

## Appendix 10: s53(2)(a) Fast-track Approvals Act 2024 (FTAA) Technical Advice

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date                        | 12/10/2026                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| To                          | Consents – Fast-track                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Expert Name and Job Title   | Lucy Just, Scientist – Surface Water Resources Science, Canterbury Regional Council                                                                                                                                                                                                                                                                                                                                                        |
| Project advice provided for | Carter Group Limited - Ōhoka Residential Subdivision                                                                                                                                                                                                                                                                                                                                                                                       |
| Documents referred to       | Change in Water Balance Assessment (PDP)<br>Construction Earthworks Spring and Groundwater Monitoring Plan (PDP)<br>Appendix 47. Waterways and Wetlands changes plan (Inovo)                                                                                                                                                                                                                                                               |
| Qualifications              | I hold the qualifications of BSc in Environmental Science from Massey University NZ and a Master of Science in Physical Geography from Otago University, NZ. I have 7 years' experience working in the field of Hydrology and 4.5 years' experience working as a Scientist for Environment Canterbury.                                                                                                                                     |
| 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. |

### Introduction

1. There are several questions from the Panel, specifically in Appendix 4 of Minute 1 (14/03/2026), which I have provided comment on, constrained to surface water hydrology:
  - a. Potable water supply: effects of the proposed bores on surface water users
  - b. Waterways, wetlands and ecology: Whether all affected waterways have been correctly identified and effects quantified accurately; whether avoidance of loss and modification has been adequately considered
2. I have reviewed the following updated or new documents from the applicant:
  - Change in Water Balance Assessment, 31/8/2026 (Emma Rhodes, Bas Veendrick and Carl Steffens, PDP)
  - Construction Earthworks Spring and Groundwater Monitoring Plan, 31/8/2026 (Caitlin Frazer and Emma Rhodes, PDP)
  - Appendix 47. Waterways and Wetland changes Plan - Inovo

### Discussions with the applicant

3. I have been involved with meetings and/or discussions with the applicant (or their experts) as recorded in Appendix 1.

### ***Change in Water Balance Assessment***

4. The applicant has provided an estimate of stream-depleting surface water use for the current state of the catchment and the post development phase. For comments on the stream depletion methods and the model used, refer to Philippa Aitchison-Earl's 'Groundwater Resources' s53 Technical Advice.
5. Pre-development stream depleting surface water use is detailed in the table below. The pre-development water use is approximately 22.86 L/s which equates to 296,265 m<sup>3</sup> annually (based on a 150-day irrigation season). The post development direct stream-depletion is estimated to be 5.2 L/s, however, there is an estimated total reduction in recharge of ~6 L/s also. Overall, this provides a water balance estimate of 11.2 L/s in total effect on surface water flow (abstraction and reduction in recharge) or 353,203 m<sup>3</sup> annually.

6.

| <b>State</b>     | <b>Stream-depletion rate (L/s)</b> | <b>Recharge reduction</b> | <b>Total surface water effect</b> | <b>Total annual volume (m3)</b> | <b>Period</b>         |
|------------------|------------------------------------|---------------------------|-----------------------------------|---------------------------------|-----------------------|
| Pre-development  | 22.86                              | NA                        | <b>22.86</b>                      | <b>296265</b>                   | Irrigation (150 days) |
| Post-development | 5.2                                | 6                         | <b>11.2</b>                       | <b>353203.2</b>                 | Annual (365 days)     |
| Change           | +17.7                              | -6                        | +11.66                            | <b>-56938</b>                   |                       |

7. The main effect on flows is due to the shift in the timing of the surface water use, from a ~5-month period to a year-round effect. At present the 22.86 L/s is during the irrigation season period, whereas the 11.2 L/s will be consistent throughout the year. The applicant has acknowledged this shift in the seasonality; however, it is important to note this will be an average increase in surface water use annually (56938 m<sup>3</sup>).

### **Waterways and wetland changes plan**

8. I have reviewed Appendix 47 – Waterways and wetland changes. It would be useful to have the downstream outflow proposed area identified on the map (the confluence of

where the tributaries draining the proposed area meet and flow into the lower Ōhoka River).

***Question: Potable water supply: effects of the proposed bores on surface water users***

9. As detailed above, the total surface water effect to the Ōhoka will be spread out over the year. The shift in timing may reduce the abstraction pressure on the Ōhoka and reduce demand pressure for downstream users during the irrigation season. However, there will be less recharge to groundwater within the Ōhoka South Branch area and associated spring-fed tributaries (~6 L/s).

***Question: Waterways, wetlands and ecology: Whether all affected waterways have been correctly identified and effects quantified accurately; whether avoidance of loss and modification has been adequately considered***

10. Affected waterways and effects to surface water flows have been assessed. As addressed in Philippa Aitchison-Earl's 'Groundwater Resources' s53 Technical Advice (*Outstanding areas of contention and significance 9-14*), there is uncertainty associated with these methods. Comprehensive stream flow monitoring would aid in quantifying the actual effects on surface water flows. Refer to the 'Construction Earthworks Spring and Groundwater Monitoring Plan' comments under the outstanding areas of contention.

**Outstanding areas of contention and significance**

**Construction Earthworks and Ground Water monitoring plan**

11. I have reviewed the Construction Earthworks and Ground Water monitoring plan which outlines the proposed monitoring, locations, and frequency of surface water flows. The applicant has suggested that monitoring should occur across 13 locations three times a year and a winter baseflow, summer baseflow, and an autumn or spring baseflow should be captured.
12. As detailed in Appendix 20 Surface Hydrology Assessment, the applicant has provided flow data for three dates (February, August, November 2025) across 10-13 sites within the proposed development area. The gauging data is spatially distributed across the tributaries; however, it is limited to three dates. The flow data provides an indication on the range of flows in the upper South Branch of the Ōhoka but does not provide a robust baseline of flow as it is temporally limited.
13. It is not clear how 'adverse effect' on spring flows will be determined, or how this will be avoided or mitigated.

### *Significance of this matter*

14. I believe undertaking monitoring 3 times per year is not sufficient to be able to assess 'adverse effects' on surface water flow. Given seasonal and annual variability, discrete flow measurements may simply capture this natural variability rather providing a flow record against which adverse effects on spring flows could be assessed.

### *Solution*

15. A temporary water level recorder at the tributary confluence (outlet of the proposed development area) paired with gaugings to derive a continuous flow record may provide a more robust data record for assessing changes. The monitoring should commence as soon as possible to provide a pre-development and post-development record.

### **Benefits of the project**

16. There are no specific benefits with respect to my area of expertise.

Appendix 1: Record of consultation

| Expert and date of discussion                                              | Subject                                 | Summary                                                                                                                                                                                                                                                                                                                                                                                                                                     | Matter resolved? Y/N                                                               |
|----------------------------------------------------------------------------|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| CRC Scientists Philippa Aitchison-Earl and Lucy Just<br><br>11 August 2026 | Groundwater and Surface water hydrology | A meeting was held with the Applicant to discuss groundwater and surface water matters associated with the proposal, including the site water balance and how changes to existing flow paths and volumes would be managed. As a result of the discussions, the Applicant agreed to provide a change in water balance assessment and a draft construction earthworks spring and groundwater monitoring plan to further address these matters | CRC considers further refinement of the content of the management plan is required |

## Fast Track Approvals Act 2024 (FTAA) Technical Advice

### Ōhoka Residential Development – Surface Water Resources

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date                        | 01/07/2026                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| To                          | Joanne Mitten, Principal Consents Planner, Environment Canterbury, cc Samuel Prystupa, Consents Planner, Environment Canterbury                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| From                        | <a href="#">Jen Dodson, Senior Scientist – Surface Water Resources Scientist, Environment Canterbury.</a><br>Lucy Just, Scientist – Surface Water Resources Scientist, Environment Canterbury.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Project advice provided for | Carter Group Limited - Ōhoka Residential Subdivision                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Documents referred to       | Hydrology Assessment (Bas Veendrick, PDP)<br>Groundwater Assessment of Environmental Effects (AEE) Report (Carl Steffens, PDP)<br>Dewatering and Dust Suppression AEE (Nic Love, PDP)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Qualifications              | <p><a href="#">I hold the qualifications of BSc (Hons) in Environmental Science from the University of East Anglia (United Kingdom) and a Master of Science in Hydrology for Environmental Management from Imperial College, University of London. I have 21 years' experience as a hydrologist and have been employed by CRC since November 2007. I am a member of the New Zealand Hydrological Society. In the course of my work for CRC, I have worked on catchment flow and allocation plans, notably for the Ōrari and Hinds/Hekeao catchments. I have assessed correlations of flows and modelled the effects of different allocation regimes on flows. I have also planned and analysed gauging investigations into surface water – groundwater interactions.</a></p> <p>I hold the qualifications of BSc in Environmental Science from Massey University NZ and a Master of Science in Physical Geography from Otato University, NZ. I have 7 years' experience working in the field of Hydrology and 4.5 years experience working as a Scientist for Environment Canterbury.</p> |
| 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

### Preapplication review of Application – Jen Dodson - April 2026

#### Executive summary/overview

1. I have reviewed the following documents

- [Hydrology Assessment \(Bas Veendrick, PDP\)](#)
- [Groundwater Assessment of Environmental Effects \(AEE\) Report \(Carl Steffens, PDP\)](#)
- [Dewatering and Dust Suppression AEE \(Nic Love, PDP\)](#)

- Technical Advice for Groundwater Resources (Philippa Aitchison-Earl, Environment Canterbury).
- 2. The Hydrology report sets out the hydrological and hydrogeological assessment used to provide technical support for the applications made by Ohoka Residential Development under the Fast-track Approvals Act 2024 (FTAA).
- 3. The Hydrology report presents the environmental setting of the subdivision including geological setting, groundwater flow paths, springs and wetlands and flows in the waterways intersecting the site.
- 4. The Hydrology report assesses potential effects on ground and surface water due to construction of the subdivision including:
  - changes in recharge to groundwater due to an increase in impervious area
  - potential redirection of groundwater flow through excavations and fill
  - downstream/downgradient changes in stream flow and groundwater level
- 5. The Groundwater AEE report identifies and assesses the potential effect of the take, use and discharge of groundwater from proposed bores for community supply, and proposes a Community Drinking Water Protection Zone. It also considers subsoil drainage of groundwater to drains and stormwater management areas (SMAs).
- 6. The Dewatering and Dust Suppression report assesses effects of dewatering groundwater with rates up to 75 L/s, and the use of groundwater for dust suppression at the same rates as current irrigation takes. Dewatering is required for construction of SMAs, pipeworks, roading and stream realignments.
- 7. The following addresses the sections of these reports that pertain to surface water flow.

## **Draft Review Consultation and Preapp**

### **Overall Review of the report: Hydrology**

1. I agree with the Applicant on identified surface waterways that may potentially be affected (temporarily or permanently) within the proposed project site.
2. The Applicant generally says that little change will occur to the waterways downstream of the site.

### **Overall review of the report: Groundwater AEE**

3. In general, I agree with the description of the hydrology, which is also largely contained in the Hydrology Report.
4. In general, I agree with the potential positive benefit to surface water from the reduction in pumping from the shallow aquifer.

### **Overall review of the report: Dewatering and Dust Suppression**

5. The dewatering methodology is unknown, as no contractor has been appointed. Discharges are proposed to be to surface waters, or to land where waters have elevated metal concentration. Dewatering proposes to avoid high groundwater levels and wet onsite conditions. I recommend that a condition is included to that effect.

6. I agree that dewatering water is hydraulically connected to surface waters, and the proposed discharge location condition. I note that where the discharge is to land, it will reduce the flow in the affected waterways.
7. Dewatering occurs at different times and locations to the existing irrigation consents, so effects on neighbouring wells and streams will also vary and occur at different times. I agree that lowered rates, and less abstraction during the summer may be a positive effect to groundwater levels compared to the existing irrigation abstraction.

## **Benefits of the project**

8. The transfer and reduction of total rate and volume of groundwater takes from the existing shallow aquifer irrigation takes to deeper potentially less connected to surface water aquifers could create a positive impact on stream flows and reduce Ōhoka Stream surface water allocation which currently exceeds the limit.

## **Outstanding areas**

9. I agree with Ms. Aitchison-Earl's points 24 and 25 that within the Hydrology report, there are numerous statements that effects are 'expected to be negligible', but little detail has been provided to support these expectations.
10. I note that the reports refer to the existing irrigation consents that will be transferred and/or reduced in volume, often as a mitigation/offset for the new activity. This assumes that the existing consents are currently utilised and hence part of the existing environment. No information such as metering is provided to support this.

### Hydrology Report: Change in land surface recharge contributing to spring flow due to the increase in impervious land area

11. I agree with Ms Aitchison-Earl's comments 28 and 30:
12. A reduction in land surface recharge by channelling water to stormwater and then to surface water flow rather than infiltrating to the underlying aquifer is assessed in the Hydrology Report as not having a significant effect on spring flow. This is based on generalised comments that the spring water source is from a larger catchment upgradient, and that local soils are poorly drained. Page 7 of the Hydrology Report talks of the 'relatively thin layer of fine grained lower permeable clay, silt and sand-based soils'. The groundwater levels in the piezometers have not been monitored frequently but do seem to show a response to rainfall.
13. The report notes that any impact on spring flows from reduced land-surface recharge will be partially offset by reduction in pumping for irrigation from existing shallow groundwater, to be replaced by a deeper bore for community supply. I assume that the irrigation takes are to be surrendered after the dust suppression requirement is done. The irrigation takes are seasonal, with effects mostly within the summer irrigation season. This is different timing to a reduction in land surface recharge

which occurs mostly in the winter-spring. How this impacts on overall flow to springs and the stream is not assessed.

#### Hydrology Report: Potential for re-directing groundwater flow paths

##### *Potential effects from areas of fill*

14. I agree with Ms. Aitchison-Earl's comments 33 and 34:
15. This assessment looks at the impact on the overall surface/groundwater system of infilling existing drains that do not permanently flow. It concludes that there will be localised changes in groundwater levels, but that the overall *'total combined groundwater contribution to surface water, and hence surface water flows, from the site are not expected to change significantly'*.
16. No detail has been provided to support this statement.

##### *Potential effects from rerouting watercourses*

17. The realignment of Northern Spring Channel to join the Southern Spring Channel will potentially intercept the location of Southern Spring Pond and spring M35/7487. No assessment has been made of the impact of the realignment on the spring.

#### Hydrology Report: Potential effects on hydrological function of wetlands

18. I agree with Ms Aitchison-Earl's comments 35-37:
19. Changes in local land surface recharge and in the potential diversion of groundwater flow paths through excavation are identified as potentially lowering groundwater levels and impacting on wetlands.
20. The report states a reduction in local land surface recharge is *'not expected to significantly affect groundwater levels or wetland hydrology'* given that *'that the current contribution of land surface recharge within the development area is small compared to groundwater through-flow'*.
21. No assessment has been given of the magnitude of local land surface versus regional catchment zone of the springs to support this statement.

#### Hydrology Report: Potential effects downstream/downgradient of the site

22. I agree with Ms Aichison-Earl's comments 38 and 39:
23. Potential risks to downstream/gradient properties due to changes in groundwater level or spring flow are *'expected to be negligible'*.
24. Without monitoring data to assess changes over time, or any modelled effects, it is difficult to assess if the effects would be negligible. It is acknowledged that any groundwater modelling will also come with uncertainty which may not assist with decision making. An option if the application is granted would be to consider trigger levels of stream flows and groundwater levels leading to a more detailed assessment

of effects and potential mitigations. The flow recorder on Ōhoka Spring at Dalleys Weir (number 66435) measures spring flow south-east of the site and could be useful in identifying changes.

#### Groundwater AEE Report: Effects on surface water (stream depletion)

25. The change of abstraction from the shallow water table to deeper aquifers will change the timing of any depletion from seasonal related to irrigation pumping to a more built-in smoothed effect over time.
26. The reduced rate of take and annual volume will likely benefit the surface water allocation of Ōhoka Stream which currently exceeds the limit set in the LWRP.
27. The effect on downstream users of Ōhoka Stream has not been assessed. However, in theory, the reduced surface water allocation should benefit the remaining users assuming that the remaining allocation is not transferred to another party.

#### Groundwater AEE Report: Drainage

28. I agree with Ms. Aitchison-Earl's comment 47:
29. Drain inflow represents interception of groundwater that may otherwise have flowed toward existing springs/drains. It will vary across the site with changing thicknesses of surficial finer grained deposits. The drain flow will be more significant at times of high groundwater level, and may lead to more quickflow component to surface waters. The impact of this interception on existing water courses is not assessed.

#### Dewatering and dust suppression report: consumptive dewatering

30. It is unknown what proportion of water will be discharged to land instead of to surface water. It may be that the dewatering then is consumptive with regard to surface water flows. There is no information on mitigation for the loss of flow. I recommend that any surface water discharge occurs upstream of the affected reach to minimise the effect of dewatering.

#### Dewatering and dust suppression report: dust suppression water take

31. I agree that the rates and volumes proposed for dust suppression are lower than used for existing irrigation consents.
32. Table 8d of the Land and Water Regional Plan (LWRP) determined the surface water allocation limit of the Ōhoka Stream to be 500 L/s. The allocation as of April 2026 is 648 L/s. The allocation therefore exceeds the limit.
33. A new consent would need to be applied for and would be considered a prohibited activity due to the take being stream depleting in an over-allocated catchment.

## **S46 Review of Application – Lucy Just 01 July 2026**

I have reviewed the following documents

- Hydrology Assessment (Tom Garden, PDP)
- Dewatering and Dust Suppression AEE – Pages 30,31,32 (Caitlin Fraser, PDP)
- Technical Advice for Surface Water (above) (Jen Dodson)
- Technical Advice for Groundwater Resources (Philippa Aitchison-Earl, Environment Canterbury).

## **Substantive Application documents:**

### **Outstanding areas**

#### **Hydrology Assessment June 2026**

34. Change in land surface recharge contributing to spring flow due to the increase in impervious land area: In section (4.1), the applicant suggests that decommission of these bores will likely have a positive impact on spring flows. However, this is based on consented rates. The applicant has not used metered or average irrigation season abstraction information used to support this statement. There is water use metering data available for 4 out of the irrigation 5 bores authorised by consents CRC991022 and CRC991827. A brief assessment of the water use data indicates there is data from 2012, while the bores associated with CRC991827 have not been used since 2021.
35. As addressed by Philippa Aitchison-Earl in the Technical Advice for Groundwater on point 35: the applicant has stated the effects on Hydrology and effects on downstream flows and wetlands are expected to be negligible. The limited flow gauging data (provided by the applicant) includes some flow information for the Ohoka Stream tributary, Ohoka South Branch, and the other tributaries draining the proposed subdivision area. While they might not cover a large area of the catchment, these tributaries do contribute a reasonable flow (a combined ~45 L/s in February to ~360 L/s in August). In comparison, other branches of the catchment contribute less e.g., Ohoka Sping at Dalley's weir (flow recorder) to the east has a mean flow of 5 L/s. There are few gaugings on the Ohoka North Branch, however, existing flow data ranges between ~11 and 121 L/s. Without quantification of changes to spring and surface flows due to changes in land surface recharge and stream alignment, it is difficult to conclude that the effects on downstream flows and wetlands will be negligible.

#### **Dewatering and Dust Suppression Assessment of Environmental Effects**

36. Given the allocation status of the catchment and the irrigation pressure, the changes in stream depletion and effects on surface water flows will depend on the current use of the consented irrigation takes. Page 32: The statement - *“As a result, all the proposed groundwater abstractions on site (dust suppression and dewatering) will result in a significant net gain in surface water flow compared to the currently consented irrigation takes at the site”*. Whether or not this reduction will be realised and result in ‘significant gain’ of surface flow depend on the changes in actual water use. Without these data it is difficult to assess if there will be a ‘positive effect on the reliability of supply for existing users’ compared with current hydrological conditions.

### **Proposed Regional Council Conditions**

37. For the ‘Groundwater and Spring Flow Monitoring Plan’ in Condition 9 of the Proposed Regional Council Conditions, I am in agreement with Philippa Aitchison-Earl. A copy of the monitoring plan should be included in the consent conditions so that the locations, frequency and duration of surface water monitoring is confirmed and agreed upon before the works begin.