



# Swansons Lane Wind Farm

Application for Planning Permit

Appendix K – Geotechnical Assessment

May 2025

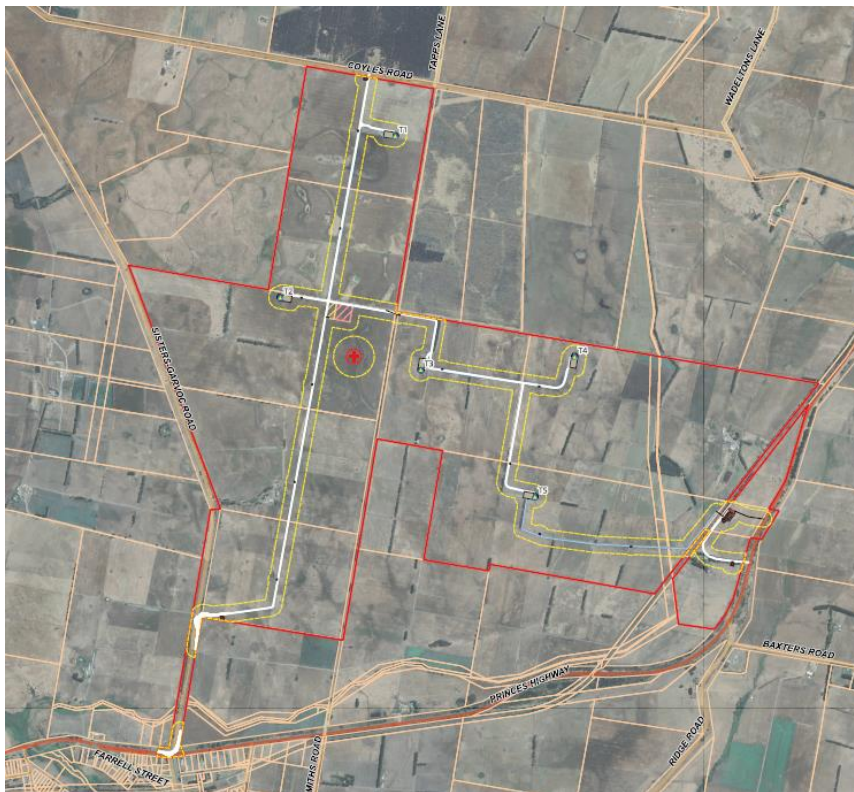


**Melbourne  
Geotechnics**  
CONSULTING GEOTECHNICAL ENGINEERS

# Geotechnical Desktop Study

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**RE:** Proposed Wind Farm Development at



## Swansons Lane Wind Farm, Garvoc

**File No:** 221306/2  
**Date:** 09 January 2024  
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## **Introduction**

A "desktop" study was undertaken to provide an initial geotechnical assessment of the proposed Swansons Lane Wind Farm site. Relevant geological maps were examined with the purpose of providing feasibility foundation and pavement advice for the proposed wind farm comprising of 5 turbines.

## **Scope of the Study**

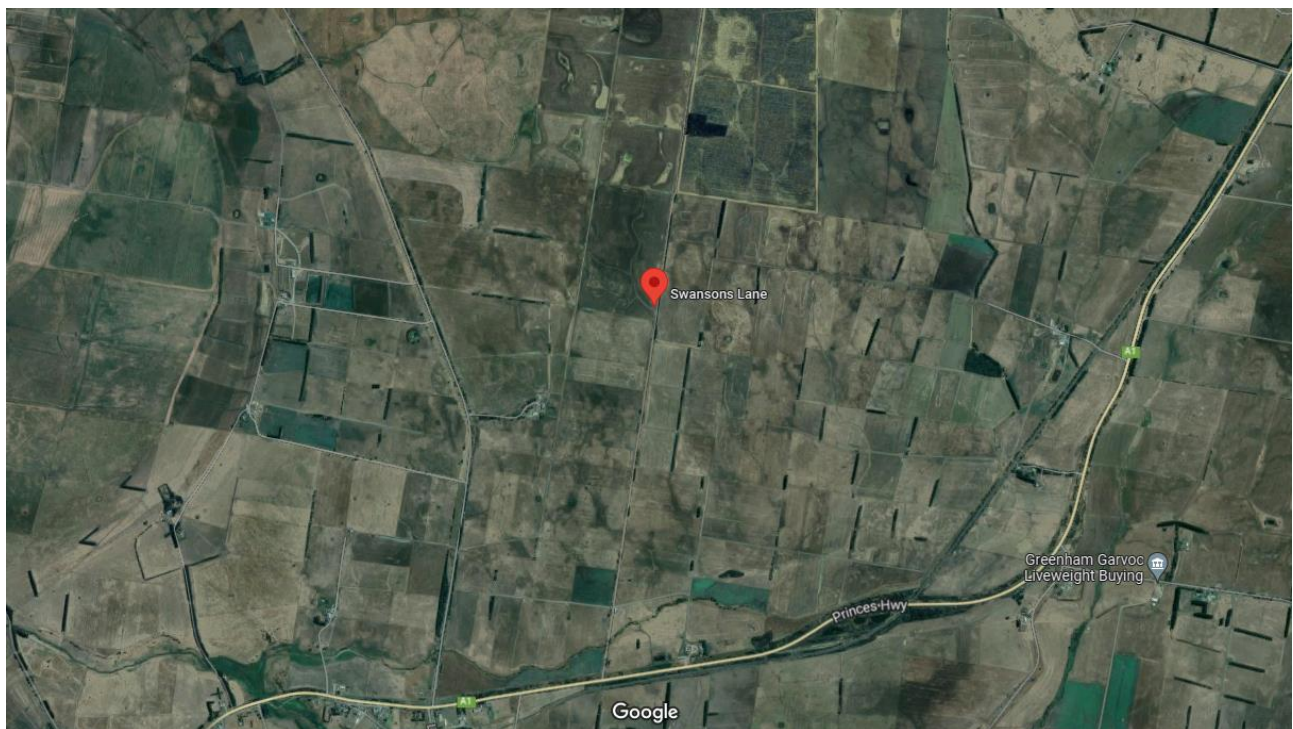
The study is limited to a desktop review only.

The scope of this report is to provide comments on the anticipated foundation systems and pavement options, based on experience in the region and its geology, as interpreted from appropriate maps.

Site investigation work will be required to confirm the assumptions made in this report and for any design purpose.

## **Site Description**

The site of the Swansons Lane Wind Farm is located approximately 190km South West of Melbourne and approximately 2km North East of Garvoc Community Hall. The proposed turbine locations appear to be on existing pastoral grazing / farming land. Aerial images suggest the site has a sparse ground cover of trees and shrubs and an underlying cover of grasses.



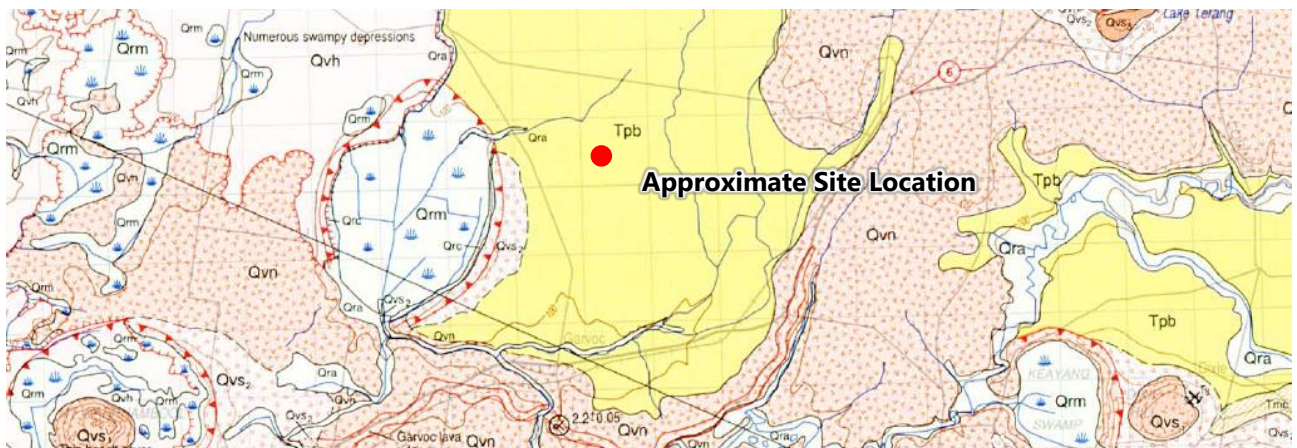
*Satellite imagery of the location of the proposed development (image courtesy of Google Maps)*



## **Subsurface Conditions**

### ***Regional geology***

The area of the proposed wind turbine development lies within the 'Geological Survey of Victoria' Port Campbell Sheet (1:100,000) as being within the Tertiary "Hanson Plain Sand" formation and associated sediments.



*Extract from 'Geological Survey of Victoria' Port Campbell Sheet (1:100,000) showing site in the Tertiary "Hanson Plain Sand" formation*

## **Discussion**

### ***Anticipated subsurface conditions***

The subsurface profile is expected to comprise ;

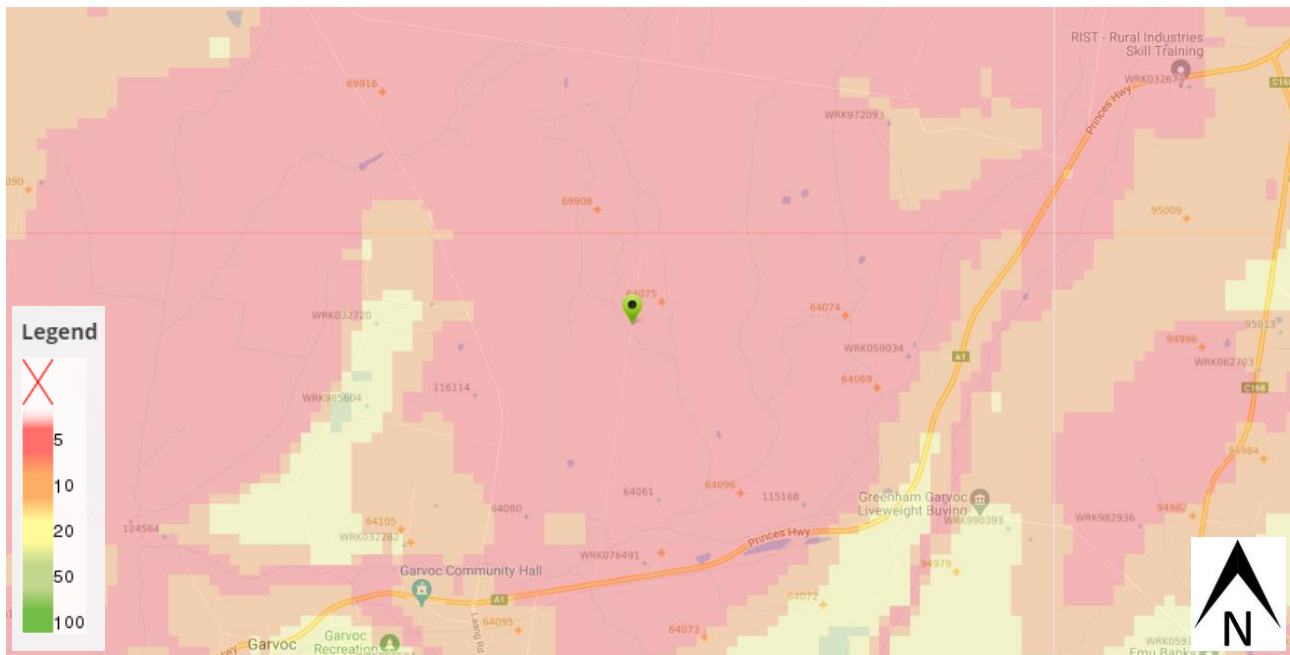
- Surface residual sands, possibly with some gravel, underlain by,
- Moderately reactive CLAY soils, underlain by,
- Non-reactive Clayey SAND at depth.

The depth to the non-reactive clayey SAND material may be shallow but variable across the site.

An effective design philosophy aimed at minimising excavation will provide a more cost effective and practicable approach at this site.

The subsurface geology will need to be confirmed through direct sampling methods.

The regional groundwater table appears to be located at a depth of less than 5m with reference to Visualising Victoria's Groundwater (VVG), reference (1); this is consistent with the groundwater table documented in multiple bores in the vicinity of this site.



*Extract from 'Visualising Victoria's Groundwater' database showing the approximate depth to groundwater being less than 5m*

Transient perched groundwater may form within the upper topsoils at shallow depths during the wetter months.

The regional groundwater regime would be investigated during a detailed geotechnical investigation, as necessary.

The geological setting is favourable in terms of interaction between the soil mass and groundwater regime.

### **Foundation options**

It is understood that loading conditions are relatively light for wind turbine structures, with overturning movements usually the critical loading condition in the order of 200kPa (peak edge pressures). The natural CLAY soil or clayey SAND should readily accommodate such loads.

It is expected that a mass pad footing will provide the most practicable foundation type for the structure.

Piled footings, and the use of cable anchors would provide further alternatives to a conventional pad type footing, however the final foundation design will be based on economics with all alternatives providing a stable foundation.

Subject to further investigation and the preferred design, it is expected that site specific difficulties should be readily negotiated.

Footings for the associated control booths could comprise conventional slabs, strips or pads, depending on construction methods and the soil profile encountered.



### **Pavements**

It is expected that access roads will be required for the construction of the wind farm and future maintenance.

Heavy construction vehicles and large cranes may be required during the construction period. Traffic frequency and loading conditions on access roads during construction may be high. However, post-construction traffic is likely to be low and comprise light vehicles for maintenance purposes only.

Subgrade properties may be poor, and pavement construction could be difficult during wetter months. Some form of subgrade improvement or geo-reinforcement may be required. This could include in situ lime/cement stabilisation upon which the pavement is constructed or placement of a geo-fabric on the stripped surface upon which the pavement is constructed.

Conventional construction practices should be able to accommodate the ground conditions on site (evidenced by existing roads and pavements).

### **Report notes**

This report contains information for the feasibility stage of the proposed development. Detailed geotechnical site investigation and reporting will be required for design purposes.

During the construction period, land may be disturbed and exposed to erosion. Erosion and sediment runoff can be minimised/controlled by adopting good construction practices referenced below (2), (3) and (4).

Further information regarding geotechnical site investigation reports is referenced below (5).

Should there be any further queries please do not hesitate to contact this office for further advice.

Yours faithfully,

**Melbourne Geotechnics Pty Ltd**

### **References**

1. Environment Protection Authority. 1996 *Environmental Guidelines for Major Construction Sites*. Best Practice Environmental Management.
2. Environment Protection Authority. 1991 *Construction Techniques for Sediment Control*. Publication 275.
3. Ransom, M.J., 1987: *Control of erosion on construction sites*. Department of Conservation Forests and Lands, Victoria
4. Geological Survey of Victoria. 1997. 1:100,000 Geological Map Series Port Campbell Sheet. Department of Natural Resources and Environment.
5. Institution of Engineers, Australia. 1987. *Guidelines for the Provision of Geotechnical Information in Construction Contracts*, Institution of Engineers, Australia, 1987.
6. Cochrane, G. W., Quick, G.W. and Spencer-Jones, D. (Eds), 1991. *Introducing Victorian Geology* Geological Society of Australia (Victorian Division).
7. Geology of Victoria Douglas et al 1976.