Office 16
Level 4, 60 Moorabool Street
Geelong VIC 3220
P +61 3 7068 5699
E mailbox@psm.com.au
www.psm.com.au

Our Ref: PSM5665-033L

25 February 2025

Associate
Harwood Andrews
79 Gheringhap Street, Geelong, VIC 3220
lhovendene@ha.legal

Attention: Leesa Hovendene

Dear Leesa

RE: MCCRAE LANDSLIDE INCIDENT
TEMPOARY WORKS PROPOSAL

1. Introduction

This letter provides details of proposed additional Scope of Services (**Scope**) for PSM to support the development and implementation of temporary works at, and around, the McCrae Landslide Incident (the **Site**). The Scope would form an additional stage of works to that identified in our initial reverse brief (Ref. PSM5665-016L, dated 6 February 2025).

This proposal has been prepared at the request of Mornington Peninsula Shire Council (**Council**) and Hardwood Andrews (**HA**).

2. Background

2.1 Hazards

The Site has over steepened and unstable material on the slope because of the 5 January 2025 and 14 January 2025 Landslides. With time, the ground conditions and stability of the ground are anticipated to deteriorate. We understand that council is concerned with risks posed by deterioration of ground conditions in and around the landslide.

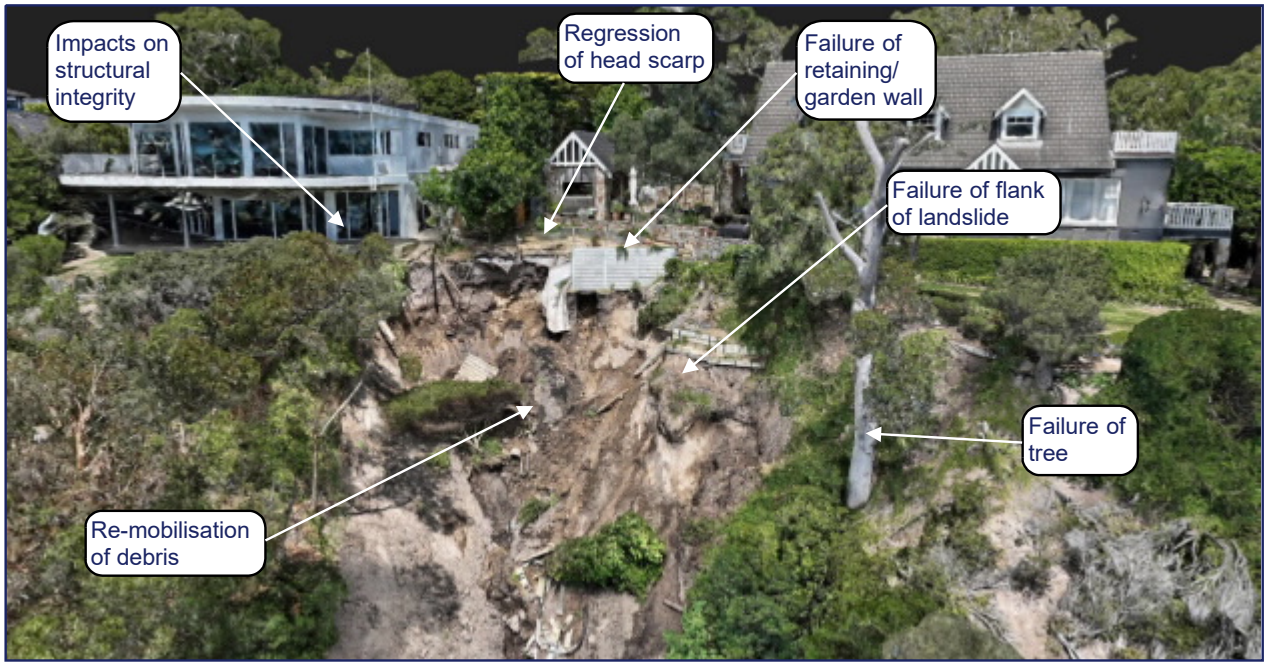
At the request of Council, PSM has identified key immediate or short-term hazards at the Site. We have identified the following hazards:

- Regression of landslide head scarp, leading to volumes of soil and debris sliding or flowing downslope
- Failure of undercut material in landslide flanks, leading to volumes of soil and debris sliding or flowing downslope
- Mobilisation and flow of previously failed material remaining on upper slope
- Uncontrolled collapse of retaining walls or garden walls, which may tumble or slide downslope. Soil and material behind the wall may also then collapse due to a lack of support
- Failure/overturning of large trees
- Undermining of structural foundations with subsequent damage or collapse of structures.

Examples of these hazards are presented in Inset 1.

Without intervention these hazards may lead to the following consequences:

- Death or serious injury to any persons to persons in vicinity of landslide including persons:
  - Behind crest of failure
  - On mid slope or at base of slope
  - Adjacent to flanks of landslide
- Major to catastrophic damage to 607 Point Nepean Rd
- Major to catastrophic structural damage to 6 View Point Rd
- Debris/Soil runout reaching Point Nepean Rd creating road safety risk to road users and pedestrians.



Inset 1: 3D model of upper zone of landslide with examples of identified hazards

2.2 Temporary Works Objectives

We understand Council may elect to undertake temporary works to reduce the number of, or size of hazards. The full scope of any temporary works has not yet been fully developed. Currently we understand that at least an initial round of temporary works may be undertaken consisting of small-scale excavation and slope flattening. We highlight that following the completion of these initial temporary works, the Site is not likely to be considered "safe", however risk from immediate hazards could be substantially reduced.

This initial temporary works may help to support any future activities at the site by either Council or Private Landholders. Future activities could include:

- Additional temporary works
- Demolition and removal of the building at 3 Penny Lane
- Clearing of landslide debris
- Geotechnical/forensic investigations
- Short- and long-term stabilisation.

3. Proposed approach

3.1 General

Broadly we expect the initial temporary works may require:

- Trimming/flattening over steepened slopes to returning the slope geometry back to the pre-fill slope geometry (Circa early 2022 and date of last feature survey by property owner) where possible
- Removal of potentially unstable vegetation
- Removal of potentially unstable structures (e.g. retaining wall, garden walls, etc).

We recommend that the temporary works are undertaken (at least initially) by small scale top-down excavation using hand tools and rope access techniques. Our recommendation is based on our experience in the management of and construction within active landslides as well as consultation with contractors experienced in remediating landslides. Hand excavation is preferred over machine excavation for the following reasons:

- Avoids demolition of existing buildings
- Limits or avoids removal of vegetation
- Not restricted to machinery reach limits (i.e. can work across whole slope, not just where it can reach)
- Allows greater precision and control in excavation.

Once the initial hand excavation work has been completed it may then be suitable for a machine to access from the base of the slope and complete any removal of material from the slope.

Excavation in and work on/around landslides is hazardous. Works at the site require careful planning and management to understand and control the associated risks. Contractors and Designers must be experienced in works on and around landslides. Further, landslides are dynamic, meaning it is difficult to foresee and plan for all hazards in design. Instead, a progressive and collaborative approach to works is necessary, i.e. initially a small amount of excavation is completed, and the performance is observed by the Contactor and Designer with the approach updated as needed prior to the next round of excavation.

3.2 Permit to Excavate

We recommend that a Permit to Excavate (PTE) approach is adopted as the primary methodology for controlling and mitigating geotechnical risk during construction works. The PTE approach is collaborative and formalised approach to managing geotechnical risk.

The PTE approach is summarised as follows:

- A PTE is an agreement between key parties to carry out a specific scope of excavation works for a finite period (normally 24 hours) and subject to implementation of nominated control measures
- Prior to issuing a PTE key parties jointly meet (the PTE Meeting) to discuss proposed activities, required control measures, available information on ground conditions, required monitoring and verification activities
- Once all parties have reached agreement, the PTE is signed by each party and work is permitted to proceed in accordance with the conditions of the PTE. Note the roles of each party are/will be clearly defined
- Following the initial PTE, the performance of previous excavations, and the inspection results are also considered at PTE meeting prior to issuing of the next PTE
- Key controls of the PTE process include:
  - The PTE is voided where and all works must stop until a new PTE is issued where,
    - conditions are found to differ to those expected, or where
    - an adverse event occurs (e.g. heavy rainfall, landslide, earthquake)
  - Nomination of clear restriction on excavation activities, including what is permitted to be excavated, and what material must remain in place

- Nomination of conditions (e.g. all works must be observed by the Designer, monitoring points must be installed, etc.)
- Nomination of exclusion zones
- Nomination of monitoring or slope performance indicators that would require a stop to the works.

Typically, the following parties would be involved in the PTE process and would be signatories to the PTE:

- Principal
- Contractor (Project Engineer and Site Foreman)
- Designer
- Surveyor (optional).

Key advantages of the PTE approach include:

- It allows for ongoing and dynamic response to geotechnical risk at the site
- It allows for less conservative design whilst providing appropriate management of risk
- It improves communication across parties and helps to ensure all parties have a consistent understanding
- It provides a clear and documented approach to geotechnical and safety risk.

Where the PTE approach is to be adopted, it is important that the PTE approach is adopted prior to undertaking design work. In this dynamic and variable environment, it is crucial that the Designer considers the construction works approach and risk control measures to be implemented during construction. Where a different approach to PTE is adopted, it may necessitate alternative design approaches. For example, where no control measures or verification is undertaken during construction a more conservative design is more appropriate so that it accounts for variability and uncertainty in ground conditions and slope performance. We note at this Site a conservative design may not be acceptable to Council for a number of reasons (e.g. an overly flat slope angle that would undermine building structures).

4. Proposed scope

We provide herein our proposed Scope to support HA and Council to implement initial temporary works at the Site. We anticipate PSM's scope to have four stages as follows:

1. Preliminary feasibility works
2. Temporary works design
3. Pre-construction support
4. Construction phase services.

4.1 Item 1 – Preliminary Feasibility Works

Prior to Council committing to completing temporary works at the Site, PSM will support Council by undertaking the following activities:

- Preliminary discussions with suitable Contractor
- Investigation of foundation depth at 6 View Point Road
- Attendance at meetings with Council.

4.2 Item 2 – Temporary Works Design

The temporary works design phase will develop design solutions and documentation necessary to allow a principal contractor to understand the required works.

Works undertaken as part of the temporary works design phase will include:

- Temporary works design
  - Hazard identification
  - Development of control measures
  - Preparation of documentation to support engagement of contractor by Council. This may include:
    - Specifications
    - Drawings/sketches
    - Marked up photographs/3D model
    - Written scope of works
- Undertake safety in design review and workshop.

4.3 Item 3 – Pre-Construction Support

Activities undertaken by PSM during the pre-construction phase will include:

- Implementation of PTE process
- Participation in joint safety and risk management workshop prior to commencing works
- Responses to Contractor RFIs
- Attendance at various meetings with Contractor, Council, Residents, etc. as required.

4.4 Item 4 – Construction Phase Services

Activities undertaken by PSM during the construction phase will include:

- Collaboration in day-to-day PTE process including attending PTE meetings and reviewing data
- Provide on-site presence during construction works
- Responses to Contractor RFIs
- Updates to design where required
- Attendance various meetings with Contractor, Council, Residents, etc. as required.

5. Fee estimate

These proposed works would form additional scope to that detailed in our Reverse Brief (ref PSM5665-016L). Work will be undertaken in accordance with our Schedule of Rates and Terms of Agreement detailed in that letter.

For budgeting purpose, our estimate of fees to undertake the proposed Scope is summarised in Table 1.

Table 1 – Fee estimate breakdown

Item No.	Description	Fee (excl. GST)
1	Preliminary feasibility works	Irrelevant & Sensitive
2	Temporary works design	
3	Pre-construction support	
4	Construction phase services[1]	
	Total	TBC

Notes:
(1) Construction phase services fees are a function of the length of the time required to complete the works. We have estimated a range of fees based on a construction period of 2 to 4 weeks, as construction timeframe cannot be reliably estimated until completion of temporary works design and initial consultation with Council's preferred Contractor.

6. Closure

We trust this proposal is suitable for your current requirements. We will continue to update HA and Council as the scope evolves.

We request HA confirm acceptance of this proposal by return correspondence for our records.

Should you require any further information at this time to support our engagement, please do not hesitate to contact the undersigned.

Yours Sincerely

Personal Information

DANE POPE
PRINCIPAL