BEFORE INDEPENDENT HEARING COMMISSIONERS APPOINTED BY THE KAIKOURA DISTRICT COUNCIL

IN THE MATTER OF	The Resource Management Act 1991 (**RMA** or **the Act**)
AND	
IN THE MATTER OF	Proposed Plan Change 4 (**PC4)** to the Kaikoura District Plan (**KDP** or **the Plan**) brought by Kaikoura Business Park Limited (**KBP**)
AND	
IN THE MATTER OF	The Hearing of Submissions and Further Submissions on PC4

EVIDENCE OF SIMON MARSHALL FOR THE APPLICANT KAIKOURA BUSINESS PARK LIMITED

Dated: 13 March 2024

Presented for filing by:
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INTRODUCTION

1 My name is Simon Ian Marshall.

2 I am a Senior Civil Engineer at Baseline Group Limited and have worked here for the past year.

3 I hold the qualifications of Bachelor of Engineering (Civil) from Auckland University in 2005 and I am a Chartered Professional Engineer.

4 My experience includes 19 years as a civil engineer working in infrastructure design, consenting and supervision of land development projects. My previous projects have been based around the Northland, Auckland, Waikato, and Canterbury regions working for Terra Group NZ and Airey Consultants as a Civil Engineer. My previous work experience has predominantly included civil engineering services for rural, and low to high density residential projects up to 2,000 lots.

5 I have read the Environment Court's Code of Conduct (2023) and agree to comply with it. My qualifications as an expert are set out above. The matters addressed in my evidence are within my area of expertise, however where I make statements on issues that are not in my area of expertise, I will state whose evidence I have relied upon. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in my evidence.

SCOPE OF EVIDENCE

6 In my evidence I address the following issues:

(a) Earthworks and Roading.

(b) Stormwater and flood management.

(c) Wastewater servicing.

(d) Water supply servicing.

(e) Power and communications servicing.

CONTEXT

7 I understand that under s73(2) of the Resource Management Act 1991 (RMA), Kaikōura Business Park Ltd ("the Applicant") requests a change to the Kaikōura District Plan (KDP), to re-zone approximately 21.6 ha of rural land located at 69 Inland Kaikōura Road, Peketā, to a new proposed 'Light Industrial Zone'. This plan change will allow the rural pastoral land to be developed into a business park.

8 This evidence relates to land legally described as Lot 2 DP 501321 and approved Lot 20 SU-2021-1765-00 and commonly known as 69 Inland Kaikōura Road Peketā, Kaikōura.

9 In preparing my evidence I have taken into consideration the following reports:

(a) Infrastructure Servicing Report for Kaikōura Business Park by Baseline Group dated 14 September 2022.

(b) 69 Inland Kaikōura Road, Proposed Lot 14. Site Validation Report dated 7 September 2022 for Kaikōura Business Park 2021 Limited by Contaminated Land Solutions Limited (CLS Limited).

(c) 69 Inland Kaikōura Road, Proposed Lot 20. Site Validation Report dated 19 December 2022 for Kaikōura Business Park 2021 Limited by Contaminated Land Solutions Limited (CLS Limited).

(d) Environment Canterbury Resource Consent CRC230294 issued 9 August 2022 – To use land for a community system.

(e) Environment Canterbury Resource Consent CRC230294 issued 9 August 2022 – To discharge domestic wastewater to land.

(f) Environment Canterbury Resource Consent CRC240909 issued 13 November 2023 – To take and use groundwater for community supply purposes.

(g) Water Supply Strategy – Kaikōura Lifestyle Blocks for Kaikōura Business Park 2021 Limited by Baseline Group dated 24 August 2023.

(h) Kaikōura Fans Flood Modelling Investigation – Environment Canterbury report by Michelle Wild dated February 2020.

(i) Environment Canterbury Flood Hazard Assessment dated 7 December 2023 for SH1/Inland Kaikōura Road.

(j) Confirmation from Mainpower and Chorus for the electrical and communications supply.

THE PROPOSAL FOR REZONING

Outline Development Plan

10 The purpose of the proposal is to enable the future subdivision of the site to be used for light industrial purposes and will include the creation of associated roading, stormwater, water supply, and sewer disposal infrastructure.

11 The Outline Development Plan includes the realignment of Inland Kaikōura Road through the Plan Change area. The land under the current alignment of Inland Kaikōura Road and land further to the east towards the Kowhai River is proposed to be used for stormwater management. This is expected to include devices to treat the stormwater runoff from the Plan Change area prior to it entering the downstream environment.

12 At the time the servicing report was drafted specific design of future allotments had not been considered. Baseline Group has been engaged to consider specific design details for subdivision in the future. As such my evidence expands on and may vary from the original information in the servicing report given this additional work.

13 In particular, this includes a new location and method for the disposal of stormwater from the site in place of the soakage disposal proposed in the servicing report. This is as a result of onsite testing of ground conditions indicating variable infiltration rates which means that suitable soakage could not be reasonably guaranteed for all of the lots and roads in the Plan Change Area.

ASSESSMENT OF THE PROPOSAL

Earthworks and Roading for Future Subdivision

14 The plan change will enable the development of the site by way of a subdivision consent. The following explains the likely earthworks associated with this future development.

15 Earthworks are anticipated within the site to construct the new roads and sections for the Plan Change area. Earthworks will also be used to control stormwater runoff from the site to direct it to stormwater management devices.

16 It is estimated that there will be approximately 35,000 cubic metres of cut and fill required to construct the development. The bulk of the earthworks is expected to be up to 1.2 m deep to reshape the site with deeper areas in places to install services and to construct a first flush basin.

17 A containment cell with contaminated material from the Kowhai Downs subdivision is located near the northern corner of the site as identified in the 69 Inland Kaikōura Road, Proposed Lot 14 Site Validation Report by CLS Limited[1]This cell contains material with heavy metal concentrations that exceed residential standards but are suitable for the proposed commercial/industrial land use[2]

18 An area of contaminated land was present on the site in the vicinity of an incinerator unit that was found to have asbestos. I understand from the Site Validation Report by CLS Limited for Lot 20 that the contaminated land on the site has now been remediated and is suitable for the proposed commercial/industrial land use[3].

19 Erosion and sediment controls will need to be constructed as part of the earthworks to manage and treat water runoff during construction. The treated water would discharge to the Kowhai River. The controls are expected to include silt ponds, earth bunds and silt fences in accordance with Environment

[1] 69 Inland Kaikoura Road, Proposed Lot 14 Site Validation Report, Dated 7 September 2022, by CLS Limited – Figure 4, Page 10
[2] 69 Inland Kaikoura Road, Proposed Lot 14 Site Validation Report, Dated 7 September 2022, by CLS Limited – Section 4, Page 9
[3] 69 Inland Kaikoura Road, Proposed Lot 20 Site Validation Report, Dated 19 December 2022, by CLS Limited – Section 8.3, Page 15

Canterbury's Erosion and Sediment Control Toolbox. During dry conditions dust control using water carts is expected to be required to prevent fine sediments from becoming airborne due to wind or machinery operation on site. Resource consent from Environment Canterbury will be required for this work.

20 Provided that suitable erosion and sediment controls are implemented on site during construction works, it is my opinion, from an engineering perspective, earthworks during construction can be managed to control sediment laden water, and prevent it entering waterways. Furthermore I consider that appropriate control measures can be implemented that ensure dust is managed to avoid generating unreasonable airborne dust. In my experience with developments of this type this level of mitigation is sufficient to ensure effects from this type of development are minor.

21 A roading network can be provided within the site to accommodate a realignment of Inland Kaikōura Road and to provide vehicle access to each of the lots in a new subdivision.

22 Inland Kaikōura Road is considered a Strategic Arterial Road in the Kaikōura District Plan and requires a road reserve width of at least 20 m (TRAN Appendix 5: Road Hierarchy).

23 The road network in the site can be constructed in accordance with NZS4404:2010 which provides standards for roads within subdivisions based on their surrounding land use. I consider the activities on the site to be classified as "Make and Move" (NZS4404:2010 Table 3.2). This requires a road reserve of at least 23 m for collector roads and 18 m for local roads. The maximum gradient for both these road classes is 10% (1 in 10), which I consider can be achieved within the site.

24 The roads are expected to be constructed with flexible pavements to accommodate heavy traffic with a design life of at least 25-years (NZS4404:2010, 3.3.3). The surfacing of the roads is expected to be a 2-coat chipseal. It is my experience that meeting these standards ensures effects on the environment are minor for the purpose of future resource consents.

Stormwater Management

25 During onsite investigations it was found that infiltration rates within the site are potentially unreliable and that onsite disposal of stormwater to ground may not be available in all areas of the site. Therefore, an alternative solution for stormwater has been explored since the original plan change was filed. The solution now involves a discharge to the Kowhai River after appropriate treatment. I understand local Iwi have been consulted over this matter and will be consulted on this as part of any future resource consent application to Environment Canterbury.

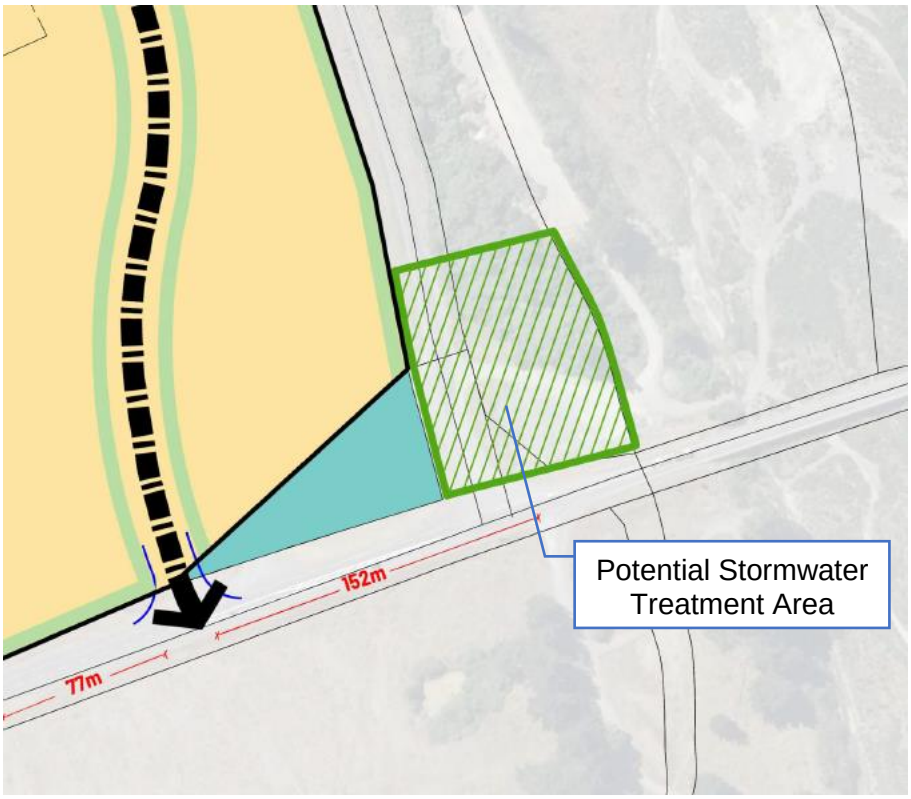
26 Stormwater runoff from the Plan Change area is to be collected by a reticulated stormwater system. The system is expected to consist of pipes and swales to collect the runoff from each lot and the road reserve.

27 The reticulated stormwater system will be designed for a 1 in 10 year storm event as required for commercial/industrial areas by NZS 4404:2010 (Table 4.1). This is the standard accepted for infrastructure by Kaikōura District Council.

28 The receiving environment for the stormwater runoff is the Kowhai River immediately upstream of the State Highway 1 bridge. The Kowhai River discharge point is approximately 350 m from the coast. The river is classified as an Alpine-Upland river by Environment Canterbury.

29 The Alpine-Upland river classification determines resource consenting requirements for water use and quality targets in the Canterbury Land and Water Regional Plan (Table 1a).

30 A first flush basin is proposed to provide treatment for the collected stormwater. This is proposed to be located within the area to the east of the Plan Change area between the current alignment of Inland Kaikōura Road and the Kowhai River. The figure below shows the potential stormwater treatment area relative to the ODP area:



31 The proposed treatment area sits within the existing road reserve of Inland Kaikōura Road (that would be realigned to the west) which is managed by both Kaikōura District Council and NZTA and a Local Purpose Reserve fronting the Kowhai River that is managed by Environment Canterbury. I understand that resource consents are currently being obtained to locate a basin within this area. Alternatively, a suitable basin could be located within the southern portion of the ODP area to the west of the proposed location.

32 The basin can be sized to collect and treat the runoff from the first 25 mm of rainfall. It is typical that these kinds of basins have a slow-release rate allowing contaminants to settle out of the collected water before it is released. The first 25 mm of rainfall typically accounts for the majority of regular storms and for larger storms collects the bulk of contaminants from hardstand areas such as roads and carpark areas and carries this in suspension to treatment areas. This is known as the first flush. Therefore, it is common practice to treat only the first 25 mm of rainfall for contaminants as rainfall occurring after the first flush is across surfaces that have already been stripped of contaminants in the first 25 mm. This is the recommended practice in Christchurch City Council's Waterways, Wetlands and Drainage Guide (Section 6.4). Auckland Council also

uses a water quality volume that approximately equates to 25 mm of rainfall to treat runoff (Stormwater Management Devices in the Auckland Region GD01, Table 3) so is a commonly accepted practice.

33 The first flush basin is designed to provide a 24-hour average residence time by controlling the release of captured runoff over 48-hours. In Christchurch City Council's Waterways, Wetlands and Drainage Guide (Section 6.4) this is considered sufficient time to allow for the release of suspended contaminants prior to discharge.

34 Stormwater runoff after the first 25mm is less contaminated and it is anticipated any future design will include a bypass for the first flush basin so the contaminants that have settled out are not resuspended by the additional less contaminated water. This ensures the first flush basin operates at an optimum level.

35 Flow that exceeds the first flush volume is conveyed around the basin directly to the receiving environment. This is achieved by installing an overflow structure upstream of the basin to divert the excess flow.

36 The first flush basin can provide treatment for roads, car parks and roof areas from typical development activities. If there are activities proposed for any of the lots that involve storage or use of hazardous materials or other potential contaminants, then the developer of that site would be expected to implement a site-specific stormwater treatment and management system. A resource consent for this system is required from Environment Canterbury and a condition of consent for the discharge will prevent the discharge of untreated stormwater from areas of sites using or storing hazardous materials.

37 The need for individual on site treatment can be managed by the Canterbury Land and Water Regional Plan; permitted activity Rule 5.93A. This rule requires written permission to be provided from the reticulated stormwater owner for discharge of stormwater into their system. The owner of the reticulated stormwater system will be Kaikōura District Council as the stormwater network will be draining runoff from the public roads.

38 Provided the proposed stormwater treatment system is implemented on site, I consider that an appropriate engineering solution, which meets best practice

design guides can be achieved. It is my experience from previous similar developments that stormwater solutions which treat first flush prior to discharging are considered sufficiently mitigated that adverse effects are minor.

Flooding

39 Environment Canterbury have undertaken flood modelling for the Kowhai River detailed in their technical report titled "Kaikōura Fans Flood Modelling Investigation" dated February 2020[4].

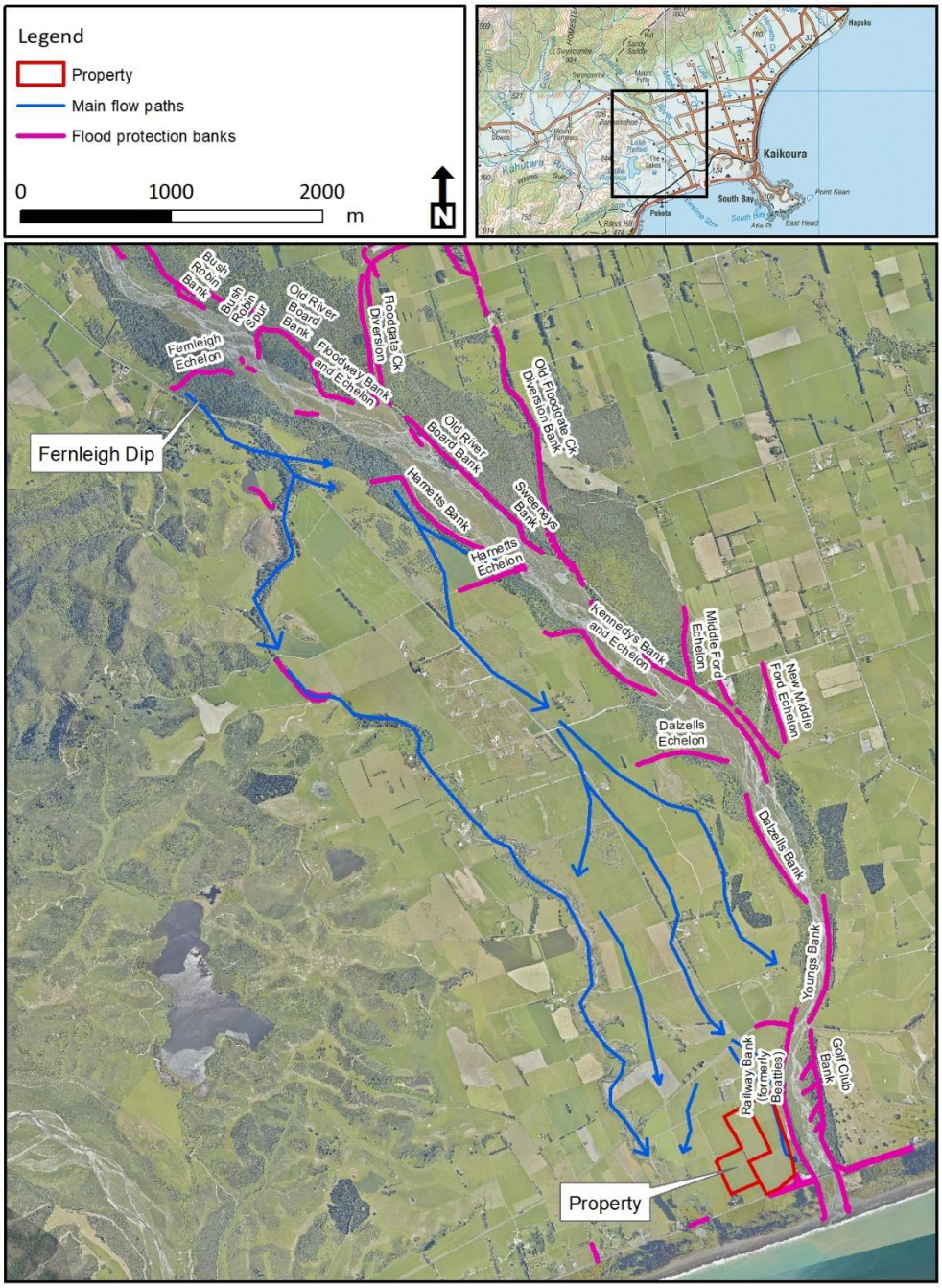
40 The flood model investigated several river break-out scenarios for both the 1 in 50 and 1 in 500-year storm events.

41 The Plan Change included a flood hazard assessment provided for the adjoining Kowhai Downs development, however a further site specific flood hazard assessment for the site was obtained from Environment Canterbury dated 7 December 2023 which is based on this model and is attached in **Appendix A** to my evidence.

42 The critical flood risk case identified for the Plan Change area is a break-out of the Kowhai River 1.5 km downstream of Fernleigh Dip at 514 Inland Kaikōura Road. The modelled break-out results in a flow path along the eastern boundary of the site adjacent to Inland Kaikōura Road with a depth up to approximately 0.3 m for the 1 in 500-year event. See figure below for the flow paths from the flood hazard assessment:

[4] This report can be found through a search within the document library on Environment Canterbury's website at the following address:
https://www.ecan.govt.nz/data/document-library/

Figure 2: Flood protection bank and main flow path map



43 The flood hazard assessment considers the site to be outside of any High Flood Management Area and not likely to be affected by significant flooding in the 1 in 500-year event.

44 The flood hazard assessment notes that the Kowhai River flows within approximately 20 m of the site. I have measured the distance from the riverbank

to the site boundary and found it to be approximately 60 m which reduces the risk of property loss from erosion.

45 It is my opinion the flow path through the site can either be managed with the proposed realignment of Inland Kaikōura Road or diverted back towards the Kowhai River to the east of the site. Detailed design of this is most appropriately undertaken at the time of the subdivision design work to ensure the most appropriate engineered solution is achieved. It has been my experience that implementing an appropriately engineered solution ensures risks from flooding natural hazards are sufficiently mitigated and effects are minor.

46 The flood hazard assessment identifies the site as being within the 'Orange Zone' for tsunami evacuation. The expected reoccurrence interval for a tsunami affecting the site is greater than 500 years. The Orange Zone from Canterbury Maps[5] means the following:

"You should leave this zone immediately if you:

- *feel a long or strong earthquake, OR*
- *are told to evacuate by Civil Defence, OR*
- *hear loud or unusual noises from the sea (like a jet plain or train), OR*
- *you hear tsunami sirens (where they are installed).*

47 It is expected that this may occur a few times within a lifetime."

48 Based on this assessment, it is my opinion that on site design as part of the subdivision can manage potential flood risk to an appropriate level. This is typical for managing effects of this type, and results in risks from natural hazards being considered minor, in my experience.

Wastewater

49 Baseline Group has begun preliminary design work for wastewater as part of applying for resource consent from Environment Canterbury for the discharge of wastewater from the Plan Change area. This preliminary design work forms

[5] https://www.ecan.govt.nz/your-region/your-environment/natural-hazards/tsunamis/tsunami-evacuation-zones-and-warnings/

the basis for the information following and is generally consistent with the proposal in the servicing report.

50 Each of the industrial sites is expected to generate an average of 1,000 litres per day of wastewater with a potential peak of 2,000 litres per day. For an assumed development of 51 lots this results in a total estimated average daily discharge of 51 cubic metres per day with a peak of 102 cubic metres per day. The daily discharge rate will be confirmed as part of obtaining resource consent from Environment Canterbury.

51 Wastewater from the proposed site can be treated and disposed of at the existing wastewater treatment plant for the Kowhai Downs subdivision. The treatment plant is located immediately south of the site on Lot 19 DP 578956 (392 State Highway 1) and is owned by the Applicant. The wastewater plant is proposed to be upgraded with additional capacity and disposal fields to accommodate the Plan Change area, for the anticipated rate of discharge assumed from a future 51 allotments. There is sufficient space adjacent to the existing treatment plant and disposal field within this allotment to accommodate the upgrades required. The upgrades are expected to include additional primary treatment, aeration and clarification tanks and an enlarged disposal field area to accommodate the additional wastewater.

52 The wastewater treatment plant provides secondary level treatment for wastewater. This is a typical level of treatment and is consistent with NZ standards.

53 The existing treatment plant discharges the treated wastewater to land via pressure compensating dripper irrigation. This allows for further treatment within the soil layers to protect surface and groundwater.

54 The depth to groundwater is recorded as being 3.3 m and 4.2 m at the two nearest boreholes to the site. This exceeds the 1 m vertical separation required for wastewater disposal onto land in Environment Canterbury's Canterbury Land and Water Regional Plan, which is considered to protect groundwater. As such I consider the groundwater to be sufficiently deep to allow for on-site wastewater disposal without contamination of groundwater or surface water resources.

55 Wastewater from each of the new lots is proposed to be collected by a new gravity reticulation system. This system will convey the wastewater generated to the treatment plant.

56 An upgrade to this system to accommodate additional flows will require a variation to the existing wastewater system resource consents being CRC230294 for land use (attached to my evidence in **Appendix B**) and CRC221484 for discharge of wastewater (**Appendix C**). Given the soils in this area and the level of treatment, I consider this can be achieved to an appropriate level. In my experience, such designs when operated and maintained correctly are able to function without impacting surrounding groundwater, and generally odour free. This enables such designs to have minor effects on the surrounding environment.

Water Supply

57 The water supply for the area is from an existing bore located within the Plan Change area (Identified as O31/0155).

58 A consent for the use of water for Community Supply purposes from this bore was obtained from Environment Canterbury on 13 November 2023 (CRC240909 attached as **Appendix D** to my evidence). This confirms that effects from the approved consent were considered to be minor.

59 The water is required to be treated to meet the New Zealand Drinking Water Standards by the Water Supply Strategy within CRC240909. The treatment devices include a Filtec Multimedia Sand Filter and UV Disinfection. Provision has also been made for chlorination if required in the future[6].

60 The consent conditions provide for a maximum water take of 36 litres per second with a maximum volume of 310 cubic metres per day and 110,360 cubic metres between 1 July and the following 30 June.

61 This allows for a water take to supply 18 residential allotments and 51 industrial allotments which have an expected water demand of 138 cubic metres per day, as set out in the water supply strategy attached to this consent. I consider this rate of water will adequately supply most typical light industrial activities to

[6] Environment Canterbury Resource Consent CRC240909 – Appendix CRC240909: Water Supply Strategy Kaikoura Lifestyle Blocks, Section 2.4.

adequately meet their needs. Individual allotments where activities have a higher water demand than provided by the reticulated scheme may choose to augment their supply through onsite roof water collection at the time of building consent. Alternatively high-use water industries can trade water from low-use activities within the site or collect and store water in tanks during off peak periods to supplement their use during times of high demand.

62 For firefighting the site can achieve a water supply classification of Fire Water 3 (FW3) in the New Zealand Fire Service Firefighting Water Supplies Code of Practice (SNZ PAS 4509:2008), as set out in the FENZ submission.

63 The FW3 classification requires a total flow of 50 litres per second of water from up to three hydrants and a minimum volume of 180 cubic metres to provide a firefighting duration of 60 minutes. To meet the flow and volume requirements additional storage for firefighting using tanks and pumps can be provided at the bore site. I understand that it is proposed to install a pump at the existing well head that would provide a maximum flow rate of 135 l/s. This would provide sufficient flow for an FW3 classification.

64 The watermains and hydrants will be designed in accordance with NZS 4404:2010 with hydrants located within the road reserve areas at spacings to suit the requirements of SNZ PAS 4509:2008 (Table 2). The fire hydrants within the road reserve will be accessible to fire trucks.

65 Any future business activities with a higher water supply classification would need to provide additional water storage for firefighting. This is a matter that is typically addressed as part of a building consent, however typical solutions might include additional onsite water tanks capturing water supply from roof water and stored on site in an accessible location, or use to support internal sprinkler systems. The Building Code includes a range of requirements which are considered as part of the building consents process.

Power and Communications

66 Confirmation from Mainpower has been obtained confirming that the 51 lots proposed for the Plan Change area can be provided with power services.

67 Confirmation from Chorus has been obtained confirming that the 51 lots proposed for the Plan Change area can be provided with fibre communication services.

68 Given this, I consider the site can adequately be serviced with power and communications infrastructure as part of any future subdivision.

RESPONSE TO MATTERS RAISED BY SUBMITTERS

Submissions

69 I understand there were a large number of submissions received in relation to the proposed Plan Change, most of which were in support of the Plan Change. There were four key submissions in opposition, however I understand these have since been withdrawn.

70 Fire and Emergency New Zealand (FENZ) have raised concerns with how the site will be serviced for firefighting. As set out above in my evidence, the proposed water supply system can be engineered to ensure sufficient supply is available in the reticulated network to meet an appropriate level of firefighting supply. Given this it is my view the concerns raised in the FENZ submission have been adequately addressed.

Section 42A Report

71 I have read the Section 42A report for Plan Change 4 dated 7 March 2024. In reference to Paragraph 43 of the report, stormwater disposal to Kowhai River via a first flush treatment basin is also being considered as a potential alternative to soakage to ground.

KEY ISSUES AND SUMMARY OF CONCLUSIONS

72 Earthworks can be undertaken on the site to provide suitable building areas and a road network. Erosion and sediment controls can be provided to manage stormwater runoff from the site during construction in accordance with best practice.

73 Stormwater and wastewater drainage can be provided on the site and can be managed with treatment in accordance with regional and local council standards.

74 Flooding and overland flow can be managed appropriately as part of the engineering design works through the site in accordance with best practice.

75 Water supply is available at the existing water bore on site. This can provide water for the new development and for firefighting purposes.

76 Power and communications services can be provided to the site.

77 Based on the above assessment, I consider that suitable infrastructure solutions from an engineering perspective are available to service the Proposed Plan Change area. Utilising best practice and standard engineering solutions results in effects on the environment which are considered minor when seeking resource consents from Environment Canterbury.

Simon Ian Marshall

Dated: 13 March 2024

Appendix A: Environment Canterbury: Flood Hazard Assessment - Lot 20 DP 578956 & Lot 2 DP 501321, SH1/Inland Road, Kaikōura, dated 7 December 2023

Appendix B: Environment Canterbury Resource Consent CRC230294 Kaikōura Business Park 2021 Limited, To use land for a community system. Dated 9 August 2022

Appendix C: Environment Canterbury Resource Consent CRC221484 Kaikōura Business Park 2021 Limited, To discharge domestic wastewater to land. Dated 9 August 2022

Appendix D: Environment Canterbury Resource Consent CRC240909 Kaikōura Business Park 2021 Limited, To take and use groundwater. Dated 13 November 2023