

15 MARCH 2012

Geotechnical Fact Sheet

Southern Berry bypass review

More information about geotechnical investigations

The RMS is investigating a bypass suggestion to the south of Berry.

The purpose of this investigation is to develop a cost estimate in a level of detail that provides clear guidance and certainty on whether cost is a factor in ruling out an option in this location.

This investigation includes geotechnical fieldwork to obtain information about the ground conditions in this area.

The importance of geology and ground conditions for the southern bypass cost investigation

It is essential to understand the geology and ground conditions of a site on which any structure is to be built. In this respect a road is the same as a building or any structure such as an embankment or bridge. Due to its length, a road will traverse different terrains and encounter changing ground conditions ranging from soft clays, saturated sands and gravels, sandstones and hard volcanic rocks. All these rock and soil types are present in the region.

The nature of the ground largely influences the engineering solutions and construction methodologies used for road construction and its associated structures. The accuracy of the cost estimate highly depends on these factors.

To date high-level cost estimates have been prepared for southern options without geotechnical fieldwork being undertaken. RMS made assumptions

about the depth and nature of soft soils and the presence of acid sulphate soils.

This geotechnical fieldwork is a major difference between the current investigation into a southern suggestion and previous investigations which relied on the extrapolation from nearby investigations and desktop maps. Based on experience, the area to the south of Berry is likely to have soft soils to varying depths and it is known that there is the potential for acid sulphate soils to exist, as mapped by Shoalhaven Council and the Department of Land and Water Conservation.

The geotechnical analysis will provide information about:

- The location and depth of soft soils.
- The degree of consolidation (water content) of soft soils.

Soft soils

Soft soils can range from 1 metre to 30 metres or more.

Soft soils require construction methods such as surcharging (preloading) along the route.

Constructing embankments could need soil, several metres higher than the embankment's final height, placed early as a surcharge load to accelerate the consolidation of the soft soils below. This surcharging process requires time as the additional weight of the soil pile presses down.

Roads and Maritime Services



RMS project achievements. Have a look.

www.rta.nsw.gov.au/roadprojects/resources/documents/reports/achievements_display_book.pdf

Soft soils (continued)

It can impact a construction program by several months and even years. There are alternatives, some being trialled on the Pacific Highway. But they cost money. We need to understand the depth of soft soil and then how surcharging or alternatives to deal with the soft soils, which tells us construction cost and how long construction could take.

Acid sulphate soils

The analysis will also provide information about the location of acid sulphate soils. We classify acid sulphate soils as:

- No known occurrence
- Low probability
- High probability

The presence of acid sulphate soils in the area to the south of Berry is in the “low probability” category.

If acid sulphate soils are present, environmental controls will be required to ensure that these soils do not enter the local water system during construction. Sulphate resistant cements could be required in the manufacturing of the concrete used for construction - which could increase the cost. We need to know how much acid sulphate, to cost how much treatment. This is likely to be a minor item in the whole cost equation (say for a \$300 million project).

Update on progress of geotechnical fieldwork

There is no information for a southern route and therefore a significant number of boreholes and other tests and samples will be taken along this route. Up to 20 bore holes were planned.

Supplementary sampling will be taken to better inform the north bypass route (2 more bore holes).

A delay to the geotechnical field work will delay the completion of the cost estimate. The recent prolonged wet weather has delayed the geotechnical fieldwork. Several of the planned borehole locations

were not accessible due to the rain and may not be accessible until the ground is dry enough so that you can drive heavy equipment onto the paddock. 9 have been done as at 15 March 2012. In addition, there are demands on RMS geotechnical resources from other areas of the state that have also been impacted by wet weather.

The original completion date of geotechnical field work was 30 March 2012. The current programmed date for completion of the field work is 13 April 2012.

For further enquiries: Foxground and Berry bypass project team

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