

**IN THE MATTER OF**

of the Resource Management Act 1991

**AND**

**IN THE MATTER OF**

of Resource Consents and Notices of Requirement for the Central Interceptor main project works under the Auckland Council District Plan (Auckland City Isthmus and Manukau Sections), the Auckland Council Regional Plans: Air, Land and Water; Sediment Control; and Coastal, and the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health

**SUPPLEMENTARY STATEMENT OF EVIDENCE OF CLINTON JAMES  
CANTRELL ON BEHALF OF WATERCARE SERVICES LIMITED**

**1. INTRODUCTION**

1.1 My name is Clinton James Cantrell. I am the Industry Director for water and wastewater engineering at AECOM New Zealand Ltd. My qualifications and experience are set out in my primary statement of evidence, dated 12 July 2013.

1.2 The purpose of this supplementary evidence is to provide additional information and clarification to the Commissioners on the following matters.

**2. CAN THE CONSTRUCTION OF THE MAIN PROJECT WORKS BE PHASED SUCH THAT THE WESTERN INTERCEPTOR CAN BE DUPLICATED PRIOR TO THE ENTIRE PROJECT BEING COMPLETED?**

2.1 Watercare already intends to consider, at the detailed design stage, the possibility of phasing the construction of the main project works to provide for the duplication of the Western Interceptor prior to the entire Project being completed. The evidence has explained how the approvals being sought expressly enable flexibility in the approach to construction. For example, the ability to tunnel either from May Road up to Western Springs or vice versa and likewise the direction the Tunnel Boring Machine ("TBM")

will take between May Road and Mangere. A further aspect of this flexibility is whether the bottom portion of the new tunnel could be commissioned earlier, including Link Sewer 3 which is a necessary element.

- 2.2 Link Sewer 3 and associated connections are required to provide full duplication of the Western Interceptor including the disconnection of Pump Station 25 which otherwise feeds into the Western Interceptor. Part of Link Sewer 3 is likely to require the Earth Pressure Balancing ("EPB") TBM due to the depth of the tunnel and the pressure involved.
- 2.3 At this stage of concept design the intention is to build the main tunnel between Mangere and May Road and then, as the second drive, to tunnel from Western Springs through to May Road and on to Haycock Avenue, which forms the lower part of Link Sewer 3.
- 2.4 To provide for early duplication of the Western Interceptor would require completely different construction sequencing, a different set up and mobilisation, and possibly an additional shaft at May Road. Watercare is not in a position to know whether this is at all feasible and it is highly likely that it would add considerably to the cost and total duration of construction. Additional considerations include the feasibility of operating Link Sewer 3 and the lower portion of the main tunnel while the section from May Road to Western Springs is constructed.
- 2.5 Watercare is interested itself in understanding whether this might be economically and practically feasible, as one of Watercare's key drivers for the Project is to mitigate the risk of failure of the Western Interceptor. The key point is that Watercare will not be in a position to reach finality about this until the contractor has been engaged and construction methodologies, programme, and costs have been fully evaluated.

**3. IF IT IS LATER DETERMINED THAT THE WESTERN INTERCEPTOR IS STRUCTURALLY SOUND, OR COULD BE REPAIRED TO MAKE IT SO, IS IT POSSIBLE TO UTILISE THIS ASSET FOR STORAGE IN A SIMILAR MANNER TO THE MAIN TUNNEL?**

- 3.1 It is not technically feasible to utilise storage available in the Western Interceptor in a manner similar to what is proposed with the main tunnel.

3.2 The reasons for this include:

- (a) The Western Interceptor is much shallower in certain sections than the main tunnel. For example the section of the Western Interceptor from the Mangere WWTP to Kiwi Esplanade is only a few metres deep. Mobilisation of storage which would be available in the section above the siphon would result in wastewater overflowing along the low lying manholes in this section, including the Mangere Bridge residential area.
- (b) Mobilisation of storage requires careful control at the downstream end to manage how and when the storage is mobilised, and to also manage how the storage is then drained back to the Mangere WWTP to ensure that existing consent limits on flow are not exceeded. With the main tunnel this is facilitated by the proposed Mangere Pump Station. The Western Interceptor discharges into the Mangere WWTP by free gravity flow which is not controlled or regulated as the existing interceptor conveyance capacity is within the limits of the flow consent. As such, there is no mechanism to safely regulate the mobilisation of storage within the Western Interceptor or to control how stored flows would be delivered into the Mangere WWTP during wet weather events.
- (c) Finally, even if it were feasible to access storage in the Western Interceptor located above the existing siphon, Watercare would only be able to mobilise approximately 3,000 m<sup>3</sup> of storage, as opposed to the 200,000 m<sup>3</sup> provided by the Central Interceptor main tunnel.

**4. HAS THE HOBSON TUNNEL PERFORMED AS EXPECTED IN TERMS OF TARGETED OVERFLOW DISCHARGE CONTROL?**

- 4.1 In terms of capturing overflows, the Hobson Tunnel was designed on the basis of controlling overflows from three Watercare branch sewers and from the Orakei Main Sewer to a target of no more than 10 discharges in a 10-year period into Hobson Bay (i.e. average of 1 overflow per year), under normal wet weather operating conditions, down from an average of 23 such overflows per year. To date, the tunnel has performed to this standard.

**5. IS IT POSSIBLE TO INCLUDE A PROVISION FOR SCREENING OF DISCHARGES FROM THE PROPOSED EPR OUTFALL?**

5.1 As part of the concept design development Watercare has carefully assessed the potential need for screening of the Emergency Pressure Relief ("**EPR**") flows prior to discharge. This resulted in a conclusion that screening is likely not necessary, nor desirable, on the basis that:

- (a) Most existing large combined sewer overflows which discharge into much smaller bodies of water directly adjacent to residential areas, as many as 100 times per year or more, are not screened and this has not resulted in problems associated with wastewater-related debris.
- (b) The overflow which discharges into Okahu Bay is not screened. This overflow has not resulted in a problem associated with wastewater debris.
- (c) The proposed EPR outfall is estimated to discharge no more than 1 time every 50 years.

5.2 Watercare has already agreed (see Watercare's proposed Consent Condition 10.4 - 10.8) to manage the response to any discharge from the EPR structure in accordance with procedures set out in the Wastewater Overflow Regional Response Manual (Version 1.0 – May 2013), which has been developed jointly by Watercare and Auckland Council. The key purpose of these procedures is to reduce risk to people and the environment.

5.3 In terms of including a design provision for screening discharges from the EPR, on a purely technical basis, this is feasible. However, consideration of operational, risk, and safety issues are likely to practically preclude the ability to implement screens on the basis of the following key considerations:

- (a) Any screens on the EPR must be capable of functioning with no mechanical intervention (i.e. passive screens) as it is not practical to maintain a mechanical system which may not operate more than 1 time every 50 years. This dictates that the any screens would have to be coarse, manually cleaned bar screens.

- (b) It would not be practical to manually clean the screen during an EPR discharge event due to safety reasons. Workers could never enter the outfall when it is activating to remove any obstructions due to the hazardous environment. Cleaning could only occur after the event was completed, so the screening system must be capable of functioning with no blockage throughout a discharge event.
- (c) Having a screen that is capable of blocking and unable to be cleaned during the emergency event defeats the purpose of having the EPR discharge.
- (d) Given the extreme infrequency of the predicted EPR operation and the associated risk of screen blockages, it may be more practical for Watercare to implement a post-discharge event clean-up plan consistent with the Wastewater Overflow Regional Response Manual (Version 1.0 – May 2013) if it is determined that EPR wastewater related debris is a problem.<sup>1</sup>

## **6. NORGROVE AVE AND WHITNEY STREET SITES**

6.1 A question was raised by the Commissioners as to how the Norgrove Avenue and Whitney Street sites will be managed if the alignment were to move 20 m in either direction within the horizontal corridor.

6.2 In summary:

- (a) Both sites are on the link sewers not the main tunnel.
- (b) In order to rely on the proposed designation Watercare has less flexibility at these locations than at other sites.
- (c) If the link sewer alignment were to move within the horizontal corridor then it is possible that the connection pipes could be reconfigured within the proposed designation.
- (d) Alternatively, Watercare could consider amending the construction area if it were necessary to do so.

**Clinton Cantrell**  
**1 August 2013**

---

<sup>1</sup> Refer Evidence of Peter Roan at paragraph 6.3(d).