1 September 2023

Watercare Services Limited
Attn: William Huang
Private Bag 92521
Victoria Street West
Auckland 1142

Dear William

Resource consent application – s92 request

Application numbers:	BUN60420393 (Council reference) LUC60420246 (s9 land use consent) WAT60420394 (s14 water permit)
Applicant:	Watercare Services Limited
Proposed activity:	Land use consent and water permits associated with the provision of 1.5km long, 2.1m internal diameter wastewater tunnel and associated access shafts and pipe connections that will extend from Bella Vista Road in the west and connect with the Central Interceptor (a 4.5m internal diameter wastewater conveyance and storage tunnel) at 94 Shelly Beach Road (Pt Erin Park) in the east, along with associated enabling works, including earthworks, groundwater diversion and dewatering, construction noise and vibration non-compliances, and works to trees.
Site address:	Bella Vista Road in the west to 94 Shelly Beach Road in the east and areas of road reserve in between

Thank you for submitting the above resource consent application.

Following consultation with the respective Council specialists, I am writing to advise you that the following further information and clarification is required under Section 92(1) of the Resource

Management Act 1991 ("the Act") to allow for a full and accurate assessment of your application to be undertaken:

Groundwater

1. It is noted that in Appendix A of the submitted Assessment of Environmental Effects (**AEE**) that the following activity is considered to be permitted:

   The trenchless installation of the pipes which will be either drilled or thrusted will require a tunnel with an external diameter being between 300mm and 450mm. Any trenching that is required for short lengths of pipeline for private property connections will be progressively opened, closed and stabilised; the open sections of the trench will require a diversion for <10 days."

   In Appendix D of the Tonkin and Taylor (**T & T**) Groundwater and Settlement Assessment Report, dated 29 June 2023, while an assessment against Standards E7.6.1.6 (1 to 3) and E7.6.1.6 (1 to 6) of the Auckland Unitary Plan (Operative in Part) (**AUP(OP)**) is provided, it is not clear what the activity is that has been assessed. The proposed activities such as: the trenchless installation of interceptor pipes; the excavation and support of drilling and receiving pits for the interceptor pipes; the 1.5km of Tunnel Boring; and the excavation and support of the eight primary shafts (Shafts 1 to 8) and four interceptor shafts (SE01 to SE04) and each section of open cut / trenching for the trunk sewer (along Marine Parade) and interceptors should be separately assessed, using appropriate groundwater level measurements against Standards E7.6.1.6 (1 to 3) and E7.6.1.6 (1 to 6). Please provide this assessment.

2. Please provide confirmation of which invert level option for the Trunk Sewer (Ref Drawing W-SL007.002 issue 1 dated 16 February 2023) has been adopted i.e., Option 1 or Option2?

3. Section 2.3 of the T & T Groundwater and Settlement Assessment Report states:

   It understood Option 1 (deeper tunnel) is considered likely to be adopted due to the requirements for integration of the branch sewer to the proposed CI at Point Erin. However, for the purposes of this preliminary assessment both potential tunnel depths have been considered.

   In Table 2.1, the "Approximate Shaft Depth (m bgl) and "Pipe Invert Levels" for each option should be presented in separate columns. The assessment presented in Section 5 onwards appears to only be for Option 1. Please clarify this noting that in Table 5.2, the depth of Shaft 2 has been taken as 20m (Option 1).

4. Section 3.1 of the T & T Groundwater and Settlement Assessment Report T & T refers to "*WSP (3 March 2023). Memorandum to Technical Specialists. Project Briefing and Request for Technical Assessments –Herne Bay Trunk Sewer, Watercare Services Limited"*. However, the Construction Methodology presented in Appendix J of the AEE is dated 29 June 2023. Please review the updated construction methodology and update the T & T report accordingly.

5. Section 4.1 of the T & T Groundwater and Settlement Assessment Report T & T states:

It is noted that this conceptual model is conservative based on the historical information available, such that the results are anticipated to represent an upper bound of potential effects that may result from project works."

The following statement is then provided on page 17 of the AEE:

Perched groundwater above the regional groundwater table is expected between 1m and 2m.

It is also noted that a groundwater level of approximately 2.9m was measured on 23 March 2023 in a standpipe installed to a depth of approximately 16m in the vicinity of Shaft 7.

Accordingly, please provide groundwater level monitoring data from standpipe piezometers installed during the current geotechnical investigation that supports the modelling with a groundwater level at 4mbgl along the entire route of the proposed trunk sewer and interceptors. If this groundwater level cannot be demonstrated by appropriate groundwater level measurements, particularly at the: eight primary shafts; the four interception shafts; the drilling and receiving pits for the interceptor pipes; and the open trench sections for the trunk sewer and the interceptor pipes (shown on Figure 7.1), a more appropriate and suitably conservative groundwater level needs to be adopted in the assessment.

6. In Table 4.3 of the T & T Groundwater and Settlement Assessment Report, it is not clear if the groundwater levels recorded for Opus BH15/2 and Opus 15/3 were undertaken on the day of drilling. Please update the notes below Table 4.3 accordingly and also add columns to Table 4.3 with the RL of the groundwater level and the proposed deepest Invert level of Shafts 1, 2 4 & 7.

7. The modelling described in Section 5.1 of the T & T Groundwater and Settlement Assessment Report has been undertaken for the main shafts (two ground profiles) with secant piles and the interceptor shaft with steel casing. No modelling or assessment has been undertaken for the drilling and receiving pits for the interceptor pipes and the open trench sections for the trunk sewer and the interceptor pipes. Please update the assessment and ground settlement plans Sheets 1 to 7 accordingly.

8. Please provide justification for not undertaking an assessment and preparing a ground surface settlement profile (in Section 6.1 of the T & T Groundwater and Settlement Assessment Report) for the tunnel where the greatest thickness of compressible alluvial soils are present e.g. Case 1 (Shaft 2) – as shown in Figure 5.1.

9. Please annotate Figure 7.4 within the T & T Groundwater and Settlement Assessment Report and provide the calculations that were undertaken to inform the plot in Figure 7.5.

10. On Figure 8.1 within the T & T Groundwater and Settlement Assessment Report, please clarify why no Case 3 has been shown? Please provide the specific distance to the edge of the nearest property boundary and the address of that property. Please also provide the calculation for the maximum differential settlement.

11. On Figure 8.2 within the T & T Groundwater and Settlement Assessment Report, please provide the specific distance to the edge of the nearest property boundary and the address of that property. Please also provide the calculation for the maximum differential settlement.

12. On Figure 8.3 within the T & T Groundwater and Settlement Assessment Report, please provide the specific distance to the edge of the nearest property boundary and the address of that property. Please also provide the calculation for the maximum differential settlement.

13. In Section 8.2 within the T & T Groundwater and Settlement Assessment Report, please either explain why reference is made to the New Zealand Building Code – B1 (ref17) (this is a design code and not applicable to the damage assessment of existing buildings) or delete it. Please repeat this exercise with respect to reference to NZS3604, which is also considered irrelevant given that most of the houses in the vicinity of the Trunk Sewer were constructed before 2011.

14. Please provide an assessment from the Structural Design Engineer for the project in respect of the tolerance / sensitivity of the Historic Heritage dwellings listed in Table 8.3 to the predicted total and differential settlements that could result from the proposed activity with respect to their age, construction, and foundation types.

15. The specific services which could be affected by settlement associated with the proposed activity should be identified, together with their details (e.g. type, diameter, material), depth and age if known and distance and orientation from the tunnel, shafts or excavations. In Section 8.3 of the T & T Groundwater and Settlement Assessment Report, T & T state:

    Based on the settlement estimates presented earlier in this report, differential settlements are anticipated to be within the allowable tolerances of the services present within the carriageway. The estimated settlements are anticipated to have a negligible to less than minor impact on pavement surfaces and overland flow regimes.

    This statement needs to be fully justified with specific information and calculations. Please address this.

16. In Section 4.1 of the T & T Groundwater and Settlement Assessment Report, T & T state:

    Consideration of impacts to underground services which are located close to or intersecting the tunnel alignment at these low points may be required as part of our further assessment and reporting.

    Please provide a detailed assessment of the effects on these services.

17. In Section 4.1 of the T & T Groundwater and Settlement Assessment Report, T & T state:

    We have considered the time that each tunnelled section is open, the static groundwater level above mean sea level along the alignment, the distance from the foreshore, and the temporary dewatering at low rates during tunnelling. Our assessment is that saltwater intrusion is unlikely to

be observed during construction of the tunnel.

This statement needs to be fully supported / justified with specific information and calculations. Please address this.

18. Consideration needs to be given to the installation of a groundwater monitoring borehole between Shaft 2 (Figure 5.1 Ground Profile) and the dwelling at 51 Wallace Street together with two additional building settlement pins on the dwelling at 51 Wallace Street in order to measure differential settlement. Please address this or provide justification if it is considered that this monitoring is not required.

19. Consideration needs be given to the installation of a groundwater monitoring borehole between Shaft 3 and the dwelling at 50 Wallace Street. Please address this or provide justification if it is considered that this monitoring is not required.

20. Consideration needs to be given to the installation of a groundwater monitoring borehole between Interceptor Shaft SE04 and the dwelling at 46 Argyle Street together with two additional building settlement pins on the dwelling at 546 Argyle Street in order to measure differential settlement. Please address this or provide justification if it is considered that this monitoring is not required.

21. Consideration needs be given to the relocation of groundwater monitoring borehole HBS5-01 closer to Shaft 5. Please address this or provide justification if it is considered that this monitoring is not required.

22. Consideration needs be given to the installation of a groundwater monitoring borehole between Shaft 6 and the dwelling at 33 Marine Parade. Please address this or provide justification if it is considered that this monitoring is not required.

23. Consideration needs be given to the installation of a groundwater monitoring borehole between Shaft 7 and the dwelling at 22 Marine Parade. Please address this or provide justification if it is considered that this monitoring is not required.

24. Please update the draft monitoring plan to provide appropriate ground and building settlement monitoring and groundwater level monitoring, together with appropriate alert and alarm trigger levels for ground and building settlement and alert Level No 1 and No 2 from groundwater monitoring in relation to the excavation and support of drilling and receiving pits for the interceptor pipes and each section of open cut / trenching for the interceptors.

25. Please clearly identify in the draft Groundwater and Settlement Monitoring and Contingency Plan (**GSMCP**) which ground settlement markers are proposed for which “Critical Service”.

26. Please replace the Alert and Alarm Levels given in Table 3.3 in the draft GSMCP with Alert Level No.1 and Alert level No2. Council does not refer to Alarm trigger levels for groundwater monitoring.

27. Please identify on the monitoring plan the specific extent of public services that are to be surveyed and the type of survey proposed for each.

28. For clarity the properties listed in Table 4.1 of the draft GSMCP for pre- and post-construction detailed condition surveys should be shown on the draft monitoring plans Sheets 1 to 7. This is to ensure that any missing properties can be identified. Please address this.

29. It is noted that the Groundwater and Settlement Assessment Report and monitoring plan are based on the alignment of the tunnel to Shaft 1 as shown on Figure 1: Option D (Red) in the WSP Memo titled "*Memo summarising the assessment of alternative positions of Shaft* 1" dated 20 June 2023 - Appendix N of the AEE. If the other referenced options are to be considered i.e., Option A - Pink, Option B – Green, and Option C – Orange, please update the settlement assessment report and monitoring plan accordingly

Earthworks

30. The construction programme includes duration and notes that activities are likely to overlap. Please provide a set of indicative staging plans for the proposed earthworks activity in respect of the various construction locations (Table 9 section 4.7 of the AEE).

31. The construction locations set out in the updated AEE show the area and volume required for earthworks at each location. Please update the respective Erosion and Sediment Control Plans (ESCPS) with this detail (m2 and m3) to ensure the proposed controls are suitable for the areas (particularly the Construction Staging Area (**CSA**) sites).

32. The CSA sites are shown to have stockpiled materials on the updated AEE but not on the ESCPs. Please update the ESCPs to show the location of the stockpiles and provide more information as to how the stockpiles will be effectively managed and controlled to prevent sediment discharge beyond the support areas.

33. The Draft ESCP annotates 'Clean Zone within CSA'. Please provide more information on how a 'clean zone' will be achieved.

Contamination

34. The informal response letter received on 25 August 2023 confirmed the earthwork volumes and states:

    Auckland Transport's position on coal tar is that it was not used as a binding agent on Auckland roads. Therefore, we typically do not consider coal tar as a contaminant of concern in the Auckland area, unless there is any direct evidence that it was used.

    Auckland Transport online (https://www.nzta.govt.nz/resources/research/reports/388/) indicates that a research report reveals that coal tar-derived roading material contains over 1000 times more polycyclic aromatic hydrocarbons (**PAHs**) than equivalent bitumen pavements and has been

identified as a major source of PAHs in both Christchurch and Auckland aquatic receiving environments. Although it was considered that it is more likely than not that coal tar exists in soil under roads in Auckland constructed before 1960 – 1970, the attached document titled '*Coal Tar in Auckland Roads' (RCA Forum November 2015)* indicates that Auckland Transport has identified small areas of coal tar in only 11 central city road rehab projects. The document concludes that research has identified no empirical evidence to support the assumed position that it is more likely than not that there is coal tar in pre-1960 (or 1970) soil in roads. However, the attached AT document states:

- AT will continue to undertake test pit sampling for road rehab works to ensure appropriate disposal and safety measures are used.

Accordingly, please confirm whether the project area was part of the Auckland Transport study areas described in the attached document. In consideration of the project location, it appears appropriate to consider soil sampling and testing to be undertaken on roads, where earthworks are proposed prior to commencement of earthworks.

Noise and Vibration

35. The 'Document control' in the revised construction noise and vibration technical assessment, dated 3 august 2023, has not been updated. Please address this.

36. The draft construction noise and vibration management plan states that tunnelling activities will occur 24 hours a day, 7 days a week, which is inconsistent with the revised AEE and the above referenced revised construction noise and vibration technical assessment. Please address this.

Traffic

37. Please provide site plans for the CSAs showing, in particular, finished gradients and the proposed parking layout for construction vehicles and the provision of tracking curves to demonstrate that all vehicles can turn within the site to exit in a forward direction.

38. Please provide a draft construction traffic management plan that addresses the usual construction traffic management requirements, and that addresses the following concerns in particular:

    - Assessment of the additional traffic volumes on diversion routes and the impact on these routes during existing peak hours, and in particular, the cumulative traffic effects on Jervois Road.

    - Assessment on whether the diverted traffic volumes will exacerbate crash risks along Jervois Road.

    - Any necessary mitigation to address safety concerns such as the higher likelihood of any unsafe right turns out of existing intersections to Jervois Road as a consequence of the construction of Shaft 2 and the estimated partial road closure for up to 251 days.

- The safety of school children and any necessary mitigation measures given the proposed diversion route along Curran Street with schools nearby.

Trees

39. Please confirm exactly what alternative options have been considered regarding the removal of Trees 15 to 21 for construction machinery and storage purposes. The subject trees and palms make a valuable contribution to Upton Street, and it may be that their removal cannot be supported.

40. If there are no alternative options in respect of the response to question 39, please identify the measures that will be implemented to address the loss of amenity to the street as a consequence of their removal. Noting their valuable contribution, it may be that this is not possible hence the comment above that their removal may not be supportable.

41. Tree 112 (Jacaranda) is proposed for removal but comments within the submitted arboricultural report suggest that only minor pruning might be needed. Please clarify what is proposed with respect to this tree.

Parks

42. The submitted AEE that there are two temporary CSAs, with one being at Salisbury Reserve and the other at 94a- 94b Shelly Beach Road. While Figures 4-10 and 4-11 within the AEE provide an indicative (conceptual) view towards the proposed activities within both CSAs, the information is not sufficient to enable a robust assessment in respect of the impact of the proposed (temporary and permanent) activities on the reserve land. In this respect please:

    - provide additional information on the location, size, and material of the proposed buildings and the physical infrastructure within both CSAs; and

    - demonstrate on drawings how the construction of proposed concept design within the CSAs will follow crime prevention through environmental design requirements.

43. Please provide landscape plans that demonstrate that the proposed landscape outcomes will meet the proposed conditions (location of trees to be (re)planted, connections, viewshafts, reserve boundary treatments etc.), including the following information:

    - Existing site conditions including a topographic survey.

    - A demolition plan (extent of works, trees and hardstand to be removed).

    - A site preparation plan / temporary works plan.

    - A general arrangement plan (to assess connectivity, access, safety, viewshafts).

    - Landscape details (hard and soft landscaping including any furniture).

- Typical cross and long sections especially where there are significant changes in levels.
- 3D views (as required to help illustrate the concept)

Please note that these plans need to be prepared for the reserves in relation to the proposed infrastructure works and not as part of the civil drawing set.

44. Please provide a mitigation planting plan, ideally as an attachment to the submitted arboricultural report.

Built Heritage

45. Does the proposal include the removal of any blue stone kerbs from the Herne Bay area during the construction work? Please confirm.

46. It is understood that that applicant is communicating with Heritage New Zealand as an affected party, but a letter confirming this has not been provided in the submitted documents. Please provide clarification on this matter.

    Note: the provided conditions will not address all adverse built heritage effects and additional conditions will be recommended. This will ensure that the necessary measures have been taken before the start of the project and will be taken in case any remedial works are needed after the completion of the process.

Your attention is drawn to the provisions of Sections 357A(1) and 357C of the Act which set out the rights of objection against this request for information.

Pursuant to Sections 88B and 88C of the Act, the application is now "on hold" until all matters have been addressed.

If you wish to discuss the matters, please do not hesitate to contact me via email, mark@sentinelplanning.co.nz or phone on 021 619 282.

Yours sincerely

Mark Ross
Consultant Planner
Auckland Council