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## MIN-4282 - Epitaph Landslide

17 August 2023

Provide an update on the Epitaph Landslide on State Highway 6, near Knight's Point.

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### Waka Kotahi NZ Transport Agency's response:

#### Background

The Epitaph Landslide is a landslide feature on State Highway 6 (SH6 RP 713 / 5.8), approximately 3km south of the Knights Point Lookout and 22km north of Haast, and immediately adjacent to the Epitaph Rift feature. The landslide feature extends on the downslope side of the highway formation at an approximate elevation of 175m Above Sea Level (ASL) and continues to the shoreline.

The landslide occurred on 27 October 2012 during heavy rainfall that was preceded by a long period of sustained wet weather. The event triggering the landslide was assessed to be a 1-in-50-year return period event.

Following the landslide, horizontal drains were installed at the site to manage groundwater impacts on the slip area. An inclinometer was also installed at road level to monitor any ongoing deep-seated movement.

The site is monitored regularly, with routine visual inspections completed weekly. Post severe weather and detailed geotechnical inspections are completed six monthly.

#### Timeline

Below is a time series of events at the site since the initial slip.

- 27 October 2012 – initial slip occurred.
- August 2013 – Landslide Assessment and Options Report - geotechnical investigations undertaken to determine ground conditions.
- October 2014 – further movement noted at the site.
- January 2015 – geotechnical drilling undertaken to install inclinometers and piezometers and drainage drilling.
- May 2015 to October 2015 – site monitored monthly by Geotechnical Engineers.
- October 2015 to present day – site monitored with weekly visual inspections and post significant rainfall by NOC contractor and detailed geotechnical inspections completed 6 monthly or as required if significant changes are noted during visual inspections.
- March 2018 – Slope drainage drilling was completed.
- Since October 2015 there has been intermittent regression of the slope crest, which has reduced road shoulder widths.
- 2022/23 FY – development of management and instrumentation plan.



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## Current Status

The most recent geotechnical inspection of the site was undertaken on 7 March 2023.

Total lateral displacement of the slip has been no more than 140mm since inclinometer monitoring began in 2015.

The landslide head scarp has regressed at both the northern and southern margins, leaving less than 6m shoulder at the site.

Global slope stability has not deteriorated further, but an elevated risk to localised regression of the head scarp into the roadway remains.

## Site Management

Results of geotechnical monitoring and assessment of the site indicates that the global stability of this site is consistent with the level of service for this route and that monitoring is an appropriate site management strategy in the short to medium term.

## Future Work

### Low-Cost Low Risk Resilience – Real Time Monitoring

The Low-Cost Low-Risk Crown Funded Resilience Package of work includes an allocation of \$276,000 to provide real time monitoring at the site. It is proposed to install a range of monitoring equipment to provide real-time data on various key metrics at the site to identify changes in site conditions and allow more proactive management of the site risks. This data will be used to inform operational decision making, including incident management if there is any deterioration in site conditions, and can be incorporated into real time travel information for road users. The project is in the detailed scoping phase and is expected to be completed in the 2023/24 financial year.

### South Island Resilience Project - SH6 Knights Point to Hawea Corridor Resilience

The South Island Resilience Project includes the SH6 Knights Point to Hawea Corridor. It is intended to undertake a detailed review of the network risk and identify high risk sites, undertake options assessments to treat these locations and develop concept or preliminary design stage solutions for the preferred option. The Knights Point to Hawea corridor is included in the 2nd tranche of project works, expected to commence April 2024, and specifically identifies Epitaph as an existing critical-risk site to be assessed, along with Orman Falls, Clarke Bluff, 90ft Falls, The Hinge, Diana Falls and the Gates of Haast.



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## Site Photos



Photo 1: Geotech Monitoring Site Plan



Photo 2: Epitaph Landslip Crest: Looking south from the northern corner of head scarp