Appendix C. Irrigation Water Use Consent Data

The following data were provided by the BOPRC and used in the actual water use modelling process (**Section 2.4**) to develop time series of surface water and groundwater abstractions for irrigation use, and incorporation into the SOURCE flow model development process (**Section 6**).

Consent data are outlined in the following tables as follows:

- Surface water takes in the Kaituna WMA - Horticulture (**Table C-1**); pasture (**Table C-2**); and horticulture and pasture (**Table C-3**).
- Groundwater takes in the Kaituna WMA - Horticulture (**Table C-4**); pasture (**Table C-5**); and horticulture and pasture (**Figure C-6**).
- Surface water takes in the Rangitāiki WMA - Horticulture (**Table C-6**); and pasture (**Table C-7**).
- Groundwater takes in the Rangitāiki WMA - Horticulture (**Table C-8**); and pasture (**Figure C-10**)

Irrigation area was calculated as the sum of either i) the area provided in the consent table, or ii) where no area was provided in the consent table, area was back - calculated from a correlated relationship between the maximum daily irrigation rate and the consented irrigation area (from consents which had area and maximum dairy irrigation rate attached).

These consented amounts were provided by BOPRC as annual volumes, irrigation areas, daily rates and irrigation purpose. There were differences between the Kaituna and Rangitaiki WMAs for the consented amounts in surface water and groundwater, as the Kaituna WMA has large pasture and horticultural areas in comparison to the Rangitāiki WMA (therefore, the number and volume of water use consents are larger).

Groundwater takes were assessed for the Kaituna and Rangitāiki WMAs, as not all takes will affect surface water flow (i.e. takes from deeper aquifers). Therefore, it was assumed bores that had a saturated thickness of >15 m were not connected with surface water. The figures below show the relationship found between the consented annual water takes and the irrigated area.

Table C-1. BOPRC consent database entries for horticulture irrigation from surface water in the Kaituna WMA.

Consent No.	Granted date	Expiration date	Status	Annual Volume (m^3/year)	Irrigated area (ha)	SOURCE ID
20041.1.02-WT	7/12/1972	1/10/2026	Current	26,400	10*	44
20149.0.02-WT	4/04/1974	1/10/2026	Current	37,500	11*	44
20322.0.02-WT	2/06/1977	1/10/2026	Current	32,700	10	81
20333.0.02-WT	4/08/1977	1/10/2026	Current	40,950	11*	36
20380.0.02-WT	6/04/1978	1/10/2026	Current	36,000	11*	41
20379.0.02-WT	14/04/1978	1/10/2026	Surrendered	24,600	10*	23
20433.0.02-WT	7/09/1978	1/10/2026	Current	33,750	11*	41
20495.0.02-WT	1/03/1979	1/10/2026	Current	34,050	7	12
20501.0.02-WT	1/03/1979	1/10/2026	Current	10,230	6	36
20539.0.02-WT	15/06/1979	1/10/2026	Current	1,503	18	28
20605.0.02-WT	4/10/1979	1/10/2026	Current	27,300	10*	12
20627.0.02-WT	6/12/1979	1/10/2026	Current	30,750	16	48

Consent No.	Granted date	Expiration date	Status	Annual Volume (m^3/year)	Irrigated area (ha)	SOURCE ID
20672.0.03-WT	6/03/1980	1/10/2026	Current	225,000	20*	100
20678.0.02-WT	3/04/1980	1/10/2026	Current	44,850	11*	36
20722.0.02-WT	7/08/1980	1/10/2026	Current	47,700	5	96
20790.0.02-WT	2/04/1981	1/10/2026	Current	195,000	10	12
20787.0.02-WT	2/04/1981	1/10/2026	Current	34,050	11*	96
20877.0.02-WT	3/12/1982	1/10/2026	Current	52,500	12*	43
21060.0.02-WT	3/02/1983	1/10/2026	Current	8,100	5	71
21214.0.02-WT	4/08/1983	1/10/2026	Current	54,750	12	12
21218.0.02-WT	1/09/1983	1/10/2026	Current	156,000	17*	12
21205.0.02-WT	23/09/1983	1/10/2026	Surrendered	36,300	9	44
21459.0.02-WT	3/05/1984	1/10/2026	Current	97,500	18	37
21480.0.02-WT	7/06/1984	1/10/2026	Current	21,000	10*	37
21515.0.02-WT	6/09/1984	1/10/2026	Current	17,100	10*	53
21565.0.02-WT	1/11/1984	1/10/2026	Current	130,800	16*	81
21592.0.02-WT	7/02/1985	1/10/2026	Current	45,000	9	44
21685.0.02-WT	1/08/1985	1/10/2026	Current	490,950	3	35
21764.0.02-WT	7/11/1985	1/10/2026	Current	376,650	28*	99
21808.0.03-WT	6/03/1986	1/10/2026	Current	954,000	57*	98
21797.0.02-WT	25/03/1986	1/10/2026	Surrendered	105,000	37	22
21802.0.02-WT	3/04/1986	1/10/2026	Current	39,750	11*	42
21915.2.02-WT	2/10/1986	1/10/2026	Surrendered	2,700	3	102
22058.0.02-WT	18/02/1988	1/10/2026	Current	210,000	19*	23
22011.0.02-WT	12/05/1988	1/10/2026	Current	40,500	4	23
60696.0.03-WT	3/05/2000	30/04/2015	Expired s124	126,750	15*	43
62458.0.01-WT	22/03/2004	28/02/2014	Expired	1,123,200	65*	98
62417.0.01-WT	1/04/2004	31/03/2014	Expired	118,050	15*	12
62602.0.01-WT	17/05/2004	30/04/2024	Current	90,750	14*	47
62454.0.01-WT	17/05/2004	30/04/2014	Expired	388,818	20	96
62670.0.01-WT	19/05/2004	30/04/2014	Expired	43,200	6	96
62648.0.01-WT	15/07/2004	31/05/2024	Current	336,000	40	83
62739.0.01-WT	16/09/2004	31/08/2024	Current	86,400	6	64
62974.0.03-WT	10/08/2005	31/07/2020	Current	70,800	8	43
63273.0.01-WT	4/09/2005	31/08/2020	Current	148,350	7	114
64069.0.02-WT	24/11/2006	31/10/2016	Expired	108,000	14*	99
64850.0.03-WT+	17/11/2007	31/10/2017	Current	189,750	60	72
65092.0.01-WT	4/02/2008	31/01/2018	Current	12,960	2	26
64976.0.03-WT	28/03/2008	28/02/2018	Current	94,500	4	23

Consent No.	Granted date	Expiration date	Status	Annual Volume (m^3/year)	Irrigated area (ha)	SOURCE ID
64584.0.03-WT	13/06/2008	31/10/2017	Current	88,704	8	64
65097.0.01-WT+	19/06/2008	20/05/2018	Current	33,300	10	12
64871.0.04-WT	7/08/2008	31/07/2018	Surrendered	622,050	40*	114
64457.0.04-WT	2/10/2008	31/08/2018	Surrendered	105,000	14*	23
65577.0.03-WT	3/02/2009	31/01/2019	Current	62,047	12	58
65776.0.01-WT	16/07/2009	30/06/2019	Surrendered	127,950	15*	53
65934.0.03-WT	15/01/2010	31/12/2020	Current	195,000	25	112
66164.0.01-WT	28/06/2010	30/06/2020	Surrendered	38,500	5	53
66307.0.01-WT	23/08/2010	31/07/2020	Current	55,419	8	47
66307.0.04-WT	23/08/2010	31/07/2020	Current	55,419	8	47
66392.0.01-WT	21/10/2010	30/10/2020	Current	53,416	7	30
66490.0.01-WT	5/11/2010	30/11/2020	Current	205,800	28	98
66603.0.02-WT	10/02/2011	31/01/2021	Current	6,000	3	23
66747.0.01-WT	27/05/2011	1/12/2021	Current	583,200	70	96
66751.0.01-WT	27/06/2011	30/06/2021	Current	45,570	6	44
66688.0.01-WT	19/09/2011	31/08/2021	Current	58,800	8	23
66685.0.01-WT	19/09/2011	31/08/2021	Surrendered	33,075	5	53
66024.0.02-WT	2/02/2012	31/01/2022	Current	180,000	31	114
66515.0.01-WT	22/03/2012	28/02/2022	Surrendered	1,094,100	21	23
67012.0.01-WT	29/03/2012	28/02/2022	Current	107,751	14	114
67039.0.01-WT	30/03/2012	28/02/2022	Current	8,820	2	102
67080.0.01-WT	6/08/2012	31/12/2023	Current	34,020	5	22
67339.0.03-WT	19/03/2013	28/02/2023	Current	53,000	10	99
67610.0.02-WT	15/01/2014	31/01/2024	Current	41,358	14	43
67791.0.01-WT+	28/03/2014	31/03/2024	Current	75,336	21	35
67673.0.01-WT	30/04/2014	30/04/2024	Current	33,961	9	12
67535.0.02-WT	3/10/2014	30/09/2024	Current	512,533	100	99
68065.0.02-WT	29/04/2015	31/03/2030	Current	33,878	8	30
67709.0.02-WT	30/04/2015	30/03/2025	Current	181,454	23	96
68422-WT.01	23/11/2015	30/11/2025	Current	7,429	9*	41
68461-WT.01	15/04/2016	1/10/2026	Current	126,422	15*	96

* Estimated from regression shown in **Figure C-1**.

The relationship between annual volume and the irrigated area recorded for individual horticultural consents in the Kaituna WMA is shown in **Figure C-1**. There is a poor correlation between irrigated area and consented annual volume. It is possible that either the irrigated area recorded was incorrect and/or there is variability in the irrigation management of the area in question (i.e. the soil type found could be quite permeable, or the crop

type used may require increased water availability). It was assumed that the irrigated area recorded is correct for the annual takes in this area.

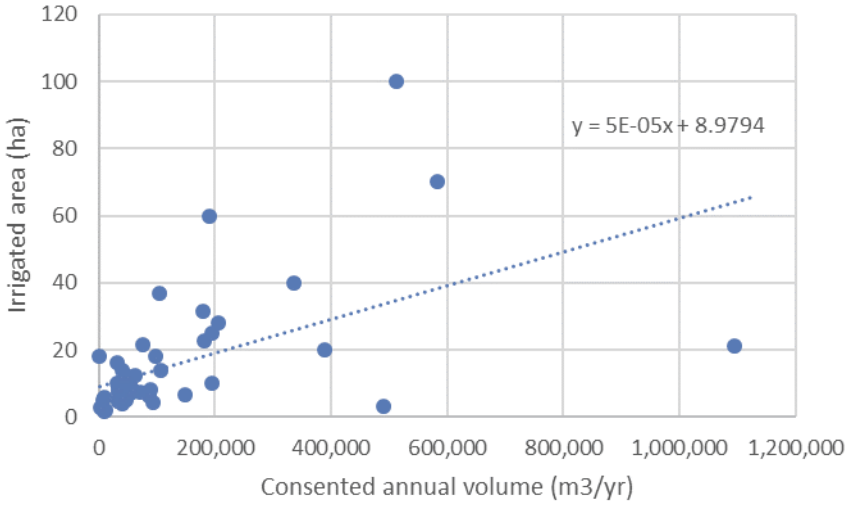

Figure C-1. Relationship between irrigated area and consented annual volume for horticulture irrigation from surface water in the Kaituna WMA.

Table C-2. BOPRC consent database for pasture irrigation from surface water in the Kaituna WMA.

Consent No.	Granted date	Expiration date	Status	Annual Volume (m^3/yr)	Irrigated area (ha)	SOURCE ID
20841.0.02-WT	6/08/1981	1/10/2026	Current	105,000	27*	112
21608.0.02-WT	7/02/1985	1/10/2026	Current	52,500	12	112
62086.0.03-WT	4/06/2003	31/05/2013	Expired	39,000	8	114
65930.0.04-WT	17/12/2009	31/03/2020	Current	330,000	40	102
66020.0.02-WT	22/09/2010	30/09/2020	Current	375,000	50	83
66136.0.02-WT	20/12/2010	30/11/2020	Current	3,412,500	50	112
66479.0.02-WT	20/12/2010	30/11/2020	Current	367,500	50	114
66572.0.02-WT	20/12/2010	30/11/2020	Current	271,950	37	114
66573.0.02-WT	20/12/2010	30/11/2020	Current	1,212,750	165	114
66574.0.02-WT	20/12/2010	30/11/2020	Current	1,087,800	65	114
66782.0.02-WT	20/07/2011	30/06/2021	Current	83,790	50	78
66027.0.02-WT	21/12/2011	30/10/2021	Current	367,500	50	57
67011.0.03-WT	29/03/2012	28/02/2022	Current	505,680	68	114
67493.0.03-WT	4/10/2013	30/09/2023	Current	616,680	108	97

* Estimated from regression shown in Figure **C-2**.

Figure C-2 shows the relationship between annual volume and the irrigated area recorded for individual horticultural consents in the Kaituna WMA. The relationship shows a relatively good correlation between

consented annual volume and irrigated area. It is assumed that the irrigated area recorded is correct for the annual takes in this area.

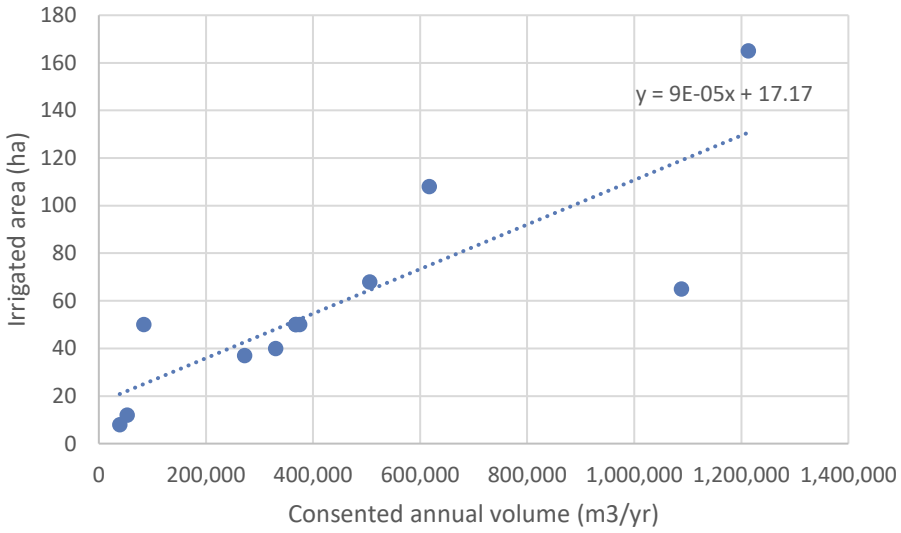

Figure C-2. Relationship between irrigated area and consented annual volume for pasture irrigation from surface water in the Kaituna WMA. (Note: Consent 66136.0.02-WT was considered an outlier and not used in the regression)

Table C-3. BOPRC consent database entries for horticulture & pasture irrigation from surface water in the Kaituna WMA (these consents have both land use types).

Consent No.	Granted date	Expiration date	Status	Annual Volume (m^3/yr)	Irrigated area (ha)	SOURCE ID
20196.0.03-WT	5/06/1975	1/10/2026	Current	309,300	28	23
20402.0.03-WT	6/07/1978	1/10/2026	Current	44,850	20	41
62340.0.02-WT	14/11/2003	31/10/2013	Expired	397,500	69*	87
63076.0.03-WT	30/06/2005	31/08/2015	Expired	600,000	100	12
63183.0.01-WT	28/07/2005	30/11/2015	Expired	60,780	45	96
65510.0.04-WT	3/02/2009	31/01/2019	Current	428,544	116	81
66179.0.03-WT	20/12/2010	30/11/2020	Current	1,411,200	165	105
67501.0.04-WT	7/08/2013	31/10/2023	Current	296,400	55	87

* Estimated from regression shown in **Figure C-3**.

Figure C-3 shows the relationship between consented annual volume and the irrigated area recorded for individual horticultural consents in the Kaituna WMA. The relationship shows a relatively good correlation between consented annual volume and irrigated area. It is assumed that the irrigated area recorded was correct for the annual takes in this area.

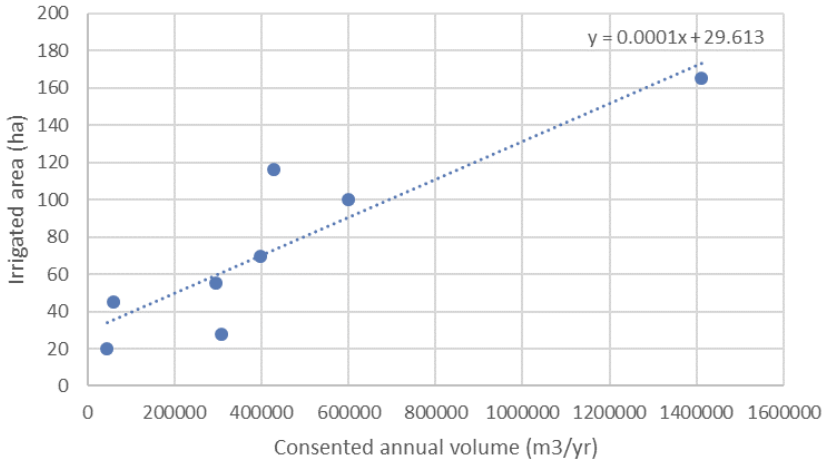

Figure C-3. Relationship between irrigated area and consented annual volume for horticulture & pasture irrigation from surface water in the Kaituna WMA (these consents have both land use types).

Table C-4. BOPRC consent database entries for horticulture irrigation from groundwater in the Kaituna WMA (takes from bores with <15 m saturated thickness)

Consent No.	Granted date	Expiration date	Status	Annual Volume (m^3/yr)	Irrigated area (ha)	SOURCE ID
20986.0.02-WT	20/07/1984	1/10/2026	Surrendered	40,500	7.4653	58
21988.0.02-WT	2/04/1987	1/10/2026	Current	64,800	9.8953	58
21903.0.02-WT	2/10/1986	1/10/2026	Current	16,500	5.0653	24
21631.0.02-WT	4/04/1985	1/10/2026	Current	58,800	9.2953	25
67903.0.02-WT	9/07/2014	30/09/2024	Current	9,360	4.1533	60
64929.0.04-WT	27/11/2008	31/10/2028	Current	708,420	40.3453	75
20648.0.02-WT	7/02/1980	1/10/2026	Current	36,000	7.0153	25
21375.0.02-WT	12/03/1984	1/10/2026	Surrendered	20,250	5.4403	25
20899.0.02-WT	4/03/1982	1/10/2026	Current	49,640	8.3793	24
21806.0.02-WT	3/04/1986	1/10/2026	Current	25,500	5.9653	77
22010.0.02-WT	4/06/1987	1/10/2026	Current	36000	7.0153	25
21309.0.02-WT	1/12/1983	1/10/2026	Current	36,000	7.0153	25

Figure C-4 shows the relationship between annual groundwater volume and the irrigated area recorded for individual horticultural consents in the Kaituna WMA. There is a good correlation between irrigated area and consented annual volume. It is assumed that the irrigated area recorded is correct for the annual takes in this area.

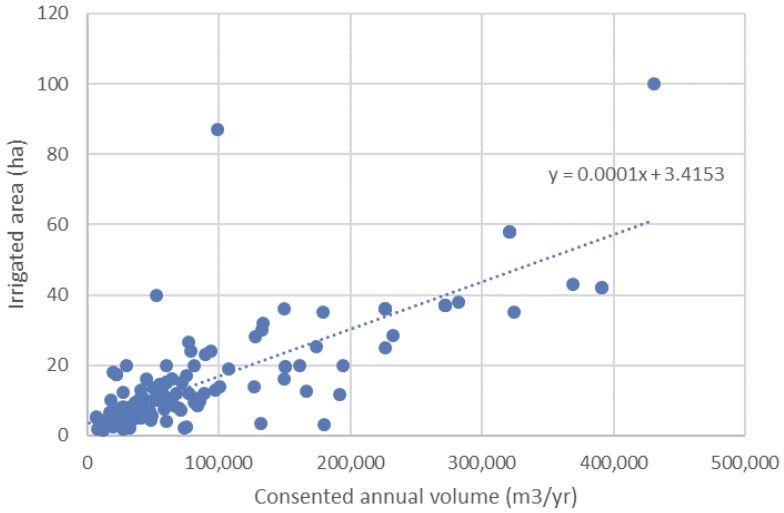

Figure C-4. Relationship between irrigated area and consented annual volume for horticulture irrigation from groundwater in the Kaituna WMA.

Table C-5. BOPRC consent database entries for pasture irrigation from groundwater in the Kaituna WMA (takes from bores with <15 m saturated thickness)

Consent No.	Granted date	Expiration date	Status	Annual Volume (m^3/yr)	Irrigated area (ha)	SOURCE ID
20273.0.04-WT	7/10/1976	1/10/2026	Current	21,150	26.0	120
20487.0.02-WT	1/03/1979	1/10/2026	Current	30,750	26.8	24
64152.0.02-WT	9/11/2006	31/10/2016	Expired	107,400	32.9	24
62568.0.01-WT	2/03/2004	28/02/2014	Expired	45,000	27.9	56

Figure C-5 shows the relationship between annual groundwater volume and the irrigated area recorded for individual pasture consents in the Kaituna WMA. There is a good correlation between irrigated area and consented annual volume, based on the three available datapoints. It was assumed that the irrigated area recorded is correct for the annual takes in this area.

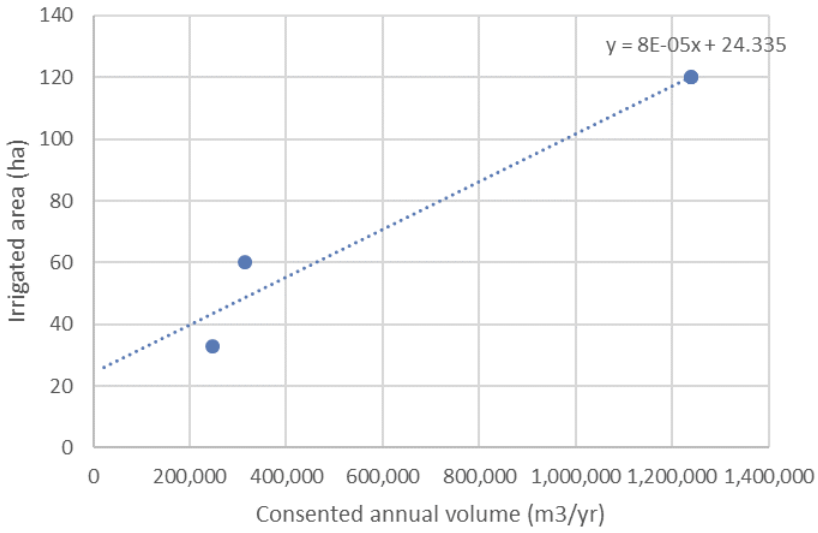

Figure C-5. Relationship between irrigated area and consented annual volume for pasture irrigation from groundwater in the Kaituna WMA.

Table C-6. BOPRC consent database entries for horticulture irrigation from surface water in the Rangitāiki WMA

Consent No.	Granted date	Expiration date	Status	Annual Volume (m^3/yr)	Irrigated area (ha)	SOURCE ID
20201.0.02-WT	3/07/1975	1/10/2026	Current	198,000	38*	76
20597-WT.01	4/10/1979	1/10/2026	Current	54,600	12	108
20632.0.02-WT	6/12/1979	1/10/2026	Current	3,900	1	108
20967.0.02-WT	5/08/1982	1/10/2026	Current	112,350	26	38
21008.0.02-WT	12/11/1982	1/10/2026	Surrendered	7,500	1*	38
21063.0.02-WT	3/02/1983	1/10/2026	Current	31,200	4*	38
21088.0.03-WT	7/04/1983	1/10/2026	Current	62,400	11*	83
21703.0.02-WT	1/08/1985	1/10/2026	Current	20,250	2*	38
21923.0.02-WT	2/10/1986	1/10/2026	Current	24,600	4.5	38
61975.0.01-WT	8/05/2003	30/04/2023	Surrendered	19,500	2*	37
62566.0.01-WT	28/06/2004	30/06/2014	Expired	90,000	16*	38
62725.0.03-WT	27/09/2004	30/09/2014	Surrendered	15,000	1*	108
63177.0.01-WT	29/06/2005	30/06/2020	Current	432,000	12	38
64967.0.01-WT	8/02/2008	31/01/2028	Current	97,500	18*	37
66363.0.01-WT+	17/12/2010	30/11/2020	Current	49,500	6.6	38
65921.0.01-WT	22/04/2013	31/01/2023	Current	35,250	5	38
67937.0.01-WT	28/11/2014	30/11/2024	Current	46,715	10	38

* Estimated from regression shown in **Figure C-6**.

Figure C-6 shows the relationship between annual surface water volume and the irrigated area recorded for individual horticultural consents in the Rangitaiki WMA. There is a good correlation between irrigated area and consented annual volume. It is assumed that the irrigated area recorded is correct for the annual takes in this area.

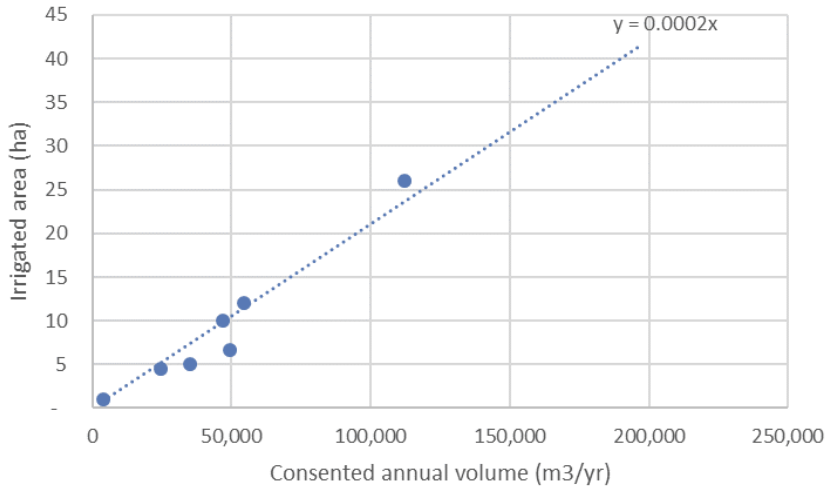

Figure C-6. Relationship between irrigated area and consented annual volume for horticulture irrigation from surface water in the Rangitāiki WMA.

Table C-7. BOPRC consent database entries for pasture irrigation from surface water in the Rangitāiki WMA.

Consent No.	Granted date	Expiration date	Status	Annual Volume (m^3/yr)	Irrigated area (ha)	SOURCE ID
20166.0.02-WT	3/10/1974	1/10/2026	Current	210,000	60	76
20209.0.02-WT	4/09/1975	1/10/2026	Current	37,350	41*	75
20266.0.02-WT	5/08/1976	1/10/2026	Current	247,500	60*	76
20930.0.02-WT	3/06/1982	1/10/2026	Current	21,000	4	27
21224.0.02-WT	6/10/1983	1/10/2026	Current	225,592	56	38
21319.2.02-WT	1/12/1983	1/10/2026	Current	420,000	76*	76
21319.1.02-WT	25/01/1984	1/10/2026	Current	1,680	30	76
21409.0.02-WT	2/02/1984	1/10/2026	Current	180,000	24	52
21349.0.02-WT	2/02/1984	1/10/2026	Current	20,460	40*	81
21589.2.01-WT	6/12/1984	1/10/2026	Current	285,000	64*	76
21589.2.03-WT	14/01/1985	1/10/2026	Current	285,000	22	76
60320.0.02-WT	17/06/1999	31/05/2014	Expired s124	408,300	45	28
60853.0.03-WT	19/09/2000	30/09/2015	Expired s124	453,600	85	28
60871.0.03-WT	19/09/2000	30/09/2015	Expired s124	453,750	79*	28
60867.0.03-WT	28/09/2000	31/08/2015	Expired s124	570,300	65	27
60778.0.03-WT	6/10/2000	31/10/2015	Expired s124	622,500	94*	28
61474.0.03-WT	24/05/2002	31/05/2012	Expired	498,900	66	27

Consent No.	Granted date	Expiration date	Status	Annual Volume (m^3/yr)	Irrigated area (ha)	SOURCE ID
61635.0.03-WT	14/08/2002	31/07/2012	Expired	810,000	107	29
61829.0.03-WT	12/12/2002	31/12/2012	Expired s124	712,800	95	30
62095.0.03-WT	10/06/2003	30/11/2013	Expired s124	375,000	52	76
61957.0.03-WT	11/06/2003	30/11/2013	Expired s124	30,000	17	76
62091.0.07-WT	23/07/2003	31/12/2013	Expired s124	453,600	63	52
62157.0.03-WT	5/03/2004	28/02/2014	Expired s124	630,000	84	27
62131.0.03-WT	10/03/2004	28/02/2014	Expired s124	300,000	65	27
62182.0.03-WT	28/06/2005	31/05/2015	Expired s124	472,500	72	27
62203.0.03-WT	7/06/2006	31/05/2016	Expired	285,000	56	26
65821.0.02-WT	5/10/2009	31/10/2019	Current	975,000	150	38
65903.0.05-WT	9/11/2009	30/11/2019	Current	620,250	180	78
66088.0.03-WT	19/04/2010	31/01/2021	Current	388,800	50	28
66026.0.03-WT	19/04/2010	31/08/2020	Current	375,000	40	78
66429.0.03-WT+	9/11/2010	28/02/2021	Current	252,000	40	28
66213.0.03-WT+	4/03/2011	28/02/2021	Current	6,000	129	38
66213.0.04-WT	4/03/2011	28/02/2021	Current	6,000	129	38
66690.0.02-WT	26/05/2011	30/09/2021	Current	583,200	80	29
66748.0.02-WT	27/05/2011	1/10/2021	Current	1,039,200	130	76
66956.0.03-WT	19/12/2011	31/05/2022	Current	498,900	66	27
67875.0.02-WT	15/01/2015	31/01/2025	Current	240,622	60	28
67078-WT.01+	4/03/2016	31/03/2026	Current	523,022	117	78

* Estimated from regression shown in Figure C-7.

Figure C-7 shows the relationship between annual surface water volume and the irrigated area recorded for individual pasture consents in the Rangitaiki WMA. There is a good correlation between irrigated area and consented annual volume. It was assumed that the irrigated area recorded is correct for the annual takes in this area.

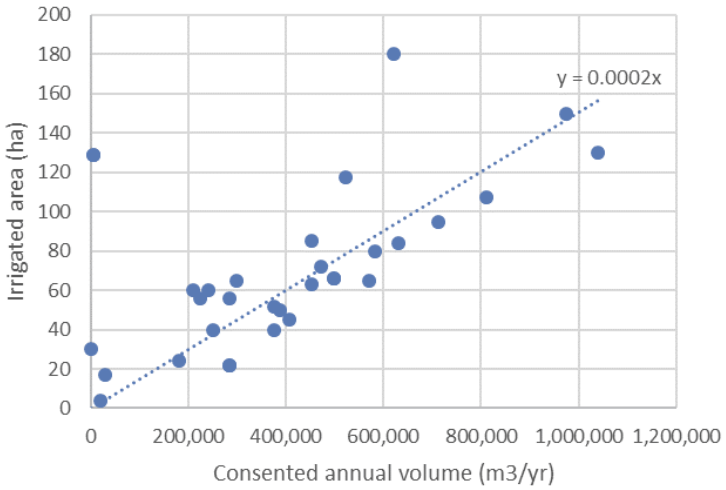

Figure C-7. Relationship between irrigated area and consented annual volume for pasture irrigation from surface water in the Rangitāiki WMA.

Table C-8. BOPRC consent database entries for horticulture irrigation from groundwater in the Rangitāiki WMA (takes from bores with <15 m saturated thickness)

Consent No.	Granted date	Expiration date	Status	Annual Volume (m^3/yr)	Irrigated area (ha)	SOURCE ID
20556.1.02-WT	2/08/1979	1/10/2026	Current	20,400	6.1	109
21263.0.02-WT	6/10/1983	1/10/2026	Current	7,500	5.0	109

Figure C-8 shows the relationship between annual groundwater volume and the irrigated area recorded for individual horticultural consents in the Rangitaiki WMA. There is a poor relationship between irrigated area and consented annual volume. It is assumed that the irrigated area recorded is incorrect and / or the variability in the irrigation management of the area in question (i.e. the soil type found could be quite permeable, or the crop type used may need larger water availability). It was assumed that the irrigated area recorded is correct for the annual takes in this area.

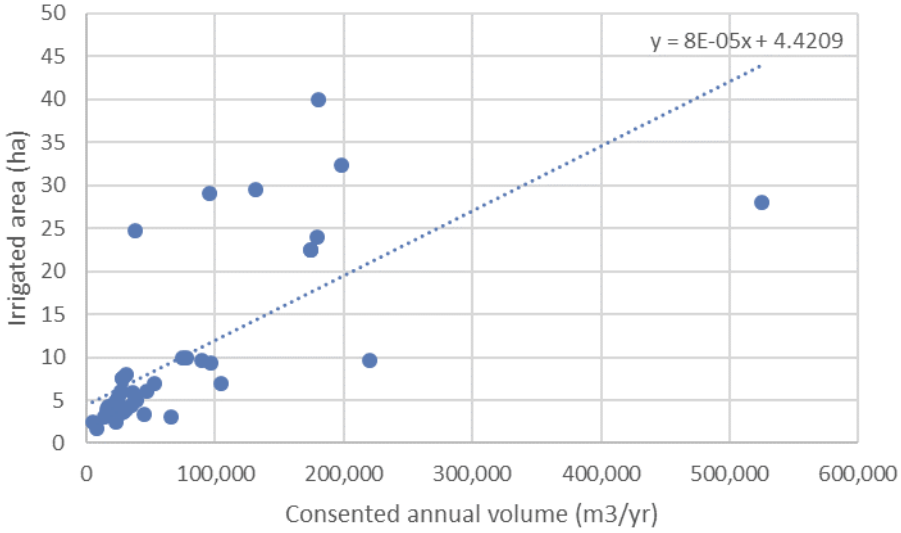

Figure C-8. Relationship between irrigated area and consented annual volume for horticulture irrigation from groundwater in the Rangitāiki WMA.

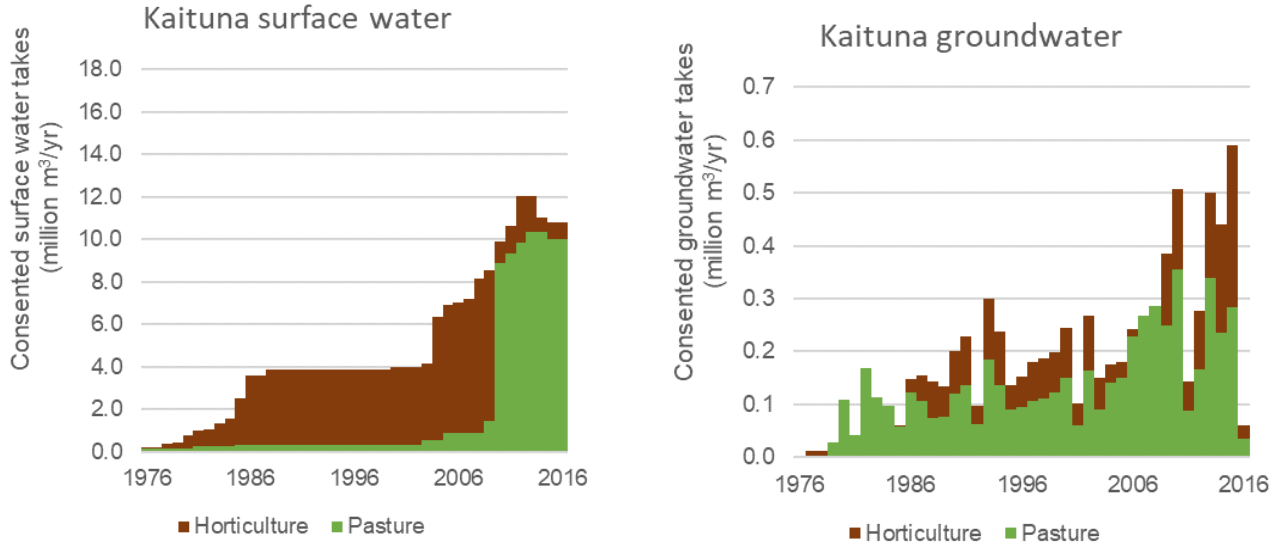

Figure C-9. Total consented water takes (m³/yr) over time in the Kaituna WMA (groundwater takes only include takes from bores with <15 m saturated thickness).

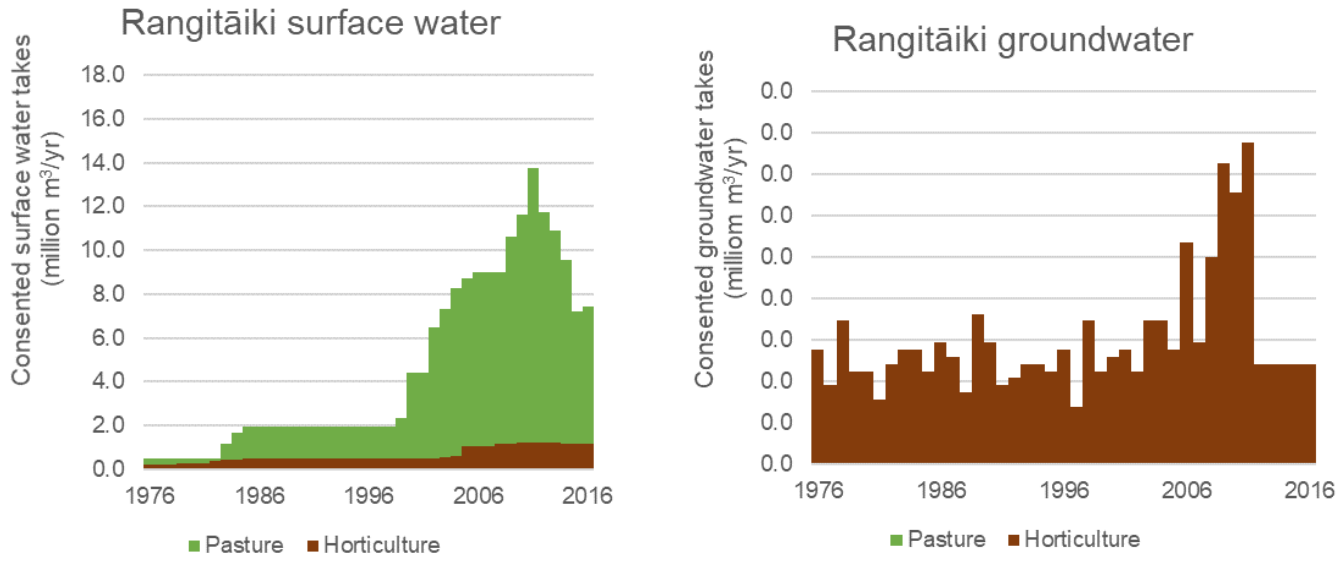

Figure C-10. Total consented water takes (m³/yr) over time in the Rangitāiki WMA (groundwater takes only include takes from bores with <15 m saturated thickness).

As shown in **Figure C-9** and **Figure C-10** there is a difference in irrigated areas for both horticulture and pasture across the Kaituna and Rangitāiki WMAs. In the Kaituna WMA there is more horticulture and pasture irrigated areas which is evident in the amount of water that has been applied for compared to in the Rangitāiki. An increase in pasture irrigation was observed in Rangitāiki WMA from 2010 onwards, and it is believed that more land has been converted to agricultural land use compared to the years previous. **Figure C-11** to **Figure C-14** provide an overview of the consented take holders locations in both WMAs.

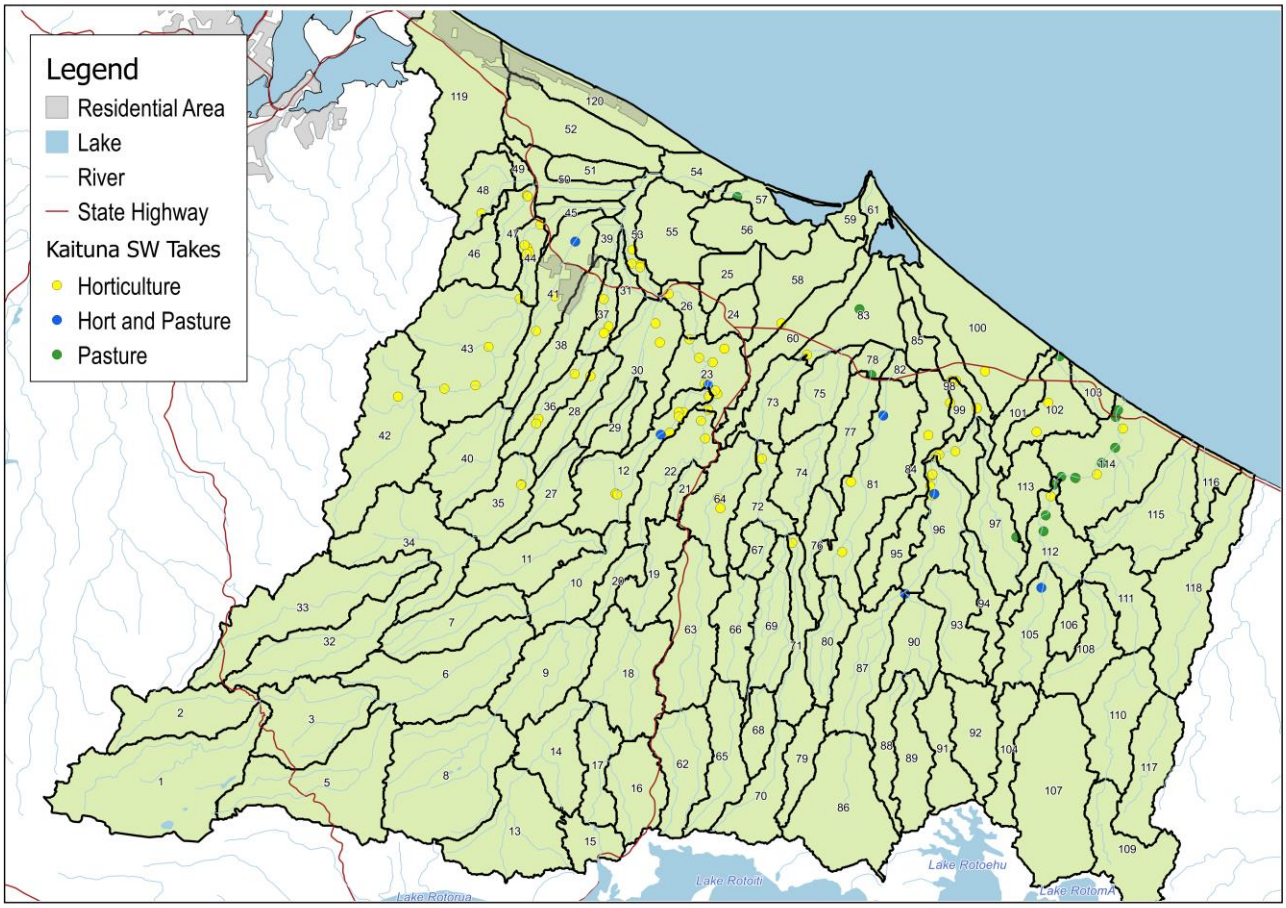

Figure C-11. Horticulture and pasture surface water takes in the Kaituna WMA

Figure C-12. Horticulture and pasture groundwater takes in the Kaituna WMA

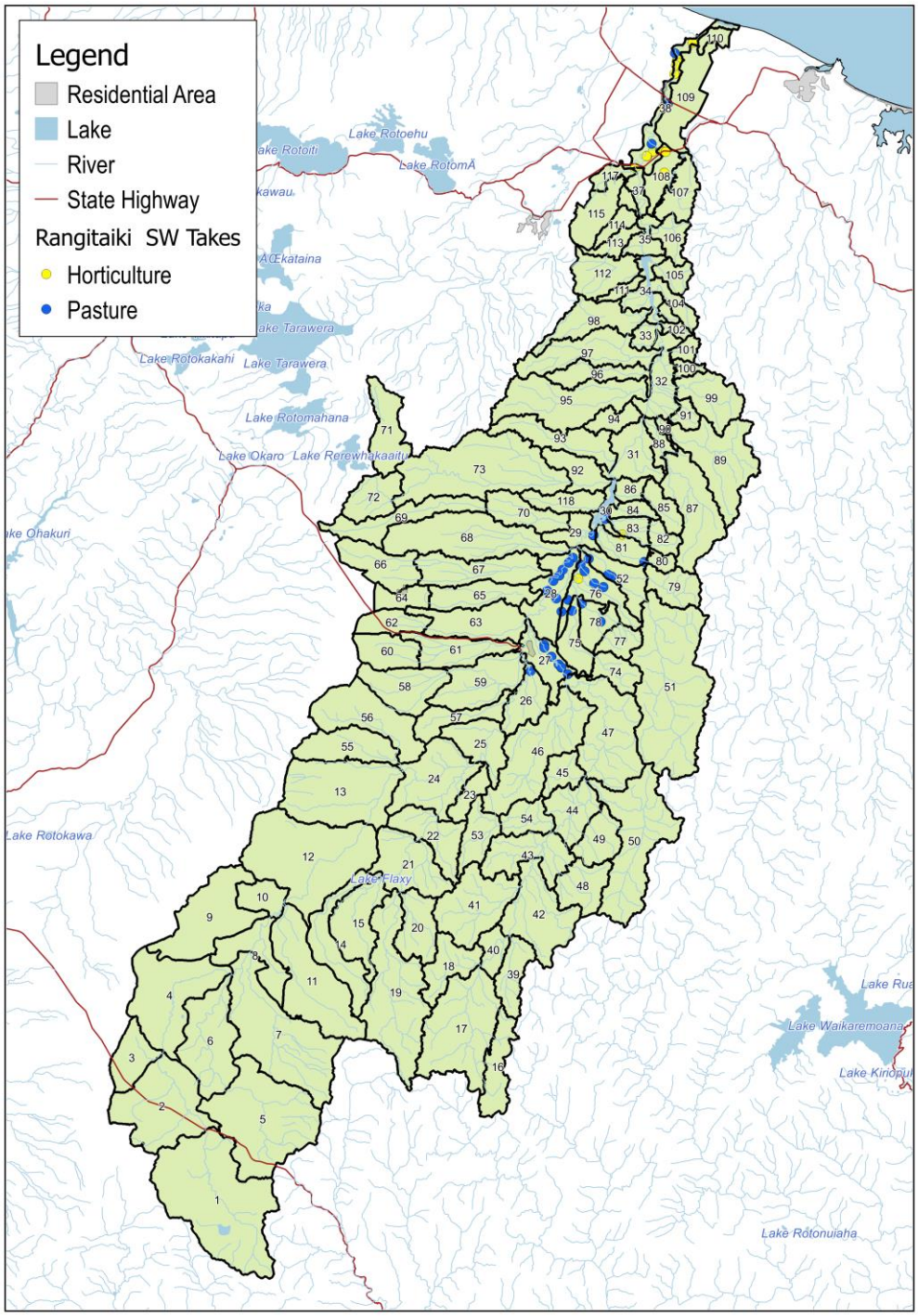

Figure C-13. Horticulture and pasture surface water takes in the Rangitāiki WMA

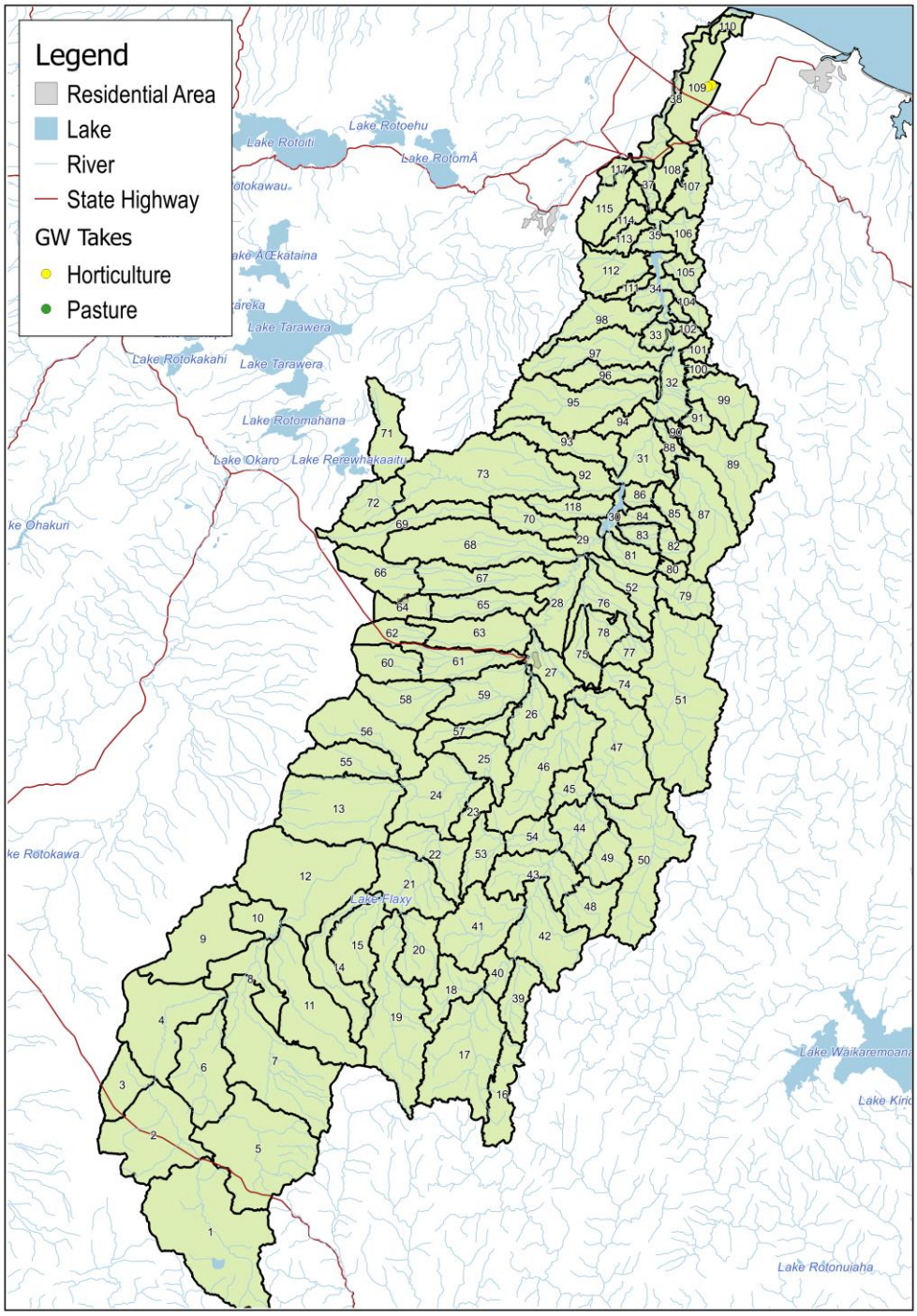

Figure C-14. Horticulture and pasture groundwater takes in the Rangitaiki WMA

A summary of the average daily water takes and discharges in each sub-catchment are provided in **Table C-9** and **Table C-10** for the Kaituna and Rangitāiki WMAs respectively.

Table C-9 Summary of average daily rates (m^3/day) for water takes and discharges in the Kaituna.

SOURCE Catchment	Municipal (m^3/day)	Non-Municipal (m^3/day)	Irrigation (m^3/day)	Wastewater Discharges (m^3/day)	Permitted Activity Takes (m^3/day)
SC#01					171.50
SC#02					68.95
SC#03		3.40			83.29
SC#04					130.12
SC#05					115.34
SC#06					59.79
SC#07					144.63
SC#08					73.96
SC#10					51.41
SC#11					63.24
SC#12			137.54		70.33
SC#13					144.72
SC#14					92.53
SC#15		247.37			16.76
SC#16					28.51
SC#17		450.21			23.67
SC#18		3.20			50.72
SC#19					26.27
SC#20					12.44
SC#21					7.95
SC#22			48.50		40.87
SC#23		17.08	295.39		134.01
SC#24					62.21
SC#25		9.11			72.75
SC#26		2163.42	2.02	1560.21	36.98
SC#27					44.76
SC#28			75.22		42.85
SC#29					27.04
SC#30		15.66	5.59		104.28
SC#31					42.60
SC#32		38.73			80.61
SC#33					101.87
SC#34					85.28
SC#35			5.94		41.47
SC#36	463.68		42.66		26.70
SC#37			102.66		20.91

SOURCE Catchment	Municipal (m^3/day)	Non-Municipal (m^3/day)	Irrigation (m^3/day)	Wastewater Discharges (m^3/day)	Permitted Activity Takes (m^3/day)
SC#38					26.52
SC#39					28.08
SC#40	1890.99				87.00
SC#41		86.32	193.65	1319.08	99.79
SC#42		8.43	13.35		82.34
SC#43			29.75		93.92
SC#44		11.75	59.51		17.63
SC#45					15.64
SC#46					128.91
SC#47			12.09		104.46
SC#48		36.97	23.55		125.71
SC#49					26.27
SC#50					104.98
SC#51					81.22
SC#52		141.62			191.12
SC#53		274.39	61.30		59.10
SC#54					57.20
SC#55		211.24			172.11
SC#56		56.25			132.88
SC#57		5.74	39.33		45.53
SC#58		83.04	114.55		196.91
SC#59					33.18
SC#60					209.43
SC#61					21.34
SC#62					56.33
SC#63					82.34
SC#64			6.52		55.21
SC#65					52.96
SC#66		4.11			41.13
SC#67					15.90
SC#68					23.07
SC#69					51.67
SC#70					46.57
SC#71			17.98		46.14
SC#72			93.57		48.82
SC#73					45.71
SC#74					155.61

SOURCE Catchment	Municipal (m^3/day)	Non-Municipal (m^3/day)	Irrigation (m^3/day)	Wastewater Discharges (m^3/day)	Permitted Activity Takes (m^3/day)
SC#75					136.17
SC#76					86.83
SC#77					119.84
SC#78			13.41		36.12
SC#79					83.03
SC#80					112.49
SC#81			258.95		314.50
SC#82					22.46
SC#83			102.68		210.38
SC#84					118.89
SC#85					36.29
SC#86					180.92
SC#87			15.84		113.36
SC#88					52.62
SC#89		25.70			76.29
SC#90					69.90
SC#91					74.39
SC#92					77.76
SC#93					83.72
SC#94					49.16
SC#95					61.78
SC#96			227.47		92.36
SC#97			18.88		91.15
SC#98		21.65	471.64		95.99
SC#99			216.95		20.04
SC#100			133.43		400.46
SC#101					98.76
SC#102		32.70	27.84		161.48
SC#103					75.77
SC#104					26.70
SC#105			101.53		40.69
SC#106					12.87
SC#107					94.09
SC#108					34.39
SC#109		25.93			47.26
SC#110					48.64
SC#111					32.57

SOURCE Catchment	Municipal (m^3/day)	Non-Municipal (m^3/day)	Irrigation (m^3/day)	Wastewater Discharges (m^3/day)	Permitted Activity Takes (m^3/day)
SC#112		0.00	103.86		37.93
SC#113					44.50
SC#114			236.85		65.23
SC#115					3.80
SC#116					0.69
SC#117					56.76
SC#118					99.36
SC#119					62.64
SC#120		134.16			113.79

Table C-10. Summary of average daily rates (m^3/day) for water takes and discharges in the Rangitāiki.

SOURCE Catchment	Municipal (m^3/day)	Non-Municipal (m^3/day)	Irrigation (m^3/day)	Wastewater Discharges (m^3/day)	Permitted Activity Takes (m^3/day)
SC#01					69.61
SC#02		2.74			39.06
SC#03					12.76
SC#04					56.10
SC#05					463.05
SC#06					289.70
SC#07					84.65
SC#08					24.99
SC#09					48.26
SC#10					13.09
SC#11					57.59
SC#12					80.95
SC#13					62.70
SC#14					25.83
SC#15					16.25
SC#16					0.98
SC#17					3.02
SC#18					1.21
SC#19					36.15
SC#20					11.83
SC#21					18.02
SC#22					13.34

SOURCE Catchment	Municipal (m^3/day)	Non-Municipal (m^3/day)	Irrigation (m^3/day)	Wastewater Discharges (m^3/day)	Permitted Activity Takes (m^3/day)
SC#23					5.19
SC#24					33.01
SC#25					17.97
SC#26			90.53		11.07
SC#27	13.99	229.45	676.20		6.65
SC#28			667.14		32.84
SC#29			175.23		21.99
SC#30			103.35		25.86
SC#31					93.25
SC#32					105.92
SC#33					6.45
SC#34					36.21
SC#35	12.92				35.67
SC#36					2.25
SC#37	2.89		32.30		17.70
SC#38		9587.29	942.50	174.98	104.44
SC#39					0.81
SC#40					0.47
SC#41					2.02
SC#42					1.95
SC#43		59.07			1.41
SC#44					1.03
SC#45					0.55
SC#46					2.94
SC#47					4.86
SC#48					0.97
SC#49					0.83
SC#50					3.82
SC#51					572.03
SC#52			241.71		99.88
SC#53					0.92
SC#54					0.67
SC#55					26.43
SC#56					39.88
SC#57					16.92
SC#58					27.36
SC#59					32.56

SOURCE Catchment	Municipal (m^3/day)	Non-Municipal (m^3/day)	Irrigation (m^3/day)	Wastewater Discharges (m^3/day)	Permitted Activity Takes (m^3/day)
SC#60					18.18
SC#61					22.70
SC#62					13.72
SC#63					29.62
SC#64					10.73
SC#65					21.85
SC#66					24.36
SC#67					31.68
SC#68					55.20
SC#69					28.75
SC#70					19.78
SC#71					138.02
SC#72					79.73
SC#73					333.11
SC#74					73.39
SC#75			126.82		75.51
SC#76			1454.23		124.50
SC#77					58.37
SC#78		191.76	152.66		76.48
SC#79					93.81
SC#80					26.17
SC#81			114.96		71.61
SC#82					46.81
SC#83			30.97		45.58
SC#84					38.84
SC#85					64.14
SC#86					37.89
SC#87					245.99
SC#88					41.35
SC#89					270.51
SC#90					13.71
SC#91					36.13
SC#92		2444.41			66.49
SC#93					21.77
SC#94					6.76
SC#95					35.87
SC#96					11.45

SOURCE Catchment	Municipal (m^3/day)	Non-Municipal (m^3/day)	Irrigation (m^3/day)	Wastewater Discharges (m^3/day)	Permitted Activity Takes (m^3/day)
SC#97					24.72
SC#98					17.95
SC#99					144.86
SC#100					24.74
SC#101					29.46
SC#102					20.27
SC#103					14.51
SC#104					53.55
SC#105					50.46
SC#106					64.32
SC#107					99.35
SC#108			86.71		75.94
SC#109			42.39		173.15
SC#110					28.54
SC#111					3.09
SC#112					20.27
SC#113					5.57
SC#114					4.77
SC#115					13.82
SC#117					10.86
SC#118					19.42