

## HEARING SUMMARY – DR IAN SMITH – GEOLOGICAL HERITAGE ASSESSMENT

### Role

1. My role has been to assess the impact of the Project on volcanic features located within the Project area.

### My key conclusions/findings are:

2. The three main geological heritage features within the East West Link Project area are Te Hopua a Rangi tuff ring and crater, remnant basalt outcrops along the Onehunga foreshore and lava flows within and around the Anns Creek Area.
3. Two of these features, Te Hopua and the Southdown pahoehoe lava flows within and around Anns Creek, are identified in the Auckland Unitary Plan - Operative in Part (**AUP(OP)**) as being outstanding natural features (**ONFs**).

### *Te Hopua*

***[Drawing – Annexure A to my EIC, Extent of mapped ONF at Te Hōpua and approximate crater rim location]***

4. Te Hopua provides evidence of an explosive eruption triggered by the interaction of hot magma with water, producing tuff which was deposited as a cone surrounding a crater.
5. There will be earthworks on the crater floor (on landfill), and a small encroachment into the side of a remnant section of the tuff ring in the north-western corner of the tuff ring. The proposed trench on the south side of the tuff ring is outside of the mapped ONF area. It is likely to encounter tuff deposits at the lower levels (below sea level). I consider that any adverse effects on the mapped ONF will be negligible and there will be benefits from an education and research perspective from studying in the cut surfaces and opportunities to educate the public by installing new interpretive signage.

### *Anns Creek Areas*

***[Drawing – Annexure D to my EIC, Extent of mapped ONF for Anns Creek lava flows]***

6. One ONF classification applies to a number of remnants (shown in grey hatching on the drawing). I refer to these as the Anns Creek Estuary, Anns Creek West, and Anns Creek East areas. The purple areas are the areas that I identified on site visits as being visible lava flows. The Anns Creek Estuary area contains examples of pahoehoe textured (ropey) lava flow surfaces. Anns Creek West and East contain outcrops of the toes of lava flows probably from Mt Wellington. These are the only substantive remnants of a formerly extensive series of lava flow toes along the northern margin of the inlet.
7. In Anns Creek Estuary the alignment has been located to avoid physical works on the pahoehoe lava flows and the majority of the area mapped as an ONF is avoided outright.
8. In Anns Creek West, the alignment has been located to avoid the mapped ONF completely.

9. In Anns Creek East, the viaducts will result in damage to and loss of small sections of lava. However, the alignment has been located to the northern edges of Anns Creek East, where there are areas of landfill and the Construction Restriction Area, provided for in the conditions, will ensure that the most sensitive areas are avoided.

**Issues as between myself and other experts:**

10. During conferencing, Mr Jamieson and I largely agreed about the level of physical effects on the ONFs throughout the Project Area. We agreed on a number of mitigation measures which have been included in conditions.
11. Two other matters that relate to Te Hopua, that were agreed during conferencing but are not addressed in conditions, were the relocation of the storm water outfall near the intertidal tuff and the visual impacts of the retaining wall for the Neilson Street Over Bridge.
12. Regarding the relocation of the stormwater outfall, Mr Cain explained in his evidence that it would be possible to include erosion protection measures in future detailed design and construction stages of the Project. I support that proposal.
13. I also expressed a view about the visual impacts of the retaining wall for the Neilson Street Overbridge. Mr Jamieson and I discussed during conferencing the possibility of opening up this area under the bridge. I agreed this would be a good idea if it is practical but I do not consider this is required for mitigation of any geological effects of this Project.

**Conclusion**

14. Overall, I consider that the effects of the Project on geological features will be minimal. In my opinion the Project provides an opportunity to create positive outcomes in terms of increasing public awareness and education about these features and the opportunity to study exposures during trenching.