



Our Ref: PSM5665-036L

17 March 2025

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Attention: Ben Broadhead

Dear Ben

**RE: MCCRAE LANDSLIDE - STORMWATER AND SEWER INVESTIGATION PROPOSAL -
REVERSE BRIEF**

1. Introduction

PSM is pleased to present our reverse brief to provide a stormwater and sewer investigation for the services located between View Point Drive, Coburn Avenue to Outlook Road, McCrae. This reverse brief has been prepared following the letter of instruction issued on 23 January 2025 from Harwood Andrews (HA).

This Scope of Services (the “**Scope**”) have been prepared to cover the **Investigation Area** outlined in Figure 1.

2. Background

PSM understands that the residential neighbourhood in the investigation area outlined in Figure 1 has experiencing ongoing issues with surface water and shallow perched groundwater. Two notable events are:

- A water main owned by South East Water (SEW) burst and or was leaking between Bayview Road and Mornington Peninsula Freeway near Outlook Road.
- Inferred seepage at the intersection of Coburn Avenue and Charlesworth Street was significant enough such that Coburn Avenue became non-trafficable and required a road closure.

As part of our work on the McCrae landslide project, PSM have undertaken multiple site walkovers between 16 January 2025 to 27 February 2025 to understand access constraints and potential surface and subsurface water flow paths.

3. Scope of Work

3.1 Item 1 - Non-Intrusive Work

3.1.1 Item 1A - Comprehensive walkover of stormwater and sewer asset

The aim of the comprehensive walkover of the stormwater and sewer assets in the investigation area is to identify surficial markers of water, such as fresh vegetation and likely water-induced deformation (collapse settlement, reflective cracking or settlement bowling in pavements). We have completed preliminary walkovers of the majority of the relevant area. Areas that remain to be inspected include Margaret Street and the connection between Coburn Avenue and Margaret Street and Coburn Avenue and Waller Place.

The comprehensive walkover will include detail of relevant observations in plan. The extent of the comprehensive walkover will cover the Investigation Area in Figure 1 and may be extended to include Coburn Creek.

3.1.2 Item 1B - SEW investigations in Charlesworth Street

SEW/MPSC investigations in Charlesworth Street that were observed by PSM on 16/01/2025 and 30/01/2025 will be presented.

Please note that SEW have not shared water chemistry testing data with MPSC. The review of SEW investigations is excluded from scope until SEW shares all relevant information.

3.1.3 Consideration of CCTV

PSM has made an allowance to consider CCTV footage gathered by MPSC. We can update our proposed test locations based on completion of this task. Note that this requires the CCTV footage to be provided on commencement of this scope of work.

3.2 Item 2 - Intrusive Work

Note that during all intrusive work a PSM Geologist/Geotechnical Engineer will be present during the works on a full-time basis to:

- Direct the drilling/excavation
- Provide field logs of the materials encountered
- Install VWP's and standpipes
- Backfill test locations.

We have allowed ten days (10) to complete the scope of intrusive work which would comprise:

- Two (2) days of service locating
- Two (2) days of predrilling with a ute mounted drill rig
- Six (6) days of non-destructive tests (NDT) in up to 13 locations including installation of instrumentation.

3.2.1 Item 2A - Non-destructive drilling to install VWP monitoring and standpipes

The aim of this intrusive work is to install groundwater monitoring instrumentation in service trenches. This can then support development of groundwater models and potentially be used to assess cause of instability on View Point Road. The proposed scope includes:

1. A series of Non-Destructive Tests (**NDTs**) in stormwater and sewer locations selected based on observations made during preliminary walkovers
2. Installation of monitoring such that there will be automated groundwater data collection. Data loggers will be used to capture response to rainfall or other transient events.

Figure 1 presents our proposed locations based on the preliminary site walkovers. We will update locations and notify relevant parties if we propose changes after the findings of the comprehensive site walkover. Appendix A includes a table of estimated depths and proposed instrumentation.

For the NDTs PSM would:

- Complete up to 13 NDTs excavated to the invert of the stormwater or sewer trench, indicative locations are shown in Figure 1.
 - Each NDT will be located in close proximity to both the stormwater and sewer trenches
 - NDTs would employ a vacuum excavation truck specialised for non-destructive drilling
 - A licensed surveyor would be engaged to survey all test locations
 - NDT locations:
 - Will be advanced using vacuum and water and with support by PVC casing where needed
 - Where possible (i.e. where there is no indication of electrical services) locations would be predrilled to 1 m above the reported invert levels. This is to accelerate the excavation time with vacuum and water without the risk of striking an asset. This would be completed using auger drilling techniques on a ute-mounted rig.
- Where water is encountered in the standpipes a sample would be retrieved for water quality testing
- NDT investigation locations will be “scanned” by a service locator to identify the location of the relevant assets and the presence of other buried services. We have reviewed the available drawings of buried services on Site provided by MPSC, and considered the Dial Before You Dig (DBYD) drawings.
- Note that locations NDT01 and NDT02 have already been completed.

For the monitoring installation:

- In stormwater trenches a standpipe piezometer would be installed at the base of the trench, equipped with a hobo datalogger, screened with sand/gravel, and sealed with a bentonite plug
 - Where instruments are installed within properties the standpipe would be covered by an irrigation valve box
 - Where instruments are installed in public places (e.g. nature strip or road) the standpipe would be covered by a steel gatic cover and concrete plug.
- In sewer trenches a VWP would be installed at the base of the trench, equipped to a single channel datalogger, screened with sand/gravel, and capped with a bentonite slurry. The VWPs would be attached to a monument installed on the nature strip or in private property.

3.2.2 Item 2B - Investigation and monitoring of the ruptured water main at Outlook Ave

The aim of this intrusive work is to install the necessary instrumentation whether this asset is a potential water source into the investigation area, works would comprise

- One (1) NDT advanced using a hand auger (time permitting a vacuum truck and water may be used) excavated to the invert of the water main at the busted water main near Outlook Road
- An open standpipe will be installed at this location with the same details as the stormwater trenches (i.e. standpipe with datalogger).

3.2.3 Item 2C - California Bearing Ratio (CBR) tests on the pavement at the intersection of Coburn Avenue and Charlesworth Street

The aim of the CBR tests is to assess the contribution of subgrade to the failed pavement. PSM would complete two (2) small hand excavations in the failed section of Coburn Avenue. This is primarily to log the subgrade type and to retrieve two (2) bulk samples for CBR testing from the pavement at the intersection of Coburn Avenue and Charlesworth Street where the road failed. These samples will be sent to a NATA accredited laboratory for testing.

3.2.4 Item 2D –Data collection

PSM would attend Site to collect piezometer data. We have made allowances to complete this up to three times and would combine this with other site visits in the McCrae area for commercial efficiencies.

3.3 Reporting

Following completion of the fieldwork, PSM will provide a factual report including:

- Borehole log reports
- Laboratory testing results
- Defect logs in CCTV reports (by others)
- Groundwater monitoring installation records
- Groundwater monitoring results.

Once a Brief is confirmed with MPSC an interpretive report can be provided. The scope of an interpretive report is excluded from this proposal.

4. Fees and Basis of Engagement

Our estimated fees to undertake the items discussed in Section 3 is presented in Table 1. We have separated the estimated fees for the sub-contractors and equipment/testing required for the fieldwork.

Work outside the scope above (e.g. meetings) are proposed to be undertaken on a time and expense basis based on our rates in Table 1.

Table 1 – Fee Breakdown

Item	Comments	Fee (Excl. GST)
Early works – walkovers and inspection of SEW trenches/water main locations	Invoiced in January and February 2025	Commercial in Confidence
PSM Geotechnical Site Investigation and Report	PSM fees	
Service Locating Subcontractor	Disbursements	
Surveyor		
Pre-drilling (auger rig) and backfill		
Laboratory Testing		
Groundwater testing (small variation to be captured in JBSG scope for EO Area investigation)		
Groundwater Monitoring Equipment Supplier		Quote for EO area to be updated as required.
Total		Commercial in Confidence
Instrumentation data collection	PSM fees	

4.1.1 Assumptions

The following assumptions have been considered for this scope of work:

- The proposed fieldwork can be undertaken during normal business hours, i.e. (7am to 5pm Monday to Friday)
- The vacuum excavation truck and operator will be supplied by MPSC
- No allowances for vandalism or sabotage of equipment have been made
- No specific environmental controls are required for the fieldwork
- Test locations will be backfilled with crushed rock (class 2) and capped with bentonite powder/pellets

- Piezometer construction would be completed by PSM
- Traffic management where required will be supplied by MPSC
- The fieldwork can be undertaken with standard PPE
- No permits are required for the fieldwork
- MPSC will inform the various property and asset owners of upcoming works as required
- PSM envisions that we could retrieve groundwater monitoring data as part of routine visits to the site. Additional data collection and decommissioning the monitoring systems is considered out of scope.

5. Timing

Upon receiving approval and subject to vacuum truck availability, we can commence planning the fieldwork, our anticipate timings are presented in Section 3.2 and summarised as follows:

- Fieldwork: 10 business days
- Laboratory testing: 12 business days
- Draft reporting: four to six weeks (allows for one month of groundwater monitoring data to be captured)
- Revisions of reports: one to two weeks following groundwater monitoring events.

We can issue our factual report within four to six (4 to 6) weeks of completing the site work subject to the turnaround of laboratory testing results and groundwater monitoring events.

PSM will update the project program that was provided in PSM5665-016L (6 February 2025).

Note that this investigation may require significant rainfall events to occur for trends to be established. MPSC can expect that monitoring will likely extend into the wet season. The data loggers proposed to be used can be used effectively for years to establish longer term trends. Please note, this does not mean that this amount of time is needed to draw meaningful conclusions regarding the data set.

Should there be any queries, please do not hesitate to contact the undersigned.

Yours Sincerely

Irrelevant & Sensitive

**DANE POPE
PRINCIPAL**

Encl	Figure 1	-	Proposed Stormwater and Sewer Investigation Plan
	Appendix A	-	Table of Proposed NDT Locations
	Appendix B	-	Schedule of Rates and Terms of Agreement – July 2024



- Legend**
- Proposed Site Investigation Locations
- Extent of Comprehensive Walkover
- Proposed Intrusive Work
- HA
 - NDT
- Council Services
- Stormwater Pipes
 - Stormwater Pits
- SEW Services
- Water Main Pipe
 - Water Main Fitting/Valve
 - Water Main Hydrant
 - Sewer Main Pipe
 - Sewer Main Maintenance Hole
- Cadastral
- Cadastral Boundaries

NOTES:
1. Aerial imagery taken on 18 January 2025 from Nearmaps.

Scale 1:2,000

0 20 40 60 80 100 m

Grid: EPSG:7855

P S M	Created By: SD	Revision: A
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Hardwood Andrews
10-12 View Point Rd, McCrae

**PROPOSED STORMWATER
AND SEWER
INVESTIGATION PLAN**

PSM5665-036L	FIGURE 1
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Appendix A

Table of Proposed NDT Locations

Proposed hole location	Targeted Asset	Proposed Instrumentation	Approximate depth to asset invert (m)
NDT01	-	Standpipe with datalogger	-
NDT02	Sewer	VWP with datalogger	3.8
NDT03	Stormwater	Standpipe	Assumed shallow (<1.5 m)
NDT04	Sewer	VWP with datalogger	3.9
NDT05	Stormwater	Standpipe	Assumed shallow (<1.5 m)
NDT06	Sewer	VWP with datalogger	1.5
NDT07	Stormwater	Standpipe	Assumed shallow (<1.5 m)
NDT08	Sewer	VWP with datalogger	1.5
NDT09	Stormwater	Standpipe	1.5
NDT10	Sewer	VWP with datalogger	< 1.0
NDT11	Sewer	VWP with datalogger	< 1.0
NDT12	Sewer	VWP with datalogger	1.6
NDT13	Sewer	VWP with datalogger	2.3

Appendix B

Schedule of Rates and Terms of Agreement – July 2024



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SCHEDULE OF RATES AND TERMS OF AGREEMENT – JULY 2024

PSM provides services on the basis of hourly rates and disbursements in accordance with the following schedule and the attached Standard Terms of Agreement unless different rates and terms are agreed on a project specific basis.

RATES (AUD):

Principal	per hour
Associates	per hour
Senior Engineers/Geologists	per hour
Engineers/Geologists	per hour
Draftsperson	per hour
Engineering Assistants	per hour
Project Administrator	per hour

Commercial in Confidence

Rates for Legal matters such as briefing lawyers and barristers and provision of expert evidence are 1.5 times standard rates.

DISBURSEMENTS INCLUDE:

Travel expenses*
 Courier, freight, postage
 Photography, report printing
 Laboratory testing and field equipment
 Research materials (e.g., maps)
 Training, induction, medicals
 Kilometrage
 Other authorised contractor expenses
 Senior Personnel travel time (greater than six (6) hours)
 Standby time (greater than six (6) hours)

Commercial in Confidence

In addition to above list, additional disbursement may include specialist software and hardware, which costing will be included in the proposal (Commission).

*Includes airfares, taxis, visa application, meals, parking, toll, car hire, and accommodation. Business class airfares will apply for Senior Personnel.

GST at 10% is applied to the above rates and costs.

STANDARD TERMS OF AGREEMENT

Agreement

1. The contractual relationship ("**Agreement**") between PSM and the client ("**Client**") is constituted by:
 - a. These Standard Terms of Agreement ("**Terms**")
 - b. The letter that accompanies these Terms ("**Commission**"); and
 - c. Any other document the parties have agreed in writing forms part of this Agreement.
2. The Client shall be deemed to have accepted that this Agreement applies to the Services on the earlier of:
 - a. The date of the Commission; and
 - b. Substantial commencement by PSM of the Services.

PSM Responsibilities

3. PSM shall provide to the Client the consulting engineering services described in the Commission, together with such other services as may be agreed from time to time "**Services**" on the terms and conditions of this Agreement.
4. In providing the Services, PSM shall exercise the degree of skill, care and diligence normally exercised by consulting engineers in similar circumstances at the time the Services are provided.

Client Responsibilities

5. The Client shall provide to PSM:
 - a. Briefings, documents and all other information and/or materials concerning the Client's requirements for the Services
 - b. Directions, instructions, and decisions, sufficient to enable PSM to perform the Services in accordance with this Agreement; and
 - c. PSM is entitled to rely on any such documents and materials, information, directions, instructions and decisions.
6. The Client must:
 - a. Procure sufficient access to any premises or sites necessary for PSM to perform its obligations in accordance with this Agreement; and
 - b. Promptly give written notice to PSM of its representative who is deemed to have full authority to act on its behalf for all purposes in connection with the Services.

Payment

7. The Client shall pay to PSM the fee and the reimbursable expenses ("**Fee**") as set out in the Commission.
8. PSM shall invoice the Client on a monthly progress billing basis.
9. All monies payable by the Client to PSM shall be paid within 30 days of invoice. Monies not paid within that period shall attract interest from the date of invoice until payment at the rate applicable to PSM's operating overdraft with its principal bankers plus a further 3%. In addition, the Client will be responsible for all debt recovery and legal costs incurred by PSM, plus a further 3% on such costs.

Variations

10. If the Client proposes a change to the scope of the Services, PSM may notify the Client whether the proposed change can be effected and, if so, provide PSM's estimate of the:
 - a. Cost of the proposed change; and
 - b. Effect on the time for performance of the Services, including any date for completion of the Services.
 The Client may by written notice accept PSM's estimate, in which case the Services, the Fee and the time for performance of the Services are adjusted accordingly.

11. If a new law or change in law after the date of PSM's proposal necessitates a change to the Services, then the extent to which the Services are changed by that legislative requirement shall be a deemed change to the Services and the Fee and the time for performance of the Services are to be adjusted by a reasonable amount and period respectively.
12. If PSM is delayed in performing the Services due to an event or circumstance beyond its control, then:
 - a. The date for completion of the Services shall be extended by the extent of the delay; and
 - b. PSM shall be entitled to the additional costs and expenses reasonably incurred as a result of that delay.

Liability

13. To the maximum extent permitted by law and subject to paragraph 14 below, the liability of PSM to the Client arising out of or in any way in connection with the Services, the performance or non-performance of the Services and/or this Agreement, whether under the law of contract, tort (including negligence), equity or otherwise, shall be limited to the cost of rectifying the Services or the sum of Commercial in Confidence whichever is the lesser. The provisions of this paragraph 13 continue to apply notwithstanding breach of a fundamental term, rescission, frustration, repudiation, or termination for any reason whether deliberate, unintentional or by operation of law.
14. PSM is not liable to the Client in respect of any loss of use of any property, loss of profit, loss of income, loss of revenue, loss of business, loss of contract, loss of goodwill, loss of opportunity, loss of anticipated savings, loss of production or for any indirect or consequential loss or damage which may be suffered by the Client in connection with the Services and/or this Agreement, whether present, or future, fixed or unascertained, actual or contingent.
15. Notwithstanding anything to the contrary, PSM shall have no liability to the Client and will be deemed to have been discharged from all liabilities, whether under the law of contract, tort, (including negligence), equity or otherwise at the expiration of the period of one year from the date of PSM's tax invoice in respect of the final amount claimed by PSM pursuant to clause 7, and the Client (and persons claiming through or under the Client) shall not be entitled to commence any action or claim whatsoever nature against PSM (or any employee of PSM), in each case arising out of or in any way in connection with the Services, the performance or non-performance of the Services and/or this Agreement after that date.

Intellectual Property

16. Intellectual Property Rights in all drawings, reports, specifications, bills of quantity, calculations and other documents and/or any other materials prepared by PSM arising out of or in any way in connection with the Services, including any documents and/or materials provided to the Client, vests in PSM.
17. Subject to clause 18, PSM grants to the Client an irrevocable licence to use that material for any purpose for which the Services are provided.
18. If the Client is in breach of any obligation to make a payment to PSM, PSM may at its discretion and without incurring any liability:
 - a. Revoke the licence referred to in clause 17, whereupon all the Client's rights in respect of the documents referred to in clause 16 shall terminate and those documents (and all copies thereof) must forthwith be delivered by the Client to PSM; and
 - b. Suspend the provision of the Services.

Disputes

19. PSM and the Client agree that if any dispute or difference between the parties "**Dispute**" arises in connection with the Services or this Agreement, then the parties must, in good faith, subject to paragraph 19(d), attempt to resolve the Dispute in accordance with the procedure set out in this paragraph below as a condition precedent to commencing any legal proceedings:
 - a. If the Dispute is not resolved within fourteen [14] calendar days after a notice of dispute given under paragraph 19 is received by the other party, the Dispute must be referred to the parties' respective Chief Executive Officers who shall confer at least twice to resolve the Dispute or agree on a method of doing so. All aspects of these conferences except the fact of occurrence shall be privileged.

- b. In the event that Chief Executive Officers are unable to resolve the Dispute, the parties will within a further fourteen [14] calendar days agree on a process to resolve the Dispute without court proceedings which may be either:
 - i. An independent expert
 - ii. Mediation; or
 - iii. Arbitration.
- c. The parties must meet to agree on:
 - i. The selection of any third party to be engaged by the parties and the involvement of any dispute resolution organisation
 - ii. Any procedural rules
 - iii. The timetable, including any exchange of relevant information and documents; and
 - iv. The place where meetings will be held.
- d. Each Party must bear its own costs of endeavouring to resolve and of resolving a Dispute and the parties must bear equally the costs of any third party engaged.
- e. If the Dispute has not been resolved within a further twenty eight [28] calendar days, either Party may terminate the Dispute resolution process by giving written notice to the other party and may commence litigation in respect of that Dispute.
- f. The requirements in the preceding paragraphs do not prevent PSM from:
 - i. Instituting proceedings to enforce payment under this Agreement or to seek injunctive or urgent declaratory relief; and
 - ii. Acting pursuant to clause 18.

Modern Slavery

- 20. The parties must ensure to not engage in Modern Slavery (bears the same meaning given under the Modern Slavery Act 2018 (Cth) or any other relevant law which has as its objective the prohibition of exploitation of workers, human trafficking, slavery, slavery-like behaviour, involuntary servitude, forced marriage, forced labour, child labour, debt bondage or deceptive recruiting for labour or services (or similar), and when performing its obligations under the Agreement, comply with all applicable Modern Slavery legislation and PSM's Corporate Policy relating to Modern Slavery.

Termination

- 21. The Client may terminate its obligation under this Agreement:
 - a. In the event of material breach by PSM of its obligations hereunder, which breach has not been remedied within 30 days of written notice from the Client requiring the breach to be remedied, or
 - b. Upon giving PSM 30 days written notice of its intention to do so.
- 22. PSM may terminate its obligations under this Agreement:
 - a. If monies payable by the Client to PSM are more than 30 days outstanding from the due date for payment
 - b. If the Client commits a breach of its obligations hereunder, which breach has not been remedied within 15 days of written notice from PSM requiring the breach to be remedied; or
 - c. Upon giving the Client 15 calendar days written notice of its intention to do so.
- 23. If this Agreement is terminated for any reason other than pursuant to paragraph 21(a), the Client shall pay to PSM a fair and reasonable fee (including overheads and profit) for the performance of the Services up to the date of termination together with payment of costs and expenses reasonably incurred by PSM to that date.

Subcontracting and Assignment

- 24. If PSM considers it appropriate to do so, it may with the Client's prior approval, which shall not be unreasonably withheld or delayed, subcontract any part of the Services but will remain fully responsible for those services.

25. Subject to clause 23, neither party may assign, novate or otherwise transfer any of its rights or obligations under this Agreement without the prior written consent of the other party. Unless stated in writing to the contrary, no assignment, transfer or novation shall release the assignor from any obligation under this Agreement.

General

26. Unless arrangements are made to the contrary, core samples will be held in storage for a maximum period of one [1] month from the date of investigation.
27. PSM shall be excused from performing under the terms of this Agreement if and for so long as such compliance is hindered or prevented by an occurrence of force majeure. For the purposes of this clause, "force majeure" means events beyond the reasonable control of PSM, including (without limitation) acts of God, public enemy, acts of the Government, fires, floods, earthquakes, epidemics, pandemics, quarantine restriction, wars, freight embargoes and work stoppages.
28. In the interpretation of this Agreement, no rule of construction applies to the disadvantage of one party on the basis that it put forward this Agreement or any part of it.
29. This Agreement and any documents or information relating to this Agreement or the Services are confidential and the parties must not disclose any of these without the prior written consent of the other party, except to the extent that the disclosure is required to perform this Agreement or by law.
30. Unless otherwise directed in writing by the Client, PSM may include references to the Services in its promotional material. Such references shall exclude any confidential material.
31. This Agreement is subject to and is to be construed in accordance with the laws of the State or Territory in which the Services are performed.
32. If the Client comprises two or more persons, each person will be jointly and severally bound by the Client's obligations under this Agreement.
33. All payments under this Agreement are exclusive of GST. If the provision of the Services is a taxable supply, the Client will pay PSM an additional amount equal to the amount of the consideration for the Services multiplied by the GST rate. The additional amount is payable at the same time and in the same manner as the consideration for the Services.