with your requirements. If you require further information please contact HMC Environmental Consulting directly on the numbers provided.

Yours sincerely



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(B.App.Sc.Env.Hlth)

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Limitations

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This document was prepared for the sole use of client and the regulatory agencies that are directly involved in this project, the only intended beneficiaries of our work. No other party should rely on the information contained herein without the prior written consent of HMC Environmental Pty Ltd and client.

Your report is based on the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until project implementation has commenced and therefore your report recommendations can only be regarded as preliminary.

Because a report is based on conditions which existed at the time of the subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time, natural processes and the activities of man.

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1 INTRODUCTION

The Planning Proposal includes amending the LLEP 2012 for the rural property located at 1055 Bruxner Highway, Goonellabah NSW. The site is currently mapped as Primary Production (RU1) land, and is proposed to be rezoned to allow for a future mixed-use subdivision including residential, commercial, industrial, and public open space lots.

The site is on the Alstonville Plateau at Goonellabah, and no acid sulfate soil (ASS) is found on these residual, volcanic, non-Holocene areas. The site is not mapped as acid sulfate soil (ASS), and disturbance of ASS, or lowering of the groundwater level in any off-site Class 1, 2, 3, or 4 ASS would not occur on this elevated site (RL 140-190m AHD). In fact the nearest mapped ASS is 5-10 km from this site.

Even with very extensive earthworks across the site to create a future mixed use subdivision no disturbance of soil below RL135m AHD would occur.

2 SITE INFORMATION

Table 1 – Project Summary

Site Address	1055 Bruxner Highway, Goonellabah NSW
Property description	Lot 42 DP 868366 & Lot 1 DP 957677
Report commissioned by	Nimble Estates Pty Ltd
Proposed development	Planning Proposal for mixed use including residential, commercial, industrial and public open space
ASS interception depth	NA
Site elevation	RL 140m to RL 190m AHD
Investigator	Mark Tunks
Local Government Authority	Lismore City
Investigation date	September 2022

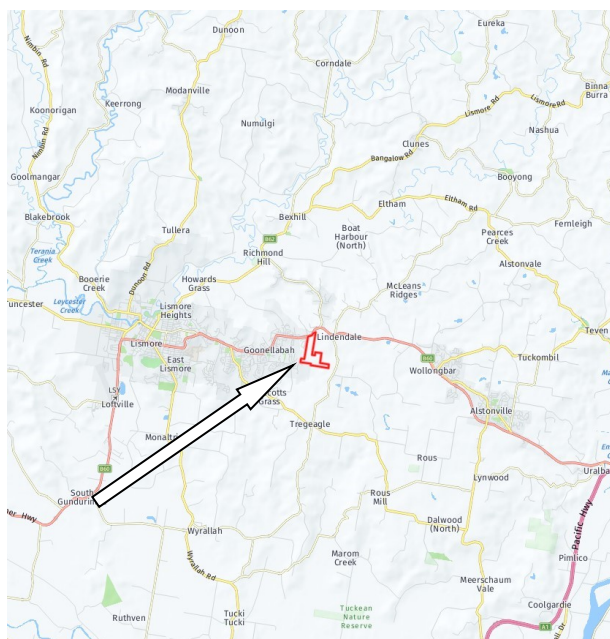


Figure 1 - Locality Map

3 PROJECT DESCRIPTION

As discussed in Section 1, the Planning Proposal includes amending the LLEP 2012 for the rural property located at 1055 Bruxner Highway, Goonellabah NSW. The site is currently mapped as Primary Production (RU1) land, and is proposed to be rezoned to allow for a future mixed-use subdivision including residential, commercial, industrial, and public open space lots. An indicative layout plan of the future development is included in **Appendix 3**.

4 PROPOSED EARTHWORKS

As discussed in Section 1, although extensive earthworks may occur during a future mixed use subdivision, the elevation of the land is approximately 139-189m above the highest expected ASS as recorded in NSW.

No excavation would be below approximately RL 135m AHD.

5 LISMORE CITY COUNCIL ACID SULFATE SOIL MAPPING

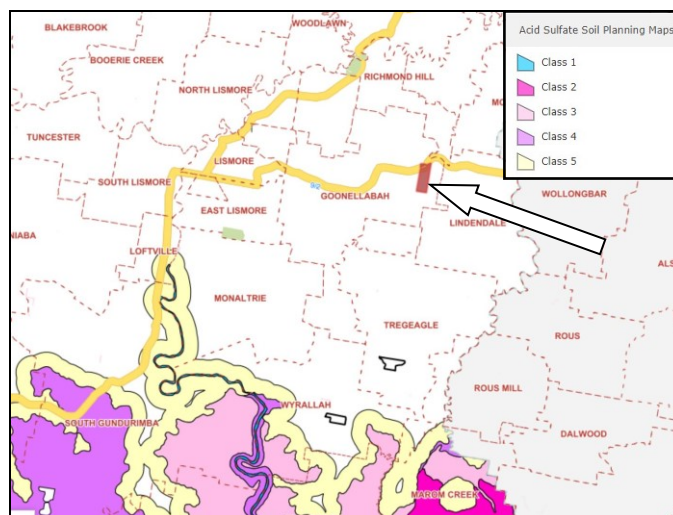


Figure 2 (<https://www.legislation.nsw.gov.au/maps.pdf>)

6 GEOLOGY & SOIL LANDSCAPE

According to the NSW Department of Land & Water Conservation *Soil Landscapes of the Murwillumbah-Tweed Heads* 1:100 000 Sheet (Morand, 1996), the site is located within a Wollongbar (wo) soil landscape: characterised by Mostly deep well drained Krasnozems with shallower stonier Krasnozems on crest/upper slope boundaries. Wet alluvial Krasnozems in drainage lines.

The 1:25000 *Coastal Quaternary Geology Map - Tweed Heads* (Hashimoto, 2008) shows the site is generally within the **Cenozoic Mafic Volcanic Rocks** - Rocks which erupted from widespread volcanic activity over the last 65 million years (Tweed Volcano). Includes basalt flows and eruptive products associated with the volcano.

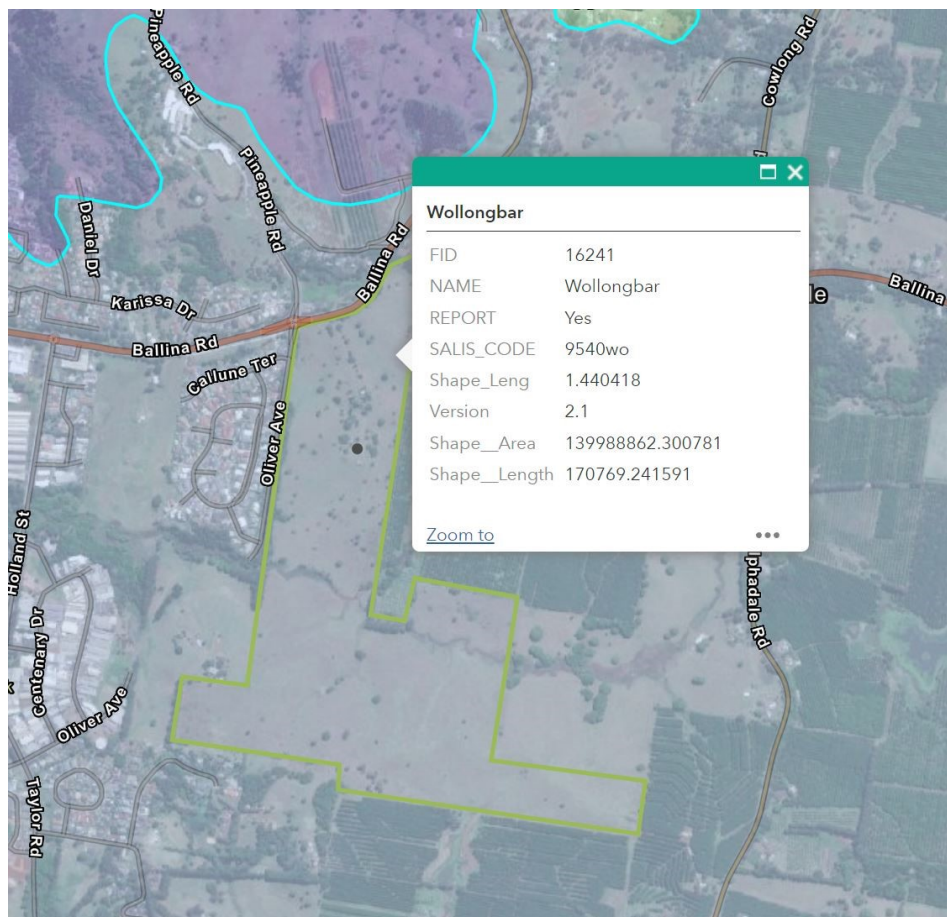


Figure 3 - Soil landscape map
(<http://www.environment.nsw.gov.au/eSpadeWebapp>)

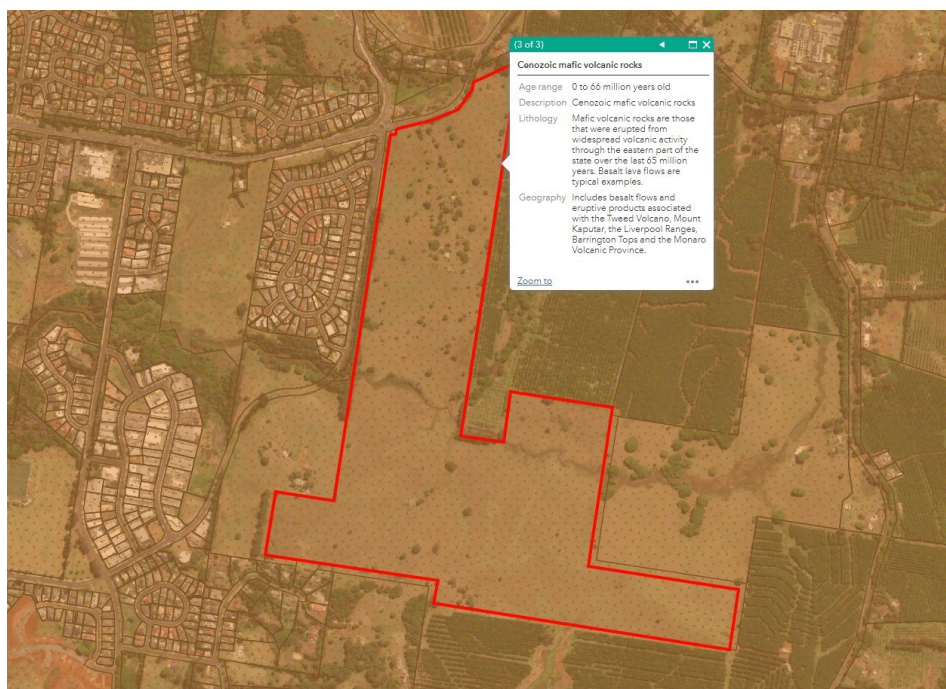


Figure 4 - Geology map (Hashimoto et al, 2008)

7 SITE ELEVATION AND ASS

White et al (1997) note that *“the top of the sulfidic horizon should be close to where it was last formed, at about mean high tide sea level (about 1m AHD in eastern Australia).* Naylor et al (1998) also conclude following the extensive ASS mapping project across NSW that an *“analysis of the relationships between*

*elevation levels (AHD) and soil data established the critical level at which the upper limit of ASS occurs. This is at or less than about **1m AHD**".* The 1m AHD benchmark can also be confirmed via the wording of provisions relating to class 5 land and watertable elevation.

Wilson (2005) also reports a maximum elevation of ASS of 1m AHD after reviewing soil investigation results for the NSW ASS mapping program.

The site elevation within the footprint of the proposed development is approximately **RL 140m AHD to RL 190m AHD**.

8 GROUNDWATER ELEVATION AND DEWATERING

Dewatering would not be expected to occur on this elevated site. Any dewatering required would not lower the groundwater below approximately RL 135m AHD. No drawdown of off-site Class 1, 2, 3, 4 ASS below RL 1m AHD would occur.

9 CONCLUSION

Following a desktop assessment of the NSW acid sulfate soil planning, soil landscape, and geology mapping, it is concluded that no ASS would be disturbed with the proposed development. The site is located on non-Acid sulfate soil on the Alstonville Plateau at Goonellabah, greater than 5 km from any mapped acid sulfate soil.. Any earthworks would not disturb soil below approximately RL135m AHD , approximately 134m above the expected maximum acid sulfate soil elevation

Acid sulfate soil has not have been identified as being a constraint to the proposed Planning Proposal for Lot 42 DP 868366 & Lot 1 DP 957677, 1055 Bruxner Highway, Goonellabah NSW

No further investigation or management is required.

10 REFERENCES

- Acid Sulfate Soil Management Advisory Committee, “Acid Sulfate Soil Manual”, Wollongbar, 1998.
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- White, I. et al, “Fixing Problems Caused by Acid Sulphate Estuarine Soils”, *In* C. Copeland, C. (Ed.) *Ecosystem Management: the Legacy of Science*, Halstead Press, Sydney 1995.
- White, I., Melville, M.D., Wilson, B.P., and Sammut, J. 1997 *Reducing Acidic Discharges from Coastal Wetlands in Eastern Australia*. *Wetlands Ecology and Management* 5 : 55-72

11 APPENDICES

Appendix 1 Property Image with Boundary



Figure 5 – Property boundary (Source: Land and Property Information 2012)

Appendix 2 Aerial Photography (HMC Drone)

Photo No. 10	Date 05/09/2022	
Description: Drone photo – View to the north towards the Bruxner Highway, showing undulating elevated site.		

Photo No. 11	Date 05/09/2022	
Description: Drone Photo – View to the south overlooking the undulating property.		