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 MEASURES TO REDUCE OR PREVENT THE RISK OF ANOTHER LANDSLIDE

1. To reduce the risk of a future landslide, it is critical to build resilience in all landslide susceptible areas in McCrae. That is to say, it is necessary to control, so far as practicable, 'preparatory factors'. That is because 'triggers' will always exist and they are less readily preventable. For example, one cannot rule out the risk of an extreme rainfall event, people irrigating their garden, a leak in a water pipe (either private or from a SEW main), a flood or an earthquake.[1] Landslide prone areas need to be strengthened to be able to endure triggers to which, in the ordinary course, they may be subjected.

2. Conclusions drawn by experts in the months after the McCrae Landslide revealed that, prior to the 5 January 2025 landslide, the escarpment was by reason of its physical features liable to fail.[2] Mr Hartley described the escarpment as being "on a knife-edge"; with the 5 January 2025 landslide "likely to happen anyway" and the 14 January landslide "very likely to happen.[3]

3. While South East Water (**SEW**) does not seek to contend whether Mr Pope's or Mr Paul's mitigation proposal is to be preferred, it recognises, in light of the fragility of the escarpment, that there is evident merit in Mr Pope's observation that:

> *"I'm not looking to reinstate the land form"[4]…."I'd rather respect what the land form's saying, where it's stable in its own – well, I don't like using that word, but I'd rather respect the land form than trying to bring fill in and increase the loads again because as – you know, my view was that it was fill. It doesn't seem sensible to bring fill back in for me."[5]*
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> and

[1] For example, the roll-out of digital meters revealed the significant volume of private leaks in McCrae (see Exhibit CA-42 and annexures in relation to private leaks).
[2] Erosion was assessed as a "significant" or "major" preparatory factor by all of the experts [Exhibit CA74at page 0004]. Mr Pope had assessed it as having a Factor of Safety of close to 1 [Exhibit CA71 at MSC.5087.0001.0215] and was of the opinion that "The 2024 and 2022 RWs and associated filling introduced a destabilising force…following construction of the 2022 and 2024 retaining walls and associated filling the slope is unstable under elevated groundwater conditions leading to global instability and geotechnical failure of the slope" [Ex CA71 at page 0214] and if the 2022 and 2024 RWs were never built it is possible that the 2024 Landslides do not occur [Exhibit CA71 at page 0221]. See also reference to the slope being "fundamentally unstable with or without groundwater" in Exhibit CA71 at page 0209.
[3] T1294.L28 (5 August 2025).
[4] T1368.L10-L11 (18 August 2025).
[5] T1373.L41-L46 (18 August 2025).

> "*My view is that this gully has returned close to its form pre-subdivision. So 100 years ago looking at the old photos of the land form I believe it's failed back to a very similar geometry on the flanks of the gully. Certainly some more has come out of the bottom. But it is telling you how it behaves under load from whether it's fill or windblown soils or whatever. It's saying it's unhappy. So to me as a designer I'm not going to load that hill up again*."[6]

4. In other words, Mr Pope has given evidence that "old fill" was a "major" preparatory factor that contributed to the 5 January 2025 and 14 January 2025 landslides.[7] Mr Pope's mitigation proposal recognises that the natural environment is presently (at least momentarily) closer to equilibrium and that re-introduction of fill, as part of Mr Paul's remediation proposal, risks repeating the mistakes of the past.

5. In light of the area having had 4 landslide events in 3 years, including the fragility of the escarpment even before the 5 January 2025 landslide, Mr Pope's recommendation not to try to return the escarpment to its pre-landslide state, but keep it as close as possible to its natural configuration, is a sensible and prudent course.

6. Mr Paul acknowledged that despite his proposal "*you might still get a landslide*". He stated that his approach was directed to protection rather than stopping the landslide happening. However, Mr Paul conceded that a future landslide "*might be a different part of the slope other than where the 2022 slide occurred that could still be vulnerable to rainfall*."[8] This evidence highlights the need to build resilience, by seeking to control all preparatory factors, including the application of an EMO to all landslide susceptible areas, stormwater management and vegetation removal controls, across the entire landslide prone area in McCrae.

Mr Paul's Report

7. Mr Paul acknowledged that his mitigation/remediation report should be considered a "concept design" rather than as advancing a final view.[9] In so far as Mr Paul's causation and mitigation/remediation report(s) raised suggestions in relation to water and sewerage infrastructure, including the replacement of pipes, trench stops,

[6] T1393.L30-L38 (18 August 2025).
[7] Exhibit CA74 and Exhibit CA71 at bates page number 0442
[8] T1356,L22-l26 (18 August 2025).
[9] T1357.L22-L24 (18 August 2025).

impermeable fill, and carrier pipes, the Board should make no recommendation about such matters. Instead, risk assessment of water and sewerage assets, and risk controls to manage risks in respect of those assets, should be and are addressed within SEW's revised asset management framework (including the asset risk management model).[10]

8. Mr Paul's observations in relation to water and sewerage assets are better understood as casual observations, rather than as considered conclusions following detailed analysis.

9. For example, Mr Paul's causation report stated that it may be prudent to upgrade the aging asbestos cement (**AC**) pipes in McCrae and, in his mitigation report,[11] Mr Paul explained that this was because AC pipes "have seen a higher rate of leakage compared to other areas of McCrae".[12] In his oral evidence Mr Paul clarified that he had seen an article "in the paper" about AC pipes which had drawn his attention to the issue; the issue was in the public domain.[13] He acknowledged that his reference to comparative leak rates in the report was based merely upon a map of leaks that he had seen.[14] Aside from seeing some maintenance records, he was not aware of full leakage data and did not know why each leak had occurred.[15] Mr Paul acknowledged that leaks occur for all sorts of reasons, including reasons that have nothing to do with pipe composition or age[16] and that the pipe which is the subject of the Bayview burst was a PVC pipe. [17] He had not costed the proposal and conceded that "the cost of trying to replace all this stuff is astronomical" – for water corporation customers.[18] Mr Paul confirmed that he had not reached a positive view on whether AC water mains should be replaced in McCrae, but he was merely "raising it for consideration".[19]

[10] The revised asset management framework and asset risk management model was the subject of evidence by Mr Chris Smith (Exhibit CA51).
[11] DPA.0005.0001.0001 (**Paul Mitigation Report**).
[12] Paul Mitigation Report at paragraph 29, bates page number 0011.
[13] T1394.L34-L36 and T1396.L22-L27 (18 August 2025).
[14] T1394.L23-L27 (18 August 2025).
[15] T1394.L21-L23 (18 August 2025).
[16] T1394.L42-L46 and T1395.L4-15 (18 August 2025).
[17] T1395.L17-L20 (18 August 2025).
[18] T1396.L22-L31 (18 August 2025).
[19] T1367.L3 (18 August 2025).

10. Although Mr Paul had raised the possibility of upgrading vitreous clay sewer pipes in his causation report,[20] his oral evidence appeared to qualify or retreat from that position.[21]

11. As to his suggestion about trench stops, Mr Paul accepted that trench stops would slow down all types of water that was flowing in service trenches - including rainwater and ground water – and force it up to the surface.[22] He referred to the purpose of trench stops as being to bring water to the surface.[23] However, trench stops are unnecessary to capture burst water from water mains because burst water generally flows to the surface in any event.[24] In his oral evidence, Mr Paul qualified his trench stop suggestion by saying that it was mainly raised in respect of sewers. He explained that the latter would also require water from the sewer trench to flow to the surface rather than directly into storm water.[25]

12. However, Mr Paul conceded that bringing ground water to the surface could cause damage to pavements and roads, wet areas and inconvenience, in the sense of a public and private nuisance.[26] Depending on the topography of the land at the location the water surfaces, and the presence of any cracks in kerbs for example, the surfacing water could then flow towards the escarpment. For that reason, Mr Paul acknowledged the need for great care in where trench stops could be located.[27] He appeared to accept that even if a trench stop were installed in a sewer trench, the water flowing in that trench would then just take another path out of the trench, for example through a void or channel to which he had referred in his earlier evidence.[28] For that reason, he said "proper thought and engineering" would be necessary if such an intervention were to be made.[29]

13. In other words, there is a serious question as to whether trench stops on sewers would be efficacious to prevent a landslide or beneficial, given the ability of water (groundwater or water from other sources) in the trench to divert to other pathways if its flow is slowed or impeded by a trench stop, and the potential for damage and a

[20] Paragraph 216 of CA67.
[21] T1367.L17-L29 and T1396.L33-L45 (18 August 2025).
[22] T1397.L1-47 (18 August 2025)
[23] Paragraph 216 of Exhibit CA67.
[24] The water from the Bayview burst water main also came to the surface but was not seenbecause of its remote location.
[25] T1399.31-L45 (18 August 2025).
[26] T1398.L43 to T1399.L8 (18 August 2025).
[27] T1399.L10-L29 (18 August 2025).
[28] T1400.L13-L27 including "you're right, all these things are considerations" at L21 (18 August 2025).
[29] T1400.L25-L27 (18 August 2025).

nuisance caused by forcing ground water to the surface. The same logic would apply to all trenches, including mains, stormwater, gas, communications, and electricity.

14. As to Mr Paul's suggestion of using impermeable backfill around service trenches – in effect to isolate the trench - this also presents difficulties and a need for more careful consideration. Mr Paul conceded that impermeable backfill does not remain impermeable forever,[30] and that manholes and other infrastructure penetrations mean that impermeable fill around a trench is not entirely impermeable.[31] He accepted that as a consequence, if burst water were flowing down a trench that was surrounded by impermeable fill, the flowing water would look for the weakest point in the fill and then head outside of the trench. This could result in water surfacing quite some distance from the source of the leak,[32] making the source of the leak more difficult to detect. Mr Paul conceded that another consequence of impermeable fill would be that water from private leaks could not readily enter the trench and go out to sea.[33] Whilst trench stops are a tool, he volunteered that it would be necessary to consider whether it was appropriate in some places to use it. [34] He also acknowledged that it would be necessary to take into account relevant industry Codes.[35]

15. Mr Paul also accepted that it would not be practicable to have carrier pipes installed throughout McCrae because the suburb would need to be essentially entirely "dug up" and every 20m or so there would be a branch off to a main.[36] Frequent service connections mean carrier pipes are not practicable. He acknowledged it would also be cost prohibitive and might be something that could be considered only on a particularly vulnerable part of a pipe.[37]

16. As noted, Mr Paul had not reached a positive determination about any of the above measures.[38]

17. Mr Paul considered SEWs risk-based model, in its revised asset management framework, to be prudent and appeared to accept that it was the appropriate vehicle for considering mitigation measures for water and sewer assets, acknowledging:

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[30] T1401.L1 (18 August 2025).
[31] T1401.L8 (18 August 2025).
[32] T1401.L12 - T1402.L17 (18 August 2025).
[33] T1402.L31-L37 (18 August 2025).
[34] T1401.L9-L10 (18 August 2025).
[35] T1402.L39 – T1403.L27 (18 August 2025).
[36] T1403.L43-L11 (18 August 2025).
[37] T1404.L3-L11 (18 August 2025).
[38] T1405.L1-L20 (18 August 2025).

> *"there is only a certain amount of money available to do this maintenance. Do a risk assessment, focus on the highest risk site first. It makes perfect sense"*[39]

and

> *"it's a sensible model. It's like triaging at a hospital or something. You know, you treat the highest risk patients first. It's the same type of thing. You treat the highest risk first".*[40]

18. SEW submits that issues of asset renewal, and other risk control measures in respect of water and sewerage infrastructure, should be addressed in accordance with SEW's revised asset management framework and asset risk management model (Exhibit CA51). This is for the reasons identified by Mr Paul above, and because water and sewerage experts at SEW are well-placed to undertake such assessments given their knowledge and experience of the relevant assets, their knowledge of the regulatory requirements and industry Codes in respect of the relevant infrastructure, and of competing needs across the SEW network.

19. Finally, Mr Paul's mitigation/remediation report raised the option of installing wells in View Point Road,[41] which he stated would be owned and maintained by the Council.[42] There is merit in Mr Pope's concern about the wells, including issues of ownership and responsibility for the proposed well infrastructure.[43] There is also an issue as to which entity is responsible for groundwater, which is primarily the water that would be captured by the wells. Although SEW acknowledges that Mr Paul is merely raising ideas rather than setting out his concluded view, SEW would not accept ownership of or any responsibility for the maintenance or control of any such well infrastructure or system.

Conclusion

20. SEW considers that there is merit in Mr Pope's reluctance to pursue remediation, and the importance of "listening to the land". The Board of Inquiry has been asked to identify any measures for the prevention or mitigation of the risk of similar landslide

[39] T1405.L46 to T1406.L27-L30 (18 August 2025).
[40] T1406.L20-L30 (18 August 2025).
[41] T1409.L13-L47 (18 August 2025).
[42] T1409.L46-L47 (18 August 2025).
[43] T1409.L13-33 and T1409.L46-L47 (18 August 2025).

events occurring in future in the McCrae area. Paul's remediation proposal would involve significant cost that is only directed to one small part of the large escarpment, all of which is at risk.

21. As to mitigation measures in relation to water and sewer assets, SEW's revised asset management framework, including asset risk management model, is the appropriate vehicle for assessing and implementing risk controls.

22 August 2025