

Appendix 4: s53(2)(a) Fast Track Approvals Act 2024, Technical Advice – Groundwater Resources

Date		Overview 1. The Tonkin+Taylor Hydrogeology Assessment report (October 2025) presents a summary of proposed site activities and evaluates the potential temporary and permanent groundwater and surface water related effects associated with the construction and future operation of the State Highway 1 North Canterbury – Woodend Bypass. 2. The report sets out the hydrogeological assessment used to provide technical support to the Substantive Application Report (SAR) for the applications made by NZTA under the Fast-track Approvals Act2024 (FTAA). 3. The report presents an assessment of effects considerations for the proposed construction of the State Highway 1 North Canterbury – Woodend Bypass. 4. The report presents the environmental setting of the region encompassing the project and settings for specific areas on the project. 5. The assessment identifies and assesses potential changes in groundwater levels, flow and quality and associated potential effects on groundwater receptors on a project wide scale and smaller area-specific scales. 6. Assessment of effects presented include both groundwater levels, flow and groundwater quality.
To	Joanne Mitten, Principal Consents Planner, Environment Canterbury	
From	Mark Trewartha, Senior Scientist – Groundwater Resources Science, Water and Land Science, Environment Canterbury	
Project advice provided for	NZTA – Woodend Bypass Project	
Documents referred to	State Highway 1 North Canterbury - Woodend Bypass Project (Belfast to Pegasus) Substantive Application – Hydrogeology Assessment Tonkin & Taylor Ltd September 2025	
Qualifications	I hold a Bachelor of Science degree in Geology. I have been employed by the Canterbury Regional Council as a senior scientist – groundwater since January 2016. My work at CRC includes investigating, monitoring, and reporting on groundwater resource quantity and groundwater quality of the region. I also I have 25 years of groundwater flow and contaminant fate and transport modelling and contaminated site assessment and remediation experience. This role involves assessing and providing advice on potential groundwater impacts with respect the proposed consent change in conditions.	
Code of Conduct	I confirm that I have read and agree to comply with the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023. This technical report has been prepared in accordance with that Code. In particular, unless I state otherwise, the opinions I express are within my area of expertise, and I have not omitted to consider material facts that might alter or detract from the opinions that I express.	

7. The following addresses the sections of the Hydrogeology Assessment report that pertain to groundwater level, flow, and quality.

Overall Review of the report

8. In general, I agree with the Applicant on the regional and site specific environmental/hydrogeologic setting as presented in the report.
9. In general, I consider the site investigations undertaken to assess groundwater levels, flows, and quality to be extensive and comprehensive for the intended purpose.
10. In general, I consider the conceptual hydrogeologic model is based on results of the investigations and available data and accurately reflects the known hydrogeology of the region and areas specific to the project.
11. In general, I consider the groundwater receptors/users that may potentially be affected (temporarily or permanently) by the proposed project have been identified and is comprehensive.
12. In general, I agree with the Applicant that under proposed good management and environmental practices, potential effects from groundwater drawdown during dewatering activities will be temporary and negligible to low.
13. In general, I agree with the Applicant that under proposed good management practices and environmental management controls, risks to existing groundwater receptors/users from potential temporary and/or permanent effects of this project to groundwater level, flow, and quality will be negligible to low.
14. In general, I agree with the Applicant that appropriate good management practices and environmental management controls are required and will need to be put in place to mitigate potential risks/effects to groundwater.
15. In general, I agree with the Applicant that permanent effects are assessed to be in localised areas (i.e. pilings, rigid intrusions) and mostly negligible on groundwater receptors.
16. In general, I agree with the Applicant that discharge of water will require onsite management at the point of discharge. Discharges will require both good management practices and environmental management controls to mitigate effects to groundwater quality.

Benefits of the project

17. No direct benefits to groundwater or groundwater receptors are noted.

Outstanding areas

18. A 400 m distance from proposed activities is used to identify potential groundwater receptors. However, no reason/justification for the adequacy of this distance is provided in the report.
19. Groundwater Surface modelling and Dewatering assessments are included in Appendix F and Appendix G. It is recommended that the electronic files from the modelling be provided to ECan and reviewed prior to finalizing the Groundwater Monitoring Program.
20. As noted by the Applicant, some site activities and ground improvements/installation will result in penetrating the upper unconfined aquifer and in some areas the lower confined/semi-confined aquifer. This may result in a mixing of groundwater from different aquifers and that this mixing may affect groundwater level, flow, and/or quality. Based on proposed construction design and mitigation measures, I agree with the Applicant that potential temporary and permanent effects caused by these activities and improvements/installations will be primarily localised and overall potential effects to the groundwater level, flow, and quality due to the bypass are considered to be negligible or low.
21. It should also be noted that some permanent structures could provide preferential pathways for contaminants from the surface to leach to underlying aquifers. Proposed good management and environmental management practices will mitigate the risk of this potential during construction.
22. Methods of mitigating mixing of groundwater between aquifers is described, but it is unclear from what is presented in the Hydrogeologic Assessment report how the design of permanent structures will prevent/mitigate leaching of contaminants from the surface to the underlying aquifers.
23. Some permanent structures that penetrate the aquifer(s) could result in localised mounding of groundwater. This could result in springs forming where mounding is greater than the pre-construction depth to groundwater.
24. I find the dewatering assessment appropriate and acceptable for consent purposes and the input parameters reflective of anticipated site conditions and timeframes.
25. If site conditions or timeframes differ/exceed modelling assumptions, it is recommended that additional assessment be conducted to evaluate the potential of additional effects to groundwater.
26. In general, I agree that the effects on groundwater flow due to quarry filling (Section 10.4.2.4) are anticipated to be negligible. This is under the assumption that the infill does not result in runoff away from the quarry lakes.
27. Under the assumption that only clean fill is used as infill material (proposed Condition C1.13), I also agree that potential effects to groundwater quality are considered to be negligible.

28. I agree with the applicant's proposed activity to decommission existing bores within the designation in advance of construction activities and that this be done in accordance with Ecan Guidelines.
29. I also recommend that bore casing be removed prior to filling and sealing of borehole (decommissioning) when practical.

Proposed Resource Consent Conditions (April 2026)

30. I agree with the applicant that discharge water quality will require management at the point of discharge. Management should reflect both good management and environmental management practices.
31. Based on what is presented, discharges of water (during construction and permanent) to land will be via collection into stormwater swales and/or bioretention basins. The effect of these discharges to groundwater will be dependent of quality and quantity of stormwater discharged to the swales/basins, treatment performance at collection points, and discharge rate to groundwater.
32. In general, I agree with the conditions proposed and the proposed changes and comments as they pertain to groundwater flow and quality.

Groundwater Management Plan

33. In general, I agree with what is currently presented under the Groundwater Management Plan (GMP) Condition (Ref.MP.11) for groundwater management plan requirements.
34. At this time, the GMP is not available for review.
35. It is anticipated that the GMP will include groundwater monitoring requirements that are acceptable to ECAN and will provide data necessary to allow adequate assessment of effects to groundwater levels and quality due to consented activities.
36. It is anticipated that the GMP will include procedures for incorporating point of discharge management decisions and actions.
37. It is recommended the GMP include provisions for assessing potential impacts to groundwater from discharge areas (swales, basins).
38. It is recommended the GMP include reporting requirements for review and approval of ECAN.
39. It is recommended that the GMP includes reporting requirements to ECAN of actioned and/or review and approval of proposed discharge management activities and groundwater monitoring activities that are not covered in the GMP