

## 2. Appendix 2: Raw habitat data

Tables showing the raw habitat data for 2010 and 2012, including physiochemical data, habitat information, habitat quality assessment, Pfankuch stability index and habitat quantity assessment, are shown below.

## Raw habitat data – 2010

## Raw habitat data – 2010 (continued)

Raw habitat data - unused & unmeasured attributes																																				
Habitat and water quality data																																				
Site Name	Wairau @ River	Wairau @ Stream	Mangakino @ Twin Bridges	Mangakino @ River	Kehu @ Gorge	Mangaharuru @ Main Rd	Mangaharuru @ Akaroa Rd	Whakapapa @ Caversham	Waiata @ site	Punakaiki @ Reporter	Waiopou @ SH12	Waiopou @ Forest Range	Victoria @ Whakatane Bridge	Whakatane @ DFO Ma	Raukawa @ Flyer Rd Bridge	Whakape @ Whakatane Landing	Mangamuka @ Mimitua Rd	Mangawhi @ Matahi Rd	Hepape @ SH12	Hawera @ SH12 bridge	Waimaneko @ Store store	Whakatane @ Stream store	Ukutu @ Pongahau Rd Bridge	Oruku @ Oruku Rd	Awanui @ FIDC PMS stream in SH1	Waihou @ Stringer Rd walking bridge	Colegate @ suspension bridge	Wairau @ 2nd River	Waihou @ Hieu Valley	Waiopou @ Driftin Bridge	Waihori @ Waikato Rd	Wainga @ Waitangi	Heke @ Mohi Park			
Site Number	101753	101625	109096	101038	102256	100237	100281	100249	100248	105231	103304	101751	105632	100370	102674	105008	101624	108978	102257	108977	109021	109100	108098	101530	109020	108979	100363	100007	102458	105672	107773	108941	103178	101752	100194	
Date	18/01/2010	18/01/2010	23/02/2010	21/04/2010	26/04/2010	19/01/2010	21/04/2010	01/05/2010	01/03/2010	19/03/2010	26/04/2010	19/04/2010	19/04/2010	19/04/2010	23/03/2010	26/01/2010	05/04/2010	21/04/2010	23/03/2010	19/01/2010	26/04/2010	26/01/2010	26/04/2010	20/04/2010	19/04/2010	26/01/2010	18/02/2010	16/04/2010	19/01/2010	18/01/2010	12/11/2009	16/04/2010	19/01/2010			
<b>Quantitative assessment</b>																																				
<b>Flow type</b>																																				
%Pool	76	100	0	0	0	12.5	0	0	0	40	20	0	20	40	0	6.25	0	0	100	0	100	0	40	0	37.5	0	16.666667	25	12.5	0	0	0				
%Riffle	12.5	0	21	0	60	60	0	0	12.5	0	20	40	20	20	0	6.25	40	20	0	0	40	12.5	0	20	30	9	97.5	0	16.666667	50	7.5	0	16.666667	0		
%Run	12.5	0	50	100	40	0	100	87.5	100	40	40	80	40	60	100	0	81.25	60	80	0	70	0	20	62.5	0	80	0	50	16.666667	25	70	83.333333	100	0		
%Waterfall/chute	0	0	20	0	0	38	0	0	0	0	20	0	0	0	0	0	6	0	0	0	30	0	0	25	0	0	30	13	20	17	13	0	30	0	0	0
Mean depth	0	0	0.5	1.92	0.340	0.475	0.49	1	1.5	0.38	0.34	0.09	0.49	1.34	0.6	0.902	0.975	0.32	1.66	0.0	0.4	1	0.42	1	1	0.36	0.66	0.575	0.7	0.23333333	0.525	0.6	0.5	1.41666667	1	
Mean width	10.75	10.75	25	7.6	14.06	4	5.56	15	15	10.5	11.94	16.0	7.62	7.9	6	6.18	26	6.12	7.5	7.2	7.64	13.75	11.18	24	42	2.94	8.92	15.5	22	4.0333333	5.375	5	6.6	14.166667	21.75	
<b>Inorganic substrate</b>																																				
%Bedrock	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	65	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0	0	0		
%Boulders	50	0	100	0	0	0	0	0	0	48	100	0	0	0	0	0	30	0	35	0	0	15	14	0	22.5	0	0	40	10	46	0	10	5	0		
%Cobbles	50	0	0	0	0	0	0	0	0	36	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
%Gravel	0	0	0	0	0	70	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
%Silt/sand	0	100	0	0	30	100	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
%Sand/clay	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
%Marnimate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
<b>Organic vegetation</b>																																				
%Dentate	0	0	0	0	50	8	0	0	8	16	4	10	0	0	0	4	0	0	0	0	25	4	8	30	0	20	0	0	0	0	0	0	0			
%Sedge/phyt.	0	0	100	0	0	8	0	0	8	20	8	30	0	0	0	50	2.5	24	0	0	48	0	0	34	5	0	43.333333	12.5	0	0	0	0	0			
%Macrophytes	0	20	0	0	0	68	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64	4	3.3333333	0	3.3333333	5	50	0	0	10	0	
%Aloes	100	48	0	36	16	50	0	0	64	16	88	36	0	50	77.5	76	88	0	36	20	67.5	0	50	50	100	23.333333	70	60	4	66.666667	87.5	0				
%Woody debris	0	32	0	45	0	0																														

## Raw habitat data – 2012

Site Name	Waiharakeke @ Stream walking bridge	Hatake @ Maripark walking bridge	Mangahauku @ Main Rd	Mangahauku @ Apotek Rd	Awana R @ FADC R/S (baked by SH1)	Awana uit Water Channel	Mangawhau @ Teiki	Waiapapa @ Waipapa Landing	Kerikeri @ Kierki Rd	Waiapapa @ Forest Ranger	Waiapapa @ SH1	Whakapapa	Kahu @ Gorge	Mangere @ Matua Rd	Oponopono @ Suspension	Koro River @ Dip Rd	Watangi @ Waitangi	Waiapapa @ SH12	Raukawa @ Tiger Rd bridge	Puhakura @ Loop Rd bridge	Victoria @ Thompsons Bridge	Waiarorina @ 2nd Avenue	Waiarorina @ Whau Valley	Waiapapa @ 2nd Avenue	Paparoa @ Walking bridge	Mangamuka @ Inverua Rd	Oruru @ Oruru Rd	Utukuri @ 1st Hawke Rd	Waiarorina @ Main Rd	Mangakaha @ Gorge	Waimatuku @ SH12	Ngunguru @ Coal Hill Lane			
Site Name	Waiharakeke	Hatake	Mangahauku 1	Mangahauku 2	Awana 1	Awana 2	Mangawhau 1	Waiapapa 1	Kerikeri	Mangere	Waiapapa 2	Watangi 1	Viarua	Waiapu	Whakapapa	Kahu	Mangere	Oponopono	Koro	Watangi 2	Waiapapa	Raukawa	Puhakura	Victoria	Waiarorina 1	Waiarorina 2	Waiapapa	Paparoa	Mangamuka	Oruru	Utukuri	Hatake	Mangakaha 2	Waimatuku	Ngunguru
Site Number	100002	100194	100237	100281	100363	100370	101036	101524	101530	101626	101751	102249	102265	102267	102268	102316	102304	105006	105231	105532	105672	10773	108841	108977	108978	108979	109020	109021	109096	109098	109099	109093	109093		
Date	02/03/2012	01/03/2012	22/02/2012	23/02/2012	26/03/2012	07/03/2012	09/03/2012	26/03/2012	14/03/2012	09/03/2012	07/03/2012	02/03/2012	07/03/2012	01/03/2012	07/03/2012	29/03/2012	09/03/2012	14/03/2012	14/03/2012	26/03/2012	20/03/2012	20/03/2012	20/03/2012	29/03/2012	20/03/2012	20/03/2012	20/03/2012	20/03/2012	14/03/2012	29/03/2012	08/03/2012	01/03/2012			
<b>Water Quality Data</b>																																			
Temperature	18.5	18.5	18.7	20.3	17	16.6	16.5	18.8	18.1	17.6	17.9	18.7	17.9	17.7	17.6	20.4	16.2	15.6	17.2	16.6	17.9	15.1	20.8	18.2	17.9	19.1	14.8	15.9	17.9	18.4	16.6	17.8	17.8		
Dissolved oxygen (mg/L)	11.58	12.38	8.6	9.6	8.56	8.84	8.96	8.04	9.49	7.76	9.05	10.1	8.93	13.19	11.76	9.67	10.15	10.47	9.92	9.55	9.72	9.23	10.44	10.2	11.1	10.3	6.86	10.05	8.51	7.72	12.36	10.51	9.81	10.98	
% Dissolved Oxygen (%SAT)	123.6	132.8	91.5	105.6	88.5	90.8	91.7	86.4	100.7	82.2	95.4	108.2	93.7	138.4	124.2	101.4	112.5	106.6	99.6	99.2	97.2	103.8	117.5	100	95.7	99.2	86	81.4	132.5	107.7	103.5	104.9			
Conductivity (µS)	120	266.1	87.2	107.6	147.8	157.5	115.6	71.6	69.8	136.3	104.7	109.1	110	79.8	75.7	59.8	179.4	110.5	85.9	79.9	114.4	119.8	268.8	153.1	298.2	122.2	154.4	111.8	147.5	98.2	91.5	92.2			
Black disc (m)	1	≥ 17	1.55	1.8	0.45	0.91	1.35	3.15	2.83	1.17	2.08	2.53	1.1	1.54	1.47	2.84	0.98	2.4	2.09	1.85	3.5	1.15	1.59	2.06	1.98	2.53	1.93	1.64	3.5	1.66	1.55	1.2	3.2	2.24	2.29
Water colourants	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Surface pH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Anerobic sediment odour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
<b>Flankchuk Stability Index</b>																																			
Upper bank																																			
Landform	7	3	2	5	8	4	7	3	5	3	7	4	8	2	6	3	2	5	1	6	5	6	7	4	5	7	2	5	5	5	5	5			
Mass wasting	8	6	4	10	7	6	4	3	9	7	4	10	6	7	4	8	2	5	3	3	6	10	4	7	9	6	4	3	4	3	3	3			
Debris jam	8	4	4	3	4	4	4	3	4	5	5	4	4	4	6	3	4	5	6	3	4	3	4	5	3	4	5	4	3	4	3	3			
Vegetation	6	2	4	11	11	10	6	5	9	1	7	10	9	1	6	7	12	11	1	6	9	8	10	9	12	12	9	9	9	9	9				
Lower bank																																			
Capacity	2	2	1	1	2	2	1	1	1	1	1	2	1	1	2	1	1	2	1	1	2	1	2	3	1	3	2	3	2	3	2				
Bank rock	7	2	5	7	5	8	6	6	8	7	8	7	2	8	4	6	5	6	1	6	5	6	7	8	9	4	5	6	7	8	9	8			
Obstruction	6	2	5	5	4	4	4	3	3	4	3	3	6	4	4	5	2	3	3	2	3	2	2	3	2	3	2	3	2	3	2	3			
Cutting	7	5	5	6	6	7	6	5	8	10	12	10	8	7	4	6	5	9	7	2	5	3	10	4	8	6	5	7	6	5	6				
Deposition	7	4	4	10	6	4	4	4	4	4	4	8	5	4	5	4	4	4	4	7	4	9	10	4	5	7	4	5	6	5	6				
Bottom																																			
Rock Angularity	3	2	2	3	4	4	2	2	4	1	2	4	4	4	4	4	4	4	4	1	2	3	2	3	4	3	2	3	4	3	2				
Brightness	5	1	3	3	2	3	1	3	1	2	2	1	2	3	1	2	1	2	1	2	1	2	1	2	3	1	2	1	2	3	1				
Consolidation	5	2	3	8	6	1	6	2	3	6	3	6	6	3	6	3	6	3	6	5	3	6	3	6	4	7	6	3	4	5	3				
% stable	12	6	5	14	9	14	12	5	4	15	9	14	10	11	8	14	10	16	4	10	6	7	10	14	8										

Raw habitat data – 2012 (continued)

Site Name	Waiharake @ String Rd walking bridge	Hata @ Maripark walking bridge	Mangaharuru @ Main Rd	Mangaharuru @ Apolve Rd	Ahwaini Rd @ TMDC P/S (Site) by SH1	Ahwaini Rd Wairere Channel	Mangaharuru @ Teoti	Waiharake @ Waiapapa Landing	Kirikeri @ Stone store	Mangere @ Knight Rd	Waiharake @ Forest Range	Waiharake @ Yates	Pearlbank @ Ruru	Waiotu @ SH1	Whakatane @ Ondaway	Kihu @ George	Mangawhai @ Mitaia Rd	Oparau @ Suspension	Kami River @ Tupu Rd	Walkers @ Whitendo	Waiharake @ SH12	Russets @ Tyger Rd Bridge	Punakaiki @ Loop Rd Bridge	Victoria @ Thompson's Bridge	Waiharake @ 2nd Avenue	Waiharake @ Whau Valley	Waiharake @ Walking bridge	Paparoa @ Walking bridge	Mangamahiti @ Waiwhetu Rd	Oruru @ Oruru Rd	Udiana @ 177 Horatio Rd	Hakaru @ Topuni Creek Farm	Mangatuhu @ George	Waimanu @ SH12	Ngunguru @ Coastal Land
Site Name	Waiharake	Hata	Mangaharuru 1	Mangaharuru 2	Ahwaini 1	Ahwaini 2	Mangaharuru 1	Waiapapa 1	Kirikeri	Mangere	Waiapapa 2	Walking 1	Ruru	Waiotu	Whakatane	Kihu	Mangawhai	Oparau	Kami River	Walkers	Waiharake	Russets	Punakaiki	Victoria	Waiharake 1	Waiharake 2	Waiharake	Paparoa	Mangamahiti	Oruru	Udiana	Hakaru	Mangamahiti 2	Waimanu	Ngunguru
Site Number	100007	100194	100237	100281	100363	100370	101038	101524	101530	101625	101751	101752	101753	102248	102256	102257	102258	102674	103178	103304	105008	105231	10552	105672	107778	108941	108977	108978	108979	109020	109021	109096	109098	110603	
Date	02/03/2012	01/03/2012	27/02/2012	22/02/2012	29/03/2012	07/03/2012	09/03/2012	28/02/2012	14/03/2012	09/05/2012	07/03/2012	02/03/2012	07/03/2012	01/08/2012	07/03/2012	29/03/2012	05/03/2012	14/02/2012	14/02/2012	14/03/2012	28/03/2012	22/02/2012	29/02/2012	28/02/2012	20/02/2012	19/03/2012	14/03/2012	25/02/2012	07/03/2012	14/03/2012	10/03/2012	01/02/2012			
<b>Quantitative assessment</b>																																			
<b>Flow type</b>																																			
%Puddles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
%Riffle	36	0	90	0	57	0	0	0	0	0	0	0	0	0	0	23	0	4	0	0	7	26	71	64	29	14	0	9	29	0	0	71			
%Run	64	100	20	100	43	100	100	43	64	100	100	100	100	73	100	90	100	100	43	33	70	29	36	57	36	0	100	71	100	99	105	100			
%Waterfall/chute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Mean depth	1.00	1.00	0.45	1.00	1.00	1.00	1.00	1.00	1.00	0.40	1.00	1.00	1.00	0.60	1.00	1.00	1.00	0.70	0.80	1.00	0.50	0.40	0.40	0.70	1.00	0.75	1.00	1.00	1.00	1.00	0.80				
Mean width	9	11	4	6	6	0	13	12	14	6	15.00	14	11	0	12	12	11	10	5	10	7	6	5	5	6	11	15	11	0	0					
<b>Organic substrate</b>																																			
%Bedrock	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
%Boulder	0.00	30.00	0.00	0.00	40.00	0.00	0.00	0.00	33.33	30.00	0.00	0.00	17.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
%Cobble	5.00	30.00	24.00	0.00	0.00	0.00	0.00	33.33	33.34	20.00	7.00	43.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
%Gravel	40.00	30.00	40.00	50.00	0.00	0.00	0.00	50.00	33.33	0.00	0.00	31.00	57.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
%Silt/sand	47.00	0.00	38.00	50.00	0.00	0.00	0.00	55.34	0.00	10.00	32.00	0.00	37.00	54.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
%Hard days	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
%Manmade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Bottom substrate*	Mx	H	Mx	S	H	H	Mx	H	H	Mx	H	H	Mx	S	H	Mx	H	S	H	H	Mx	Mx	S	H	Mx	Mx	S	H	Mx	Mx					
<b>Organic substrate</b>																																			
%Detritus	7.50	10.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
%Bryophytes	0.00	0.00	0.00	0.00	34.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
%Macrophytes	1.50	0.00	8.33	55.00	4.00	17.00	16.00	37.00	0.00	0.00	14.00	18.00	20.00	60.00	0.00	0.00	47.00	0.00	27.00	6.00	7.00	0.00	0.00	19.00	7.00	46.00	1.50	50.00	0.00	11.00	20.00	6.00			
%Algae	72.00	80.00	66.57	58.33	50.00	65.00	7																												