IN THE MATTER OF THE INQUIRIES ACT 2014

AND IN THE MATTER OF A BOARD OF INQUIRY INTO THE MCCRAE LANDSLIDE

**ENTITY: SOUTH EAST WATER** 

**CORPORATION** 

SOUTH EAST WATER'S SUBMISSIONS ON THE CAUSE(S) OF THE MCCRAE LANDSLIDE

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#### 14 November 2022 and 15 November 2022 Landslides

1. The evidence supports a finding that the landslide events, on 14 November 2022 and 15 November 2022 respectively, were triggered by rainfall. South East Water (SEW) makes no submission as to whether the loss of vegetation and/or the burst private irrigation pipe contributed to either of those landslide events. The expert evidence does not permit a finding that the leaking pipe, near 23 Coburn Avenue, was a trigger of the 14-15 November 2022 landslides. The leak occurred at approximately 5.40am on 14 November 2022, and it was fixed at 6.45pm on the same day. The landslide occurred at approximately 6.30am on 14 November 2022, being within approximately one hour of the leak. There was insufficient time for any infiltrated water from the leak to reach the landslide site by subterranean means. Save for photographs taken on 14 November 2022, which suggest that most of the water from that leak flowed downhill on Coburn Avenue, in the direction of Point Nepean Road, and into a storm water drain in the kerb, there was no evidence of the volume of water that entered the storm water drain, the volume of water that infiltrated the ground, the flow path of any subterranean water,3 or the precise location of the leak.4

# Landslide Susceptibility

2. The area in which the January 2025 landslides occurred (**Landslide Site**)<sup>5</sup> was susceptible to landslides. There was evidence of a relatively large landslide in the early 1950s, below the current dwelling at 4 View Point Road, a landslide near Anthony's Nose on 14 July 1952, a probable landslide having occurred on the escarpment below 10-12 View Point Road between 1975-1977, slippage or a mudslide having occurred in the vicinity of 6 View Point Road in about the year 2000, the landslide events on 14-15 November 2022.<sup>6</sup> and other stability concerns reported by residents.<sup>7</sup>

<sup>&</sup>lt;sup>1</sup> Exhibit CA41.

<sup>&</sup>lt;sup>2</sup> Exhibit CA21 at [11].

<sup>&</sup>lt;sup>3</sup> T1121.L32 to T1128.L21 (4 August 2025).

<sup>&</sup>lt;sup>4</sup> T1130.L43 to T1132.L38 (4 August 2025).

<sup>&</sup>lt;sup>5</sup> The 5 January 2025 landslide occurred within a gully or incision approximately mid-slope of a generally north-northwest facing escarpment slope, below the residence of 10-12 View Point Road. The 14 January 2025 originated further up slope from the 14 January 2024 landslide. It daylighted partially behind a steel post and concrete panel retaining wall located at the crest of the slope. The areas will be referred to collectively in these submissions as the "Landslide Site".

<sup>&</sup>lt;sup>6</sup> Part 5.3.1 and Part 5.3.2 of Exhibit CA69.

<sup>&</sup>lt;sup>7</sup> Part 5.3.1 and Part 5.3.2 of Exhibit CA69.

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- 3. The area also contains natural springs.<sup>8</sup> The area close to the Landslide Site has experienced significant ground water activity and seepage for decades.<sup>9</sup> Mr Borghesi gave evidence that water flowed continuously in View Point Road until about mid-2023, when drainage works were performed. His understanding is this constant water flow originated from springs under new houses at 1 and 5 Prospect Hill Road.<sup>10</sup> Mr Borghesi also referred to the installation of agi-pipes at the rear of his property in 2021, to redirect water downslope and away from a pathway at the rear of his property.<sup>11</sup>
- 4. Both before the November 2022 and the January 2025 landslides, a number of anthropogenic and natural changes occurred proximate to the Landslide Site. Those changes included the progressive loss of vegetation from the escarpment,<sup>12</sup> the removal of trees at 10-12 View Point Road,<sup>13</sup> and the installation of retaining walls and other development work at 10-12 View Point Road.<sup>14</sup>
- 5. Mr Hartley gave evidence that before the 5 January 2025 landslide, the Landslide Site was on a "knife edge", which is consistent with Mr Pope's factor of safety analysis.<sup>15</sup>

### **Bayview Burst**

- 6. On 30 December 2024 a burst water main was identified near Bayview Road, approximately 450-465m south and uphill from the Landslide Site (**Bayview Burst**). It was repaired in the period from 31 December 2024 to 1 January 2025 inclusive. The volume of water that was estimated to have been lost through the leak was 40.3ML, <sup>16</sup> which is consistent with Mr Jonathan Crook's evidence of 34-39ML (on a 60 day period) and 34-41ML (on an 85 day period). <sup>17</sup>
- 7. It is not possible, on the available evidence, to find the Bayview Burst triggered the January 2025 landslides. Although the possibility cannot be excluded, there is no empirical evidence that proves the Bayview Burst triggered the landslide.

<sup>&</sup>lt;sup>8</sup> Exhibit CA69: Evidence of multiple perched water tables in PSM bores indicate springs must also be present along the escarpment.

<sup>&</sup>lt;sup>9</sup> See, for example, evidence of Tim Lloyd at T877.L6 to T878.L28 (23 June 2025) including his discussions with a resident who had lived in the area for approximately 60 years and residents informing him that the area used to be called Spring Hill. See also CA69 at SME.0001.0001.0501 012.

<sup>&</sup>lt;sup>10</sup> T484.L12 to T485.L21 (14 May 2025).

<sup>&</sup>lt;sup>11</sup> T486.L45 to T488.L13 (14 May 2025).

<sup>&</sup>lt;sup>12</sup> See Part 7.4 of Exhibit CA67.

<sup>&</sup>lt;sup>13</sup> See Part 7.4 of Exhibit CA67.

<sup>&</sup>lt;sup>14</sup> See T479.L30.

<sup>&</sup>lt;sup>15</sup> T1294.L28 (5 August 2025). See also Exhibit CA71 at page 59, table 13.

<sup>&</sup>lt;sup>16</sup> Exhibit CA76.

<sup>&</sup>lt;sup>17</sup> The "final report" annexed to Exhibit CA40 (SEW.0001.0001.4914\_0006).

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- 8. The evidence of Mr Paul and Mr Pope that the Bayview Burst was a trigger of the 2025 landslides, appears to be a case of *post hoc ergo propter hoc*. That is to say, the mistaken reasoning that because the January 2025 landslides followed the Bayview Burst, the landslides must have been triggered by the Bayview Burst.
- 9. Mr Paul and Mr Pope asserted the water from the Bayview Burst "could have" 18 flowed into a natural channel, or a sewer or storm water trench, to reach the Landslide Site. However, neither of them could identify the actual flow path based upon empirical evidence. Mr Paul gave evidence that "a lot of water went into the ground and we don't know where it went, but it has to go somewhere". 19 Mr Paul accepted the actual pathway the burst water had allegedly taken was uncertain, and stated he had not gathered enough evidence to know exactly which way the water went and may never get that evidence. 20 He could not say which of the potential pathways he proffered was the most likely. 21
- 10. Mr Paul and Mr Pope conceded it was possible to undertake geophysical testing to identify whether there were relevant paleochannels from the Bayview Burst site to the Landslide Site. However, they had not undertaken such geophysical tests to make good their contention. Mr Pope referred, for example, to potential paleochannels of 10-20m wide and 500m long. However, he conceded these were merely assumptions,<sup>22</sup> and the reference to paleochannels was merely a theoretical possibility.<sup>23</sup> SMEC had undertaken geophysical testing and had not identified any such paleochannel.<sup>24</sup> Moreover, Mr Paul conceded there were established gullies that could have taken subterranean water away from View Point Road, to Margaret Street or the Eyrie.<sup>25</sup>
- 11. Mr Paul's "high confidence" the Bayview Burst was a significant causal factor in the 2025 landslides must be assessed in the following context. Mr Paul had expressed "low confidence" the Coburn Avenue leak had caused the 2022 landslides because of "unknowns", including his inability to confirm the flow path of water from Coburn Avenue to the site of the 2022 landslides. The area between Coburn Avenue and the 2022 landslide site was approximately 120-125 metres. Mr Paul conceded that in order to prove the water made its way from Coburn Avenue to the November 2022 landslide

<sup>&</sup>lt;sup>18</sup> See for example, Exhibit CA67 at paragraph 161: "could have" flowed into a channel or "could have" entered a sewer trench or "could have" flowed into the storm water.

<sup>&</sup>lt;sup>19</sup> T276.L40-41 (5 August 2025).

<sup>&</sup>lt;sup>20</sup> T1276.L14-L26 (5 August 2025).

<sup>&</sup>lt;sup>21</sup> T1224.L15-L20 (5 August 2025).

<sup>&</sup>lt;sup>22</sup> T1277.L1-5 (5 August 2025).

<sup>&</sup>lt;sup>23</sup> T1277.L37-38 (5 August 2025).

<sup>&</sup>lt;sup>24</sup> T1280.L24 (5 August 2025).

<sup>&</sup>lt;sup>25</sup> T1279.L37-42 (5 August 2025).

<sup>&</sup>lt;sup>26</sup> T1128.L15-21 (4 August 2025).

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site, he would need to undertake tests to evidence the existence and dimensions of subterranean channels.<sup>27</sup> However, by comparison, he expressed "high confidence" the Bayview Burst was a causal factor in the 2025 landslides. That was despite the fact:

- a. he had not undertaken geophysical tests to identify the existence or dimensions of any subterranean channel(s) upon which he relied;
- b. he was unable to say whether the water had moved in or out of subterranean channels, and if so where and when;
- c. the area in question for the 2025 landslides was far more extensive namely approximately 450m; and
- d. the time between the burst and the 2025 landslides was less temporally proximate.
- 12. While Mr Hartley could not rule out the theoretical possibility that there were credible flow paths from the Bayview Leak site to the Landslide Site, he is of the opinion that the alleged potential flow-paths referred to by Mr Paul and Mr Pope is unlikely.<sup>28</sup>
- 13. The result of dye tracing tests does not support the Mr Paul and Mr Pope theory in relation to flow paths from the Bayview Burst to the Landslide Site. Mr Pope gave evidence that on 12 February 2025 he caused dye to be poured into a borehole referred to as NDT-01. NDT-01 was located in the front yard of 6 View Point Road, being 6 metres away from the SEW sewer main. Mr Pope undertook several dye tests in the area and NDT-01 was the only test in which green dye emerged at the escarpment.<sup>29</sup> Taken at its highest, the NDT-01 dye test suggests there is a pathway from the front of 6 View Point Road to the escarpment. However, it does not establish a pathway from the Bayview Burst to NDT-01.<sup>30</sup>
- 14. Tellingly, the dye test undertaken at the SEW sewer main (NDT-04) on 7 May 2025<sup>31</sup> did not result in green dye emerging at the escarpment.<sup>32</sup> Mr Pope conceded the NDT-04 test result supported the fact the SEW sewer trench did not transport burst water to the escarpment<sup>33</sup> and he acknowledged the possibility the sewers might not be connected to the relevant location.<sup>34</sup>

<sup>&</sup>lt;sup>27</sup> T1126.L46 to T1127.15 (4 August 2025).

<sup>&</sup>lt;sup>28</sup>T1272.L32, Exhibit CA74 and T1288.L5-21 (5 August 2025). See also 1225.L25-27 (5 August 2025). <sup>29</sup> Table 7 in Exhibit CA71.

<sup>30</sup> T1282-T1283 (5 August 2025).

<sup>&</sup>lt;sup>31</sup> Exhibit CA67, internal page 46.

<sup>&</sup>lt;sup>32</sup> See Table 7 in CA71. An earlier borehole (NDT-02), which was also at the SEW sewer trench, also did not result in green dye emerging at the escarpment, although Mr Popesaid he did not execute that borehole well: T1285.L13 (5 August 2025).

<sup>&</sup>lt;sup>33</sup> T1283.L38 (5 August 2025) and T1285.L13-L15 (5 August 2025).

<sup>&</sup>lt;sup>34</sup> TT1286.L6-L16.

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- 15. Further, from 7 to 10 January 2025, dye was poured into the storm water pit at 7 Prospect Hill Road. Again, that dye did not reach the head scarp at the Landslide Site.<sup>35</sup> This test tells against there being a pathway through the storm water system from Prospect Hill Road to the escarpment.
- 16. The results of the dye testing are inconsistent with the pathway theory; the results challenge the plausibility of that theory.
- 17. Moreover, even if, contrary to the above submission, there had been a pathway from the Bayview Burst site, through the colluvium soil, the time the burst water would have taken to reach the Landslide Site means the burst water, via this pathway, could not have impacted on the 5 January 2025 or 14 January 2025 landslides.
- In the University of Auckland (**UoA**) report, <sup>36</sup> the UoA<sup>37</sup> concluded the majority of the 18. water from the Bayview Burst – 99.2% of flow - travelled directly from the burst, almost vertically, to the ground surface.<sup>38</sup> Mr Hartley and Mr Bolton gave evidence, based on modelling on "the worst day" (namely peak volume on 31 December 2025) it was theoretically possible for a volume of 0.4-0.5ML/day<sup>39</sup> to infiltrate the natural ground between the burst pipe and the storm water pit into which much of the water flowed. Mr Hartley and Mr Bolton undertook in-situ infiltration tests and water velocity tests and measured the water's velocity was 2m per day. 40 The calculations in respect of that measurement have now been provided to the Board of Inquiry. They concluded, if burst water had travelled from the Bayview Burst site to the Landslide Site in the colluvium, it would have taken in excess of 200 days to reach the escarpment.<sup>41</sup> That is to say, the leak would have needed to commence as early as late May or the beginning of June 2024 to have arrived by 5 January 2025. The UoA determined that the leak did not commence until August 2024, and did not flow in earnest until months later. Put another way, if the burst water had travelled to the Landslide Site through natural soil, it would have arrived too late to impact on the 2025 landslides. Moreover,

<sup>35</sup> Table 7 in CA71 and T1284.L20-23 (5 August 2025).

<sup>&</sup>lt;sup>36</sup> Authored by Professor van Zyl and Dr Andrew Brown.

<sup>&</sup>lt;sup>37</sup>The solicitors for SEW invited the Board of Inquiry to call Professor Van Zyl of the UoA to give evidence at the hearing: see email from Thomson Geer to the solicitors assisting the Board of Inquiry dated 22 July 2025.

<sup>&</sup>lt;sup>38</sup> The UoA noted that his conclusions were supported by site observations and calculations: see Exhibit CA76 and Exhibit CA69 at internal page 48-49.

<sup>&</sup>lt;sup>39</sup> 31 December 2024 was when the volume was at its maximum. The amount that infiltrated on earlier days was less: See T1237.L22 (5 August 2025). See further T1238-1249 (5 August 2025).
<sup>40</sup>T1261: L2-40(5 August 2025): Mr Hartley acknowledged by human error they had omitted to set out the calculations in their report. The testing and calculations were conducted on site and were in existence, but it was oversight that they were not set out. However, the calculations upon which they relied were provided to the Board on 8 August 2025. Mr Bolton gave evidence of the basis for his calculation of 2 meters per day: T1287.L17-31 (5 August 2025).

<sup>&</sup>lt;sup>41</sup> Exhibit CA69 at internal page 49.

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Mr Bolton explained there was a range, and 2m per day was at the upper end of that range based on the data; so 2m per day was a conservative figure.<sup>42</sup> If the calculation had been performed at the lower end of the range, then it would have taken in excess of 1000 days to reach the Landslide Site.<sup>43</sup>

- 19. Mr Hartley doubted the possibility of burst water travelling to the escarpment the entire way through service trenches, including because of the need for it to jump service trenches. However, he gave evidence, if the burst water had found its way from the Bayview Burst site down to Prospect Hill Road through the service trenches, it would have merely taken "a matter of days" he estimated "in the region of 30 days" through the service trenches. On the latter basis, the burst water would have arrived at the Landslide Site on or about 1 November 2024, being much too early to have impacted on the 2025 landslides.
- 20. Mr Hartley was questioned about the existence of a deficiency in a storm water trench at Browne Street. That deficiency had been identified in 2025, and Mr Pope has given evidence that this deficiency was minor. Mr Hartley and Mr Bolton assessed, if water had travelled to the Landslide Site via that deficiency in that storm water drain, and they concluded the burst water would have arrived at the Landslide Site much too early to have impacted on the 2025 landslides.<sup>47</sup>
- 21. Notwithstanding these calculations, as noted above, the dye tracer tests do not provide evidence of a pathway from the sewer main trench in View Point Road or through the storm water system at Prospect Hill Road.
- 22. The geochemical testing also undermines the viability of the theory the Bayview Burst had triggered the 2025 landslides. Mr Jewell's evidence was that he did not believe mains water could acquire very much in the way of dissolved solids as seen in the water sample taken at the head scarp on 6 January 2025, by reaction with the granitic backfill material or embedment material. 49
- 23. Mr Jewell opined water exiting the scarp after the 5 January 2025 landslide was a mixture of mains water, and a significant amount of "other water" to have raised the chemical composition measured at the scarp (330mg/L of chloride).<sup>50</sup> He considered the mixing ratio to be about 1 to 4 (1 being mains water and 4 being natural ground

<sup>43</sup> T1287.L33 to T1288.L3 (5 August 2025).

<sup>&</sup>lt;sup>42</sup> T1261.L29.

<sup>&</sup>lt;sup>44</sup> T1286.L27 to T1287.L3 (5 August 2025).

<sup>&</sup>lt;sup>45</sup> T1287.L1-15 (5 August 2025).

<sup>&</sup>lt;sup>46</sup> T1288.L36-44 (5 August 2025).

<sup>&</sup>lt;sup>47</sup> T1280.L26-45 and T1281.L1-9 (5 August 2025) and T1281.L11-19 (5 August 2025).

<sup>&</sup>lt;sup>48</sup> T1225.L45 to T1226.L6 (5 August 2025).

<sup>&</sup>lt;sup>49</sup> T1344.L41 to T1345.L10 (5 August 2025).

<sup>&</sup>lt;sup>50</sup> T1344.L45 to T1345.L1-18 (5 August 2025).

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- water). Mr Jewell had a high degree of confidence in that assessment.<sup>51</sup> Mr Jewell did not attribute the mains water to the Bayview Burst; merely stating the water exiting the scarp had a 1:4 ratio involving mains water and natural ground water.<sup>52</sup>
- 24. Mr Jewell determined that three quarters of the composition of the water was ground water and only one quarter was mains water, because the mains water had not taken on the chemical footprint of ground water. For the same reason it follows that the mains water had not recharged the ground water. In his report, Mr Jewell determined that because of the chemical composition and velocity of water he concluded that it is unlikely that the flow originated from the Bayview Burst.
- 25. Mr Jewell's opinion is to be preferred to Dr Vu's, given Dr Vu's calculations was based on his assumption that 70% of 37ML got to testing location A.<sup>53</sup> The basis of Dr Vu's calculations was contrary to the evidence. The amount of burst water that flowed into the service trenches and down to testing location A was significantly less than 70% of the total volume of burst water on the UoA's uncontested evidence.
- 26. Once the 5 January 2025 landslide occurred, the 14 January 2025 landslide was inevitable.<sup>54</sup> Following the 5 January 2025 landslide, a steep head scarp formed on the escarpment; the steepening of the slope made it more susceptible to landslides. That is to say, the occurrence of the 5 January 2025 landslide was a causal factor for the 14 January landslide.<sup>55</sup>
- 27. Mr Hartley undertook testing and assessed the escarpment only needed between 2000 litres and 2300 litres of water to be introduced to cause the 5 January 2025 landslide.<sup>56</sup> On the basis of Mr Jewell's 1:4 ratio, this means only 500-575 litres of mains water was required.
- 28. Mr Paul estimated the amount of water required to trigger the movement of the estimated 300m³ of soil from the 14 January 2025 landslide was in the order of 36,000 litres. That estimate was based upon his suction theory, and the approximate 300m³ of soil that was detached in the 14 January 2025 landslide. Thousand Hartley extrapolated from Mr Paul's calculation in relation to the 14 January 2025 landslide to determine what would be necessary for the 5 January 2025 landslide, having regard to the volume of soil detached in the 5 January 2025 landslide. He stated: "if you were to use Mr Paul's calculations purely to work out what the 5 January slide needed you

<sup>&</sup>lt;sup>51</sup> T1333.L34-45.

<sup>52</sup> T1334.L19-26.

<sup>53</sup> T1344.L14-39 (5 August 2025).

<sup>&</sup>lt;sup>54</sup> T1223.L35 to T1224.L8 (5 August 2025).

<sup>55</sup> Exhibit CA67 at paragraph 134; T1223.L 35-47 (5 August 2025) and Exhibit CA74.

<sup>&</sup>lt;sup>56</sup> Exhibit CA69 at internal page 50.

<sup>&</sup>lt;sup>57</sup> Exhibit CA67 at internal page 82.

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- would come up with something in the region of between 800 litres and 2,400 litres. So based on that taking of Mr Paul's calculations we tend to marry up very nicely".<sup>58</sup>
- 29. On either of those figures (2000-2300 litres or 2400 litres), the volume of water required to trigger a landslide on 5 January 2025 was very small. Mr Hartley acknowledged it could be created from "local, inert, inadvert [sic] and very regular sources".<sup>59</sup>
- There are many potential sources for 2000-2300 litres (comprising merely 500-575 30. litres of mains water). Mr Bolton gave evidence that irrigation was a plausible, alternative source of mains water. 60 He explained that low permeability fill materials act as a skin and hold back the shallow aquifer water, and once that skin is ripped off, the water building up behind the skin is released. In his opinion the influx of water behind the skin from irrigation could cause the skin to burst. There was evidence that the property with the highest use of water in the McCrae Landslide Site<sup>61</sup> in the period from April 2022 to May 2025 was 10-12 View Point Road, 62 followed by 4 View Point Road. There was evidence that 10-12 View Point Road had an irrigation system and Mr Kotsiakos from the Mornington Peninsula Shire Council gave evidence that on 13 January 2025, being the day before the 14 January 2025 landslide, he observed Mr Borghesi watering his garden. 63 It is open to infer that irrigation may have been higher than average in the days immediately before the 5 January 2025 landslide given the lack of rainfall and the pattern of 30+ degree Celsius temperatures in the lead up to the 2025 landslides.64

<sup>&</sup>lt;sup>58</sup> T1293.L27 to 36 (5 August 2025).

<sup>&</sup>lt;sup>59</sup> T1294.L24 to 26 (5 August 2025).

<sup>&</sup>lt;sup>60</sup> Whilst Counsel Assisting questioned Mr Bolton about whether this was speculative given the upwelling of water in Coburn Avenue and surrounds, the fact remains there is no evidence of the pathway to the Landslide Site. The dye testing reveals there is no pathway from Prospect Hill Road or the service trenches to the Landslide Site. Further, the references to paleochannels as a potential pathway was acknowledged by Mr Paul to be theoretical and uncertain, and does not accord with the transportation time and EC measurement on 6 January 2025. In so far as Counsel Assisting referred to the fact water ceased to exit the escarpment after the repair of the Bayview Burst. However, that does not support the contention. The evidence is that water was still running in at least April 2025: [T475.L4-8]. Given the exclusion zone, there would also be no irrigation after 14 January 2025 <sup>61</sup> The phrase "McCrae Landslide Site" is defined in exhibit 4 to the witness statement of Andrew Forster-Knight [Exhibit CA42].

<sup>&</sup>lt;sup>62</sup> Whilst 10-12 View Point Road is a large block, Mr Borghesi's evidence was that the house and landscaped garden comprises less than half the total land. Just over half of the land comprises the steep escarpment (Exhibit CA22). T482 (14 May 2025): He gave evidence that the area of the 2022 landslide was not frequently used and tended to remain fallow and (T483.L11-16): the area of the 2025 landslides could not be used for anything.
<sup>63</sup> Exhibit CA54.

<sup>&</sup>lt;sup>64</sup> See CA27 at internal pages 5 to 15: For example, the absence of rainfall and 30 degrees on 3/1/25, 36.6 degrees on 4/1/25 and 39 degrees on 5/1/25. See also report of Mr Jewell; Exhibit CA71 at paragraph 172 on internal page 68 and paragraph 189 on internal page 78

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- Mr Forster-Knight also gave evidence of private leaks throughout McCrae. Whilst data before the installation of digital meters was limited, there was for example evidence of a leak at 9-11 View Point Road that was identified on 26 November 2024 and was reported on 23 December 2024 as having been fixed, 65 evidence of sump pumps being used by residents and red notices having been issued for properties in the area to notify them of private leaks. Mr Forster-Knight's evidence was that as of 6 June 2025 a total of 57 leaks were identified on private property in McCrae, representing a cumulative water loss of approximately 800,000 litres since digital meters began identifying leaks in the suburb). There have been 24 leaks over 1000 litres a day. One property in Cook Street had a leak of 27,000 litres a day, and another property in Bayview Road had a leak of 3,500 litres a day. It is open to infer that there was also significant private leakage prior to the installation of digital meters.
- 32. As to why there had not been a landslide earlier, given the small volume of water required to trigger the 5 January 2025 landslide, Mr Hartley stated that there had been changes at the Landslide Site, including the construction of the most recent 2m retaining wall at 10-12 View Point Road, changes in vegetation, other development work and modification to the slope itself.<sup>66</sup>
- 33. Given the small volume of water required, the 5 January 2025 landslide was "a landslide waiting to happen".<sup>67</sup>

#### Resilience

- 34. Detailed evidence has been led about water being a major trigger of landslides, and about the potential sources of that water, including rainfall, ground water and natural springs, private water usage and leaks, and damage sustained to or the failure of water and drainage assets.
- 35. Since the 14 January 2025 landslide, SEW has undertaken significant work to minimise the impact of inevitable damage sustained to and failure of public and private assets, including the development of telemetry on public water mains and the

<sup>&</sup>lt;sup>65</sup> Exhibit CA42: The montage record in respect of the leak, which is annexed to Mr Forster-Knight's statement, notes that there had been a lot of rain recently and that water was leaking from a customer-side pipe, down through the backyard retaining wall.

<sup>&</sup>lt;sup>66</sup> T1296. In short, the escarpment and its surrounds have not remained static. From 2022 there has been a reduction in vegetation, the installation of a retaining wall in January 2024 at 10-12 View Point Road [T536] and council drainage upgrades in View Point Road. There is no evidence of what anthropogenic changes have been made at other dwellings along the escarpment near the Landslide Site. By analogy, in his evidence Mr Pope observed that it would not be possible to reverse engineer factors triggering the 2022 landslide because the environment had changed over the last 3 years: T1130.L26-34.

<sup>&</sup>lt;sup>67</sup> T1294.L6-36 (5 August 2025).

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- installation of smart meters to warn of leaks on private water mains or excess private water use. That work is detailed in the Statements of Mr Tim Lloyd and Mr Forster-Knight, and that work continues.
- 36. Notwithstanding that work, and the technological improvements derived from that work, the threat of water triggers is ever present and, to some extent unavoidable, especially given the small amount of water it can take to trigger a landslide in landslide prone areas, like the Landslide Site.
- 37. The risk of extreme weather events including heavy rainfall cannot be prevented and is arguably more likely to occur because of climate change. The risk of people wanting to irrigate their gardens cannot be prevented. Whilst technology and the works referred to in the evidence of Mr Lloyd and Mr Forster-Knight will assist in the faster identification of water loss from private and SEW assets and minimising risks, the loss of water from SEW and private sources cannot be altogether eliminated.
- 38. As such, SEW submits it is critical that the focus be on making landslide prone areas more resilient to the inevitable ingress of water.

29 July 2025