



ABN 91 006 855 689

SOIL TESTING & GEOTECHNICAL CONSULTANTS

ACN 006 855 689

26 March 2025

Civiltest Ref: 1222044-16
WR22038

Mr David Graj
On behalf of Mr Gerry Borghesi
Of 10-12 View Point Road
MCCRAE VIC 3938

Dear Mr Graj,

RE: 10-12 View Point Road MCCRAE

Up to the present, the geotechnical investigation work at the above property has revolved around the 2022 landslide, with particular emphasis on how to mitigate the risk to the residents of Penny Lane so that their emergency evacuation order can be lifted. Through collaboration between Mornington Peninsula Shire Council, Civiltest, PSM and A.S. James Pty Ltd, it was agreed that a structural debris barrier constructed between Penny Lane and the landslip area was the best option to address this.

Civiltest conducted a risk to life assessment, the most recent issue dated 26 September 2024, in regard to landslide in the affected area of 10-12 View Point Road MCCRAE due to the landslide in November 2022, as shown below. It should be noted that as it stands, the residents downslope (2 Penny Lane, 3 Penny Lane, and potentially 605 Point Nepean Road) of the hillside/landslide affected areas are most at risk under the current conditions of the site 10-12 View Point Road, as the debris barrier has not yet been constructed, **however this has been omitted from this document, which focuses on the risk to life for the residents of 10-12 View Point Road.**

RISK ASSESSMENT TO LIFE SEPTEMBER 2024:**Hazards A & B – Risk to Residents at 10-12 View Point Road**

The risk to life in the event of an earth slide is considered as follows:

$$R_{(LOL)} = P_{(H)} \times P_{(S:H)} \times P_{(T:S)} \times V_{(D:T)}$$

Where $P_{(H)}$ is the annual probability of the hazardous event (e.g. Landslide)

$P_{(S:H)}$ is the probability of spatial impact multiplied by the hazard (e.g. of the landslide impacting a location that people might occupy taking into account the travel distance of the landslip) given the event

$P_{(T:S)}$ is the temporal probability (e.g. the occupation of 10-12 View Point Road at the time of the event) given the spatial impact

$V_{(D:T)}$ is the vulnerability of the individual (the probability of loss of life given the event)

For each conceivable event as described above, the risk to life is calculated using the formula stated above.

$P_{(H)}$ for Hazard A has been based on the assumption that small to medium landslides in the area under heavy rains are LIKELY – a 1 in 50 year event.

$P_{(H)}$ for Hazard B has been based on the assumption that large landslides in the area under heavy rains are POSSIBLE. – 1 in 1000 year event.

$P_{(S:H)}$ for hazard A and B is estimated based on the size of 10-12 View Point Road dwelling and the distance from the landslip area.

$P_{(T:S)}$ is calculated based on the assumption that the person who occupies the dwellings most frequently is present 5 days a week.

$V_{(D:T)}$ has been calculated from Appendix F, AGS (2007) (e.g. debris strikes building only).

Risk to Life Calculations – Current conditions

Hazard	P_(H)	P_(S:H)	P_(T:S)	V_(D:T)	R_(DI)
A) Earth FLOW/SLIDE – Risk to people in garden/walkway	2×10^{-2}	0.5	0.01	0.5	5×10^{-5}
B) Earth SLIDE – Risk to 10-12 View Point Road residents	1×10^{-3}	0.5	0.67	0.2	6.7×10^{-5}

The above risk assessment concludes that the risk to life is 6.7×10^{-5} for the individual most at risk on the property of 10-12 View Point Road. The following assumptions were made in arriving at the risk to life value:

- The drainage works on View Point Road and on the slope are to be reasonably maintained to avoid water infiltration and pore pressure buildup.
- Time spent in the garden/walkway area will be no greater than **a sum of 15 minutes per day in total (on average), adding all the time spent by all individuals.**

To expand on the above, the nature of assigning a risk to life value to a potential landslide is not an exact science. If new information becomes available, or if different assumptions are made when selecting the parameters as described above, then a different conclusion may be drawn from the assessment. For example, the above assessment nominates two types of landslides that may occur on the site (and has occurred as of January 2025), and based on site assessments have been given probabilities of 1 in 50 years (small to medium landslide) or 1 in 1000 years (large landslide), with the general note that this is with reasonably maintained drainage conditions.

Sub-surface pore pressure (water pressure) build up is usually the main trigger of a landslide, and as such the P(H) probabilities selected above are highly dependent on how groundwater is managed in an area susceptible to slope instability. As the most recent landslip has shown, subsurface water is an issue at this site. If the most recent landslip (January 2025) has caused a permanent localised release of the pore pressure buildup, then this would mean that the risk of landslide will go down if a reasonable angle of repose/remediation system is implemented. If the groundwater issues persist, then the site will be at increased risk of further landslips.

The other parameters could be examined with scrutiny as well, for example the temporal probability, i.e., the probability that a large landslide would occur while the individual most at risk is at home, has been assumed to be 67%. This isn't a geotechnical parameter and anyone could use a value they deem more appropriate to make the calculation.

To conclude, anyone who reads this document should take time to understand the assumptions made and carefully read the description of each parameter and what value has been chosen for each, to try and understand how the overall risk rating is formed.

Should you require any further information regarding this matter, please do not hesitate to contact me at our Mornington office.

Yours faithfully,

Personal Information

DANIEL TOLAN
GEOTECHNICAL ENGINEER
CIVILTEST PTY LTD

REF: DT/jy/sb