MT MESSENGER BYPASS PROJECT: SUMMARY OF EVIDENCE OF HUGH JOHN MILLIKEN (PROJECT CONSTRUCTION) FOR THE NZ TRANSPORT AGENCY

1. I was appointed as Alliance Manager for the Project in May 2018, prior to which I was the Earthworks Manager, a role I held since March 2017. As the Alliance Manager, I have the overall day-to-day responsibility for the delivery of the Project by the Alliance.

2. I have been to the site at least eight times, in varying seasons and weather conditions, on both the east and west sides of the existing State Highway.

3. Based on my experience within the construction industry, the Project, although significant, is not a particularly large scale project. The total earthworks volume, the total length of roadway to be constructed as well as the total area of the site are not on the scale of several high profile projects currently underway in New Zealand. This means that the project resources and attention can be focused on the works, especially in relation to reacting to weather forecasts and seasonal changes

4. The Project involves the following proposed key construction aspects;

   (a) construction of 6km of new two-lane road;

   (b) a main construction yard (with other minor yards), access and haul roads, storage and disposal sites;

   (c) a tunnel (235m in length) through the ridgeline in proximity to the existing Mt Messenger rest area, with associated tunnel control building and emergency water-supply tanks;

   (d) a 120m long bridge over a wetland on a tributary of the Mimi River;

   (e) a 25m long bridge over a tributary of the Mangapepeke Stream, which has been recently added to the Project as it will provide higher certainty of ensuring appropriate fish passage for a wider range of flows. A fill and culvert has been deleted from this location

   (f) earthworks footprint over a total area of approximately 36ha, with a cut volume of approximately 960,000m3 and a bulk fill volume of approximately 890,000m3;

(g) at least 10 cuttings up to a depth of about 60m, covering a combined distance of around 2.6km (including the tunnel portals); and

(h) at least 15 earth embankments up to about 40m in height (but typically less than 5m high), along a combined distance of approximately 2.5km.

5. The Project will be constructed in a region-based and zoned manner with works occurring in a staged manner within each zone.

6. All works will be undertaken to minimise environmental effects to the extent practicable, in accordance with the CEMP.

7. The programme also recognises the poorer weather conditions likely to be encountered in winter, and has used a higher number of stand-down days for earthworks in those periods to allow for managing sediment and erosion risks by employing the SCWMP process.

8. At any one time during the construction process, works will be carried out in multiple zones, across both regions. Works will commence in the ten different zones at different times. The general sequence of construction in each zone will be:

(a) Preparatory Works will be carried out (such as surveys and investigations; monitoring; removal of stock and pests such as pigs and goats and fencing off of construction area; and initial earthworks to begin to establish site access, tracks, construction yards and laydown areas, soil disposal sites and erosion and sediment control);

(b) that will be followed by Establishment Works (to open up the site through vegetation clearance, stream diversions and construction of sediment control structures; and

(c) the main Construction Works will then follow (such as bulk earthworks, drainage installation, bridge and tunnel construction, pavements and surfacing, and reinstatement and finishing works).

9. The main construction yard will be at the northern end of the alignment (in zone 10), and will be accessed from SH3. This 5,000m^2 (approximately) construction yard will be the central hub for the construction of the Project.

10. Ten site access points off SH3, and associated access tracks and roads, will allow for direct access to work areas and for work to progress in multiple locations at once. The site access points will be developed and managed in

accordance with the CTMP to ensure the safety of access to and from the site from SH3 (and the safety of other SH3 users).

11. The site access points required would be built to applicable standards and code requirements, acting on the advice of traffic engineering professionals. I consider that approaches such as those outlined, that range from temporary and short term solutions to ones that are semi-permanent and more extensive, and based on the length of time and number of traffic movements required, are a practical solution to managing site access and egress.

12. Bulk fill will mostly be accessed from cuts carried out as part of construction. Aggregates, concrete, pavement and surfacing materials, general construction items and fuel will be delivered to the site via SH3.

13. Water will be required for dust suppression and other construction activities, and will be abstracted from one site in each of the Mimi River and Mangapepeke Stream. Water abstraction will be carefully managed and limited to prevent adverse effects on water quality and instream ecological values, in accordance with the CDMP. Wastewater (sewage) will be removed from site via tankers, with no wastewater treatment or disposal to occur. Truck washout areas will be provided onsite, in accordance with the CWMP, and drain to sediment ponds for treatment.

14. The Project has been designed in order to minimise earthworks, and to optimise the balance between cut and fill (so that large amounts of material are not required to be either imported, or disposed of offsite).

15. Having visited the site several times, I am satisfied that the areas to the north and south of the tunnel have had constructability options developed that demonstrate we are able to construct these fills in a way that manages erosion and sediment control (discussed in the evidence of Mr Ridley).

16. The staging methods devised are consistent with best practice construction industry Erosion and Sediment Control.

17. The bridge type and construction method has been selected specifically to minimise effects on the surrounding environment.

Response to the NPDC Section 42A Report

18. The NPDC Section 42A report sought further information in relation to the differences between the various MCA1 and MCA2 options, and in particular

asked questions about the costs and general constructability of the chosen Project route as opposed to previously considered 'online' Z options.

19. I address these queries in my evidence. I note in particular:

    (a) a significant landslide feature crosses the path of the Z options. large-scale works would be required in order to make a Z option route appropriately resilient, adding costs in the order of $112 million for the retaining wall portion alone;

    (b) a Z option route would need to be constructed in very close proximity to the existing SH3, significantly increasing construction difficult and cost (including but not only in terms of the cost of bridge construction; and

    (c) the interaction of existing traffic with a Z option would be very disruptive to both the work being done and the road users. The construction of the E option will cause relatively little disruption to users of the existing SH3.

20. Mr Symmans discussed issues associated with the resilience of the online Z options in more detail in his evidence.

Clarification in my capacity as Alliance Manager – Tunnel design intent for pedestrians and cyclists

21. Reference drawing DES-TUN-C0-DRG-3001.

22. The Design intent is that cyclists/pedestrians will use the egress passage.

23. Signage will be designed/installed to inform users of that preferred option.

24. If a cyclist or pedestrian chooses not to use the egress passage then the tunnel will detect this and alert drivers (via warning signs) that there is someone/something on the tunnel shoulders.

25. A working example of this system in NZ is the Karori tunnel in Wellington.