



South East Water Submission to the Board of Inquiry into the McCrae Landslide

April 2025

1. Introduction

South East Water (**SEW**) acknowledges it has been a difficult time for our customers and members of the community in McCrae who have been impacted by the landslide on 14 January 2025 (**Landslide**). We express our sympathy for property owners and residents who have experienced damage to their homes; who have been unable to occupy their homes; and who are worried about the risk of future landslides affecting their homes. We also acknowledge the Council officer who was injured in the landslide and the occupants of 3 Penny Lane McCrae at the time of an earlier landslide on 5 January 2025.

We welcome the Board of Inquiry into the McCrae Landslide (**Inquiry**). We respect its role to provide answers to residents, agencies and the community about the cause of the Landslide, the adequacy of measures to prevent and minimize landslides in the area; and what might be done in future to mitigate the risk of similar events in future.

We are pleased to be able to support the Inquiry by providing documents and information about SEW, our assets, services and activities in the McCrae area. Although we do not have a full picture of the circumstances of the Landslide – which extend beyond SEW – we hope the information we contribute to the Inquiry will assist in determining what may or may not have caused the Landslide, and importantly, what might be done to mitigate the risk of future landslides.

2. About South East Water

2.1 What we do

SEW delivers drinking water, sewerage services, and recycled water services to 1.8 million people across a 3,640 square kilometre area from Port Melbourne to Portsea and approximately 30 kilometres east of Pakenham (refer Figure 1).

Our assets in the McCrae area include pressurised drinking water pipes, gravity sewerage pipes, and drinking water storage tanks. The drinking water and sewerage networks near the Landslide site are



Figure 1 South East Water service region

shown in Appendix 1 and Appendix 2.

SEW is responsible for maintaining drinking water pipes and infrastructure up to the water meter and the water meter itself, while property owners are responsible for pipes on the other side of the meter.

Where we identify leaks on the customer side of the meter, we inform the customer and can issue a notice to investigate and repair (known internally as a 'red notice') but otherwise do not control customers' water use outside of times of declared water restrictions.

SEW is responsible for maintaining sewer mains (pipes) outside the property boundary. Where a sewer main is located within the property boundary, we are responsible for the pipe up to the first inspection opening or 1 metre inside the boundary, after which responsibility transfers to the property owner.

Our customers include:

- 1.8 million people across our service area, of whom an estimated 3,311¹ are in McCrae
- 62,629 business customers, 36 of whom are in McCrae

Our services include:

- Supplying approximately 142 billion litres of drinking water each year to over 836,000 residential and business properties across our service region²; this includes approximately 282 million litres supplied to 2,242 residential and 36 business customer properties in McCrae.
- Supplying sewerage services to over 810,000 connected residential and business properties across our service region, including approximately 2,250 properties in McCrae.

Our infrastructure to support drinking water and sewerage services include:

- 14,639 km of water pipes, of which approximately 45.2 km are in McCrae
- 11,598 km of sewer pipes, of which approximately 53.8 km are in McCrae
- 1,507 km of recycled water pipes, none of which are in McCrae
- 82 water pump stations, two of which are in McCrae
- 278 sewerage pump stations, none of which are in McCrae
- 8 water recycling plants, none of which are in McCrae
- 14,252 pressure sewer pumps, none of which are in McCrae.

2.2 What we don't do

2.2.1 Stormwater and drainage

SEW's functions do not include stormwater and drainage management. SEW is not assigned functions relating to drainage under the *Water Act 1989 (Vic)* or any other legislative instrument.

¹ 2021 census data

² South East Water 2023-24 Annual Report

2.2.2 Groundwater management

SEW's functions do not include groundwater management, and we do not source drinking water supplies from groundwater. We source the water we supply to our customers from Melbourne Water's reservoirs, which harvest inflows from rivers and receive water from the Victorian desalination plant.

Groundwater-related functions assigned to other parties under the *Water Act* generally relate to ensuring it is managed sustainably as a resource.

2.2.3 Catchment and waterway management

SEW's functions do not include catchment and waterway management, including the management of water held in or surfacing from natural springs.

2.2.4 Water infrastructure and management beyond the water meter

SEW does not operate or have responsibility to maintain household plumbing or pipes for water supply beyond the water meter.

Over the past 5 years, on average, we have supplied approximately 141 kilolitres of drinking water each year to the typical household in our service region. Households tend to use more water in the January-March quarter each year when the weather is warmer. Billing data indicates the average household water use in McCrae is lower than our region-wide household average. Water use at the individual household level can vary considerably given the diversity of households in our service region: from studio apartments to large multi-generational households; and from partially occupied holiday homes to permanent residences.

During the period 2020 to 2024, we supplied an average of 118 kilolitres of drinking water per year per household up to the meter of households in the suburb of McCrae. Amongst the 19 properties evacuated in the vicinity of the Landslide, our supply of water to households ranged from 29 kilolitres per year (75% below the McCrae average) to 908 kilolitres per year (669% above the McCrae average).

2.2.5 Planning, building and vegetation management approvals

SEW is not a decision-making authority for matters relating to the assessment of applications for:

- planning permits
- building permits
- permits for the removal of vegetation.

We understand parties other than SEW will be better placed to advise the Inquiry, McCrae residents and the community on human activity that may affect landscape stability and resilience and the movement of groundwater, such as vegetation removal and the construction of buildings, retaining walls, fences and other structures.

3. Our regulatory framework

SEW is a government-owned retail water corporation established under Division 1 of Part 6 of the *Water Act 1989*. Our key statutory functions as a retail water corporation are outlined in the *Water Act*, *Water Industry Act 1994* and relevant subordinate legislation.

Division 1 of Part 8 of the *Water Act* sets out our functions, obligations and powers relating to water supply, which includes the function to provide, manage, operate and protect water supply systems in our water supply district(s).

Division 1 of Part 9 of the *Water Act* sets out our functions, obligations and powers relating to sewerage services in our sewerage district.

The Statements of Obligations issued by the Minister for Water under Section 41 of the *Water Industry Act* specify obligations in relation to how we perform our functions and exercise our powers.

We are regulated by the Department of Health under the *Safe Drinking Water Act 2003* for drinking water quality and the Environment Protection Authority under the *Environment Protection Act 2017* for recycled water quality and discharges.

The *Water Industry Act 1994* establishes the Essential Services Commission (**ESC**) as the water industry's economic regulator. Every five years we submit a price submission to the ESC, which sets out what we will charge our customers and what we will deliver.

SEW is a *referral authority* for subdivision applications for matters related **only** to drinking water, recycled water and sewerage provision. This means the responsible authority (usually a municipal council) must send us a copy of applications to subdivide land in our service area. We then determine development conditions for water supply and sewerage services, so that the privately-owned pipes and taps on the subdivision can be connected to our assets. We do not have functions to decide or advise on other factors, e.g. whether it is safe or appropriate for the subdivision to be approved.

The *Emergency Management Act 2013* establishes a framework for emergency management planning at the State, Regional and Municipal level. The State Emergency Management Plan (**SEMP**) recognises that emergency management is the shared responsibility of all Victorians, not just the emergency management sector.

The SEMP provides details of roles and responsibilities for managing each phase of emergency management in Victoria (mitigation, response, relief and recovery). Roles and responsibilities for mitigation are specified according to Victoria's significant emergency risks. These risks were identified as having the greatest risk and consequences for Victoria over the next 5 years in a 2023 report titled 'Emergency Risks in Victoria'. They include bushfire, earthquake, flood, storm and water supply disruption. Landslides are not identified as a significant emergency risk for Victoria in this report. The roles and responsibilities for mitigating risk of, responding to and recovering from landslides are not defined in the SEMP, the Southern Metro Region Emergency Management Plan, or the Mornington Peninsula Municipal Emergency Management Plan.

Water corporations are identified in the SEMP as a participating agency in mitigating the risk of water supply disruption, through ensuring system resilience, and mitigating the risk of storms through being an equipped, trained and prepared essential service (water).

4. Our funding arrangements

In 2023/24 SEW's total revenue was \$1,143 million, total expenses were \$1,037 million, and net profit after tax was \$74 million (6.47%). We hold \$1,918 million in total equity.

SEW primarily generates revenue by billing customers for the provision of water and wastewater services. The maximum prices we can charge for these services are set through the ESC's Price Determination process.

Our 2023-28 price submission sets out the prudent and efficient cost of delivering our functions in accordance with our legislative and regulatory requirements. Our price submission also involved engagement with customers to understand their priorities, preferences and willingness to pay for various levels of service, as well as the outcomes we seek to achieve for our customers, community and the environment. The ESC's binding determination was published in June 2023, covering the period 1 July 2023 to 30 June 2028.

In 2024/25, the annual water and sewerage bill for a typical owner-occupier in our service region is \$1,027. Our average annual bill is the lowest of any Victorian metropolitan water corporation³ and in 2023-24 was the lowest of any major water corporation in Australia.⁴

5. Our approach to the Landslide

Since the Landslide, our focus has been on:

1. Supporting our customers
2. Initial investigations of our assets and water surfacing in the landscape
3. Subsequent investigations into whether previous leaks from our assets could have contributed to the Landslide.

5.1 Support for customers

SEW support for and engagement with our customers following the Landslide included:

- Appointment of a dedicated customer liaison officer for customers in the 19 properties that were subject to evacuation orders
- Communications and engagement via:
 - Attendance at the local community centre on 19 January and community forums on 22 January and 21 March 2025 to answer questions and hear from residents
 - Letterbox drops to 136 properties in the local area and poster distribution in 19 community locations
 - Direct email communications with customers January – April 2025
- Prioritising any calls from McCrae that come through our Faults and Emergencies number
- Provision for alternative supplies of water where needed
- Waivers on water bills for the time that customers are unable to occupy their homes
- Increased leak detection activity in the area to give customers assurance about any potential excess water from leaks in the landscape

³ Average household water bills in Victoria, [Average household water bills in Victoria | Essential Services Commission](#)

⁴ Bureau of Meteorology National Performance Report 2024, [NPR_2023-24_04-Pricing.pdf](#)

- Commenced the rollout of 3,500 digital meters in McCrae and surrounding suburbs (April-June 2025) to assist customers to detect potential leaks in their plumbing in near-real-time.

5.2 Initial investigations of SEW assets and water surfacing in McCrae

Following the Landslide, our maintenance and works records indicate water continued to surface in the McCrae area. In the aftermath of the Landslide, our employees and contractors recorded observations of water surfacing at the immediate site of the Landslide, between 3 Penny Lane and 10 View Point Road, as well as at other locations including Coburn Avenue, Charlesworth Street, and Waller Place.

In January – April 2025, we conducted a portfolio of tests, the purpose of which was to investigate whether the water surfacing in McCrae could have come from an SEW asset, such as a leaking water main or a sewer. There was no single definitive test available to us, which is why we pursued a range of investigations, including:

- Water sampling for laboratory analysis
- Acoustic leak detection
- Night time data analysis
- Sewer dye testing
- Trial excavation
- CCTV.

Summary information about our initial investigations is set out at section 5.2.1 to 5.2.6 below.

These tests indicated that the surfacing water was not coming from a burst water main or any other SEW assets.

5.2.1 Water sampling and laboratory analysis

SEW had also been informed of water surfacing in the area in December 2024 (before the Landslide). SEW took samples from water surfacing in the landscape and provided it to an independent laboratory for testing. Fourteen samples were collected and analysed over the period 24 December 2024 to 22 January 2025 (before and after the Landslide). McCrae street locations included:

- Waller Place
- Charlesworth Street
- View Point Road
- Penny Lane
- Coburn Avenue
- Prospect Hill Road.

Laboratory analysis of water samples considered levels of:

- **electrical conductivity** – drinking water electrical conductivity ranges from 50uS/cm to 200uS/cm, whereas more saline seawater/groundwater ranges from 200uS/cm to over 2200uS/cm
- **fluoride** – fluoride is added to drinking water for public health (dental) reasons and is usually detected in the range of 0.4mg/L to 0.9mg/L

- **chloride** – chloride is added to drinking water for public health reasons to destroy potential pathogens and is usually detected in the range of 7mg/L to 16mg/L.

Typical values for SEW network are electrical conductivity 83uS/cm, Fluoride 0.77mg/L and Chloride 9mg/L.

Fourteen surface water samples were tested in an independent laboratory. None of the samples were a direct match for the properties of drinking water. Two of the results, taken from gutters and stormwater pits, had water chemistries with similarities to drinking water. We believe these two results were due to a confirmed on-property water leak in Prospect Hill Road. The leak was finding its way to a basement pump for removal of groundwater, which discharged the water into stormwater gutters and pits.

There are a wide range of reasons why drinking water from sources other than a water main leak may be present in locations such as streets, stormwater gutters and pits. These include:

- Outdoor irrigation
- Emptying swimming pools or ponds
- Leaks in private plumbing
- Pumping water from private property to the streetscape.

5.2.2 Acoustic leak detection

SEW employees and contractors conducted acoustic leak detection in the vicinity of the Landslide and extending approximately 1 kilometre from the Landslide site. Acoustic leak detection involves deploying crews to walk throughout the area looking for visual evidence of leaks and using an electronic listening device at water main fittings at ground level (such as valves and hydrants) and customer water meters to 'listen' into our pipes for potential leaks.

Our ongoing acoustic leak detection activity subsequent to the Landslide has not identified a significant leak in our network.

5.2.3 Night-time data analysis

Analysis of data from the tank supplying the Landslide area can identify whether there is unusual drawdown from the tank at night. Household water use is usually at its lowest at night, making it easier to detect unusual activity. Higher than expected water drawdown can be an indication of a potential leak in the network.

Our analysis of water tank data has not detected any major leaks or bursts in the period of January – April 2025. Since February 2025, we are analysing water flow data in the McCrae area 3 times per week.

5.2.4 Sewer dye testing

On 22 January 2025, we poured coloured dye into our sewer network in McCrae to test for leaks. We looked for traces of dye in readily accessible maintenance holes (pits) downstream of the two injection sites, which would be indicative of leakage. The injected dye remained within the sewer pipes. This indicates that they were not leaking.

5.2.5 Trial sewer trench excavation

On 24 January 2025, we excavated down 2.5 metres to expose our sewer pipe in Charlesworth Street and placed dye in the trench around the outside of the pipe. We monitored any build up of water in the trench of which there was very little (a few cm at most). Three days later we backfilled the excavation, and have subsequently seen no evidence of the dye surfacing. This suggests the water that continued to surface at the intersection of Coburn Road and Charlesworth Street is not surfacing from the sewer trench.

5.2.6 CCTV

In January and February 2025, we undertook closed circuit television (CCTV) filming in our sewer network. CCTV enables visual inspection of underground sewer pipes so that we can look for blockages, cracks, leaks or other damage in our sewers. Our CCTV footage did not detect faults within our sewer pipes in McCrae. The dates and locations inspected using CCTV include:

- Intersection of Charlesworth Street & Waller Place on 5 January 2025
- Rear of 16 Prospect Hill Road on 20 January 2025
- Charlesworth Street on 29 January 2025
- Waller Place & Charlesworth Street & Henry Court on 11 February 2025.

Further CCTV activity has been underway in April 2025.

5.3 Subsequent investigations into previous water main leakage

Following initial indications that water surfacing in McCrae was not coming from our network, we commenced investigations into whether water from previous leaks may have contributed to the Landslide. In particular, we focused our investigations on a December 2024 water main burst approximately 450 metres from the Landslide site adjacent to Bayview Road McCrae.

An overview of our identification, repair and investigation of the Bayview Road water main burst is in section 6 below.

6. The Bayview Road water main burst

SEW understands our customers in McCrae are understandably interested in a burst water main near Bayview Road detected on 30 December 2024 and its potential relationship with water surfacing in McCrae and with the location of the 5 January and 14 January 2025 Landslides.

Key information from our investigations about the burst water main and our understanding of the circumstances of its detection, repair and impact are set out below.

6.1 When and where the Bayview water main burst

On 30 December 2024 at approximately 1pm SEW first became aware there was a burst on Water Main 104961. The burst was located on the edge of densely vegetated bushland between Bayview Road and the Mornington Peninsula Freeway, approximately 50 metres

west of Outlook Road. A map showing the location of the water main burst, approximately 450 metres from the Landslide site, is at Figure 2. A photo showing the site of the water main burst is at Figure 3.



Figure 2 - Map showing locations of Bayview Road burst (blue) and the Landslide site (red)



Figure 3 - Photo of the site of the Bayview Road burst, located in bushland

6.2 How the Bayview Road water main burst was identified

The circumstances of the Bayview Road water main burst meant that it was not readily detectable.

Examples of bursts and leaks that are readily detectable include: leaks in streets and footpaths; leaking hydrants on roadways; and leaking stop taps on accessible water meters.

Leaks and bursts are more difficult to detect when they are: in area with low visibility or low accessibility (e.g. bushland and paddocks); in areas with significant noise (e.g. trams, trains and heavy traffic) making acoustic leak detection techniques challenging; in hazardous locations (e.g. in the vicinity of gas/power infrastructure); or in circumstances obscured by other natural conditions (e.g. rainfall, stormwater and groundwater).

The Bayview Road water main burst was not readily detectable owing to: its location in bushland; distance approximately 150 metres from the area in Waller place where water issues were initially reported, being on the other side of the freeway; and concurrent issues of surfacing groundwater.

An SEW employee identified the burst water main on 30 December 2024 by:

- attending Waller Place, McCrae to assist a contractor in relation to a report of a possible leak⁵

⁵ The possible leak at Waller Place was not substantiated. SEW maintenance and works records

- hearing the sound of water moving through the Mornington Peninsula Shire Council's (**Council**) stormwater system at Waller Place
- observing the movement of water in the Council stormwater system
- reviewing SEW water tank data from the supply area, which indicated higher outflow in December 2024 compared with December 2023, indicating a potential issue in the network
- conducting acoustic leak detection on SEW water mains adjacent to Council's stormwater drain, moving uphill from Waller Place and to the high side of the freeway
- hearing water flow and subsequently observing water moving northwest from a location in unmaintained heavy bushland into a large stormwater pit that passes under the Mornington Peninsula Freeway toward Waller Place
- Locating the SEW water main burst and testing the electrical conductivity of the water from the burst site to confirm it was drinking water.

6.3 How the Bayview Road water main was repaired

SEW and its contractors repaired the burst water main on 31 December 2024 – 1 January 2025. The repair was complex, involving tasks including the following:

- Identified the escape of water and assessment of the immediate impact to the surrounding area
- Identified safety hazards to be managed at the work site including: gas main, stormwater drains, access for people and equipment through dense scrub, and unsafe trees requiring removal
- Obtained clearance from gas transmission company to excavate approximately 30 metres away from gas main
- Identified key valves that would minimise the number of customers impacted by the work, and issued "water off" notification to affected customers
- Excavated at the site and pumped out water, negotiating tree roots during the process
- Deemed the site unsafe to complete job owing to large trees that risked causing collapse and closed the area with safety markings
- Turned one of two valves back on so residents would have access to water, but only at low pressure to limit water escaping from the burst main
- Relocated by approximately 30 metres to find another place to find the main and cut in valve; but were unable to locate the main after excavating 2.5 metres; and backfilled to make safe
- With approval from Council, removed fencing and trees to make site safe to work
- Identified small split approximately (100mm long) on the water pipe and repaired by replacing a 1 metre long section.
- Flushed the water mains in the area for water quality purposes
- Conducted acoustic testing to confirm burst / leak noise had ceased
- Cleaned up works site
- Confirmed that large volumes of water had ceased flowing through the stormwater pit
- Tested water surfacing at Waller Place; advised resident that the water's electrical conductivity was out of range for mains water, indicating that it was not coming from a drinking water source; and referred the resident to Council. Refer to section 5.2.1 for an explanation of electrical conductivity testing.

indicate our crew's conclusion the possible leak was surfacing groundwater. Tests on the electric conductivity of water surfacing in Waller Place were well out of range for drinking water.

6.4 Likelihood the Bayview water main contributed to the Landslide

6.4.1 Investigation findings

Based on the information currently available to us, we do not believe that the Bayview water main burst contributed to the Landslide.

SEW considers that a significant portion of the drinking water released from the water main burst that was identified on 30 December 2024 travelled above ground to a stormwater pit approximately 30 metres away from the burst site.

We think if there was drinking water that entered the ground and moved downslope, that drinking water would likely flow into, and then follow the trenches of existing services such as stormwater or sewer, because they are intentionally constructed on varying downhill grades, and the embedment material of such services offers a readily available preferential pathway for subsurface water flow. The stormwater network near the burst site, follows an alignment running down towards and then adjacent to, Coburn Road to Point Nepean Road, away from the Landslide site. The sewer mains follow an alignment down Waller Place, Charlesworth Street and then to Coburn Avenue. SEW expects that water would continue to follow either trench until it reaches Point Nepean Road below the elevation of the Landslide site.

6.4.2 Limitations to available knowledge

SEW acknowledges it does not have complete information about the cause and contributing factors of the Landslide. Our investigations have been limited to the performance of our water main and sewer network in isolation. We recognise there may be other factors in the McCrae landscape, extending beyond our remit and expertise, which may or may not interact with our assets. Such factors might include:

- The geology of the area and underlying Landslide susceptibility
- Removal of vegetation
- Construction of built assets, such as buildings, pools, retaining walls, terrace structures, irrigation drainage, stormwater drainage, and other structures
- Rainfall, groundwater and springs
- Stormwater and outdoor irrigation.

We look forward to the Inquiry's comprehensive assessment of the Landslide's possible causes and contributing factors. Although our investigations have not found a causal or contributory link, we remain open to reassessing our findings in light of any potential data, analysis or findings from the Inquiry's deliberations or questions from the impacted community.

7. Actions SEW is taking to further reduce water leaks

7.1 Digital metering

SEW is currently deploying approximately 3,500 digital meters across McCrae and surrounding suburbs (April – June 2025). This is part of a \$203 million 5-year program to deploy 705,500 digital meters across our service area. Our digital metering program is our highest value capital project and Australia's largest digital water metering initiative.

Advantages of digital metering include:

- **Leak detection on customers' properties** – Ability to detect potential leaks in customers' plumbing in near-real-time and issue alerts to customers. This enables them to undertake repairs and minimise leaking pipes that may cause property damage, as well as avoid excess water use charges
- **Leak detection in our network** – Ability to attach acoustic sensors to meters, enabling SEW to 'listen' for leaks in our network. This enables us to prioritise maintenance in our network earlier and in locations where it is most needed, and avoid water waste.

7.2 Leak monitoring and detection in McCrae

SEW shares the community's concern about any potential excess water in the landscape. This is why we have escalated our leak detection activities in McCrae. Our current leak detection activity in McCrae includes:

- On-site acoustic leak detection – fortnightly
- Analysis of water use data – 3 times weekly
- Escalated prioritisation of potential leaks to Priority 1 level (average 1-hour response time).

8. Conclusions

SEW hopes that the information provided in this submission, as well as information provided in response to the Inquiry's Notices to Produce documents and requests for Witness Statements, will be of assistance to the Inquiry.

We acknowledge the importance of the Inquiry's work in determining the cause of the Landslide. A comprehensive, accurate, impartial and evidence-based assessment of the cause will be instrumental to directing future efforts where they are most needed to minimise the risk of future landslides.

We look forward to the Inquiry's findings in relation to the cause of the Landslide. We welcome any findings in relation to our drinking water supply assets or our sewer assets. We also welcome any findings from the Inquiry into any features of the natural environment or any other human activities – such as vegetation management, planning and building activity, stormwater and drainage management, property maintenance, and outdoor irrigation – that may be determined as relevant to landslide risk.

Importantly, we welcome any recommendations about how residents, agencies and the community might be able to mitigate likelihood and impact of similar events in future and improve our resilience to landside risk in McCrae.