Appendix H

Storm Water Schedules

Diversion of Existing Watercourses

Note:

1 Does not include the length of watercourse replaced with a culvert nor new watercourses where ones did not exist prior.
2 Length of watercourse diversion where culvert skew is reduced would be additional.
3 Does not include relatively minor diversion lengths associated with constructing culverts off line.

Drawing		Water Course Reference	Associated culvert	Approximate Length of diversion (m)	Reason
CV-SW-	104				
CV-SW-	105				
CV-SW-	106	Tributary of Drain 7	10	50	Existing drain filled in by embankment
CV-SW-	107				
CV-SW-	108	Tributary of Drain 7	11	20	Existing drain filled in by embankment
CV-SW-	109				
CV-SW-	110				
CV-SW-	111				
CV-SW-	112				
CV-SW-	113				
CV-SW-	114				
CV-SW-	115				
CV-SW-	116				
CV-SW-	117				
CV-SW-	118	Muaupoko Stream	-	30	
CV-SW-	119				
CV-SW-	120				
CV-SW-	121				
CV-SW-	122				
CV-SW-	123				
CV-SW-	124				
CV-SW-	125	Kakariki Stream	bridge	110	
CV-SW-	126	Smithfield Drain	-	600	
CV-SW-	127				
CV-SW-	128				
CV-SW-	128	Paetawa Drain	bridge	70	Existing drain filled in by embankment
CV-SW-	129	Tributary of Paetawa Drain	38.3	220	
CV-SW-	129	Tributary of Paetawa Drain	38, 38.4, 39	200	Drain filled in by emabankment and needed to facilitate offset area 13A
CV-SW-	130	Hadfeild / Te Kowhai Stream	40, 40.1, 40.2, 40.3	170	Culverts diverted. 470m if diverted further south as part of off set storage
CV-SW-	130	Tributary of Paetawa Drain	38, 38.4, 39	280	Drain filled in by emabankment and needed to facilitate offset area 13A
CV-SW-	132	Tributary of Paetawa Drain	38.1	90	Drain filled in by local road changes

M2PP Culvert Schedule (including Bridges)

Major watercourse crossings

Reference	Chainage	Name	Catchment Area (ha)	Model	Diameter / Dimensions	Length	intermediate mh (say 1500mm on average)	Headwall Type (pc = standard precast, ww only = wingwall only)	Headwall Apron Length (us+ds)	US Riprap Length (2.5xdia)	DS Riprap Length (4xdia)	Total Length of Watercourse Culverted/Ripraped	Ground improvements (beneath culvert and 20m each approach along the road)	Roughness	Note
										2.5	4				
6	2000		4.91	Alliance	600	20	y	pc	2		2.4	24.4			remove 10m of existing pipe
7.1	2220		5.7	Alliance	600	50	y	pc	2		2.4	na			
7.2	not used														
7.3	not used														
7.4	2675		na	Alliance	1050	5		pc	4	2.6	4.2	15.8			
7.5	2605		23.33	Alliance	1200	60		pc	4	3.0		67.0			
8	2600		12.48	SKM	1050	40	y	pc	4	2.6	4.2	50.8			Poplar Ave
9	not used														
9.1	not used														
9.2	not used														
9.3	not used														
9.4	not used														
10	3685	Drain 7 Upper	44.41	SKM	1500	60		ww only		3.75	6	69.75		0.013	Drain 7
11	4930	Drain 7 Lower	151.32	SKM	3x2	100		ww only		7.5	12	119.5	pile grid	0.02	Drain 7
11.1		Wharemauku Stream	1007.76	SKM				bridge				32			Wharemauku Bridge. Ihakara Rd at 5.5m.
11.2	5400		0.7	SKM	600	30				1.5	2.4	na			
11.3	5200	Storage Area 2 / 3 connector	na		1800	70				4.5	7.2	na			flood balancing culvert
12.2	not used														
13	7465		na	Alliance	750	30				1.9	3.0	na			
14	8040	Mazengarb Drain	378.83	REC	5x3	111		ww only		12.5	20	143.5	pile grid	0.02	Mazengarb Drain
15	8500	WWTP Drain	17.04	REC	1500	60	y	pc	4	3.75	6	73.75		0.013	WWTP Drain
16	8725		3.73	REC	1200	60	y	ww only		3.0	4.8	67.8		0.013	
17	8930	Landfill Drain	15.22	REC	1200	75	y	ww only		3	4.8	82.8		0.013	Landfill Drain.
18	not used														
18.1	9270	Otaihanga Drain	10.38	REC	1050	10		pc	4	2.6	4.2	20.8			
21	10290			REC	1800	50		pc	4	4.5	7.2	na		0.013	
22	10290		4.4	REC	750	50		pc	~~4~~	1.9	3.0			0.013	
22.1	10465		1.34	REC	750	65	y	pc	4	1.9	3.0	na		0.013	
22.2	10290		4.4	Alliance	1050	10	y	pc	2	2.6	4.2	18.8			
23		Waikanae River	13005.22	REC				bridge				83			Waikanae River bridge
23.3	11110		1.06	Alliance	1050	50			2	2.6		54.6			
23.4	11125		1.89	Alliance	1050	60			2	2.6		64.6			
24	11800		14	Alliance	1050	15		pc	4	2.6	4.2	na			cleanwater diversion
24.1	11820		**31**	SKM	1050	15		pc	2	2.6	4.2	na			outlet
24.2	11780		12	SKM	1050	15	y	pc	4	2.6	4.2	na			
24.3	11700		12	SKM	1050	15				2.6	4.2	21.8			
24.4	11650		2.2	SKM	300	10				0.8	1.2	na			
25		Waimeha Stream ramp	218.8	SKM				bridge				32			Waimeha Stream Ramp Bridge
25.1		Waimeha Stream / floodway		SKM				bridge				15			
25.2		Waimeha Stream ramp	218.8	SKM				bridge				15			
25.3		flow balancing culvet	9.46	SKM	600	70				1.5	2.4	na			
26	13200	Ngarara Creek	164.19	SKM	3x2	70	y	ww only		7.5	12	89.5		0.02	Ngarara Creek
27	13400	flow balancing culvet	2.21	SKM	600	65	y	pc	4	1.5	2.4	72.9		0.013	
28	not used														
29		Kakariki Stream 1	575.86	SKM				bridge				60			Kakariki Stream bridge
30	14060		6.33	Alliance	1050	30		ww only	4	2.6	4.2	40.8		0.013	
30.1	14270		1.8	Alliance	600	25		ww only	4	1.5	2.4	32.9		0.013	Smithfield Rd culverts 2No
30.2	14375		1.04	Alliance	600	25		ww only	4	1.5	2.4	32.9			
30.3	14480		14.93	Alliance	1050	25		ww only	4	2.6	4.2	35.8			
30.4	14340		5.5	SKM	1200	90	y	ww only	4	3.0	4.8	101.8			
30.5		Kakariki Stream 2	617.95	SKM				bridge				25			Kakariki Stream bridge No2
31	15100		1.66	Alliance	1050	60		ww only		2.6	4.2	66.8		0.013	
32	Not used														
33	15650		5.15	Alliance	1050	65	y	ww only	4	2.6	4.2	75.8		0.013	
34	15780		16.95	Alliance	1500	50	y	ww only	4	3.8	6.0	63.8		0.13	
35	15910		39.78	SKM	1500	48	y	ww only	4	3.8	6.0	61.8		0.013	
35.1		flow balancing culvet	na	SKM	1800	50				4.5	7.2	na			
36		Paetawa Drain	271.22	SKM				bridge				30			Paetawa drain - bridge
37	Not used														
38	16805		83.81	SKM	3x2	65	y	ww only		7.5	12.0	84.5		0.013	
38.1	16710		82.52	Alliance	3x2	30				7.5	12.0	49.5			Not used
38.2	16840		na	Alliance	525	20		ww only		1.3	2.1	23.4	pile grid	0.02	
38.3	17140		2.1	Alliance	1050	30				2.6	4.2	36.8			Not used
38.4	17165		53.74	Alliance	1800	25				4.5	7.2	36.7			Not used
39	17170		25.02	Alliance	1500	25		ww only		3.8	6.0	34.8		0.02	
40	17465	Hadfield Drain /Te Kowhai Stream	104.06	Alliance	3x2	20		ww only		7.5	12	39.5		0.02	Hadfield Drain - Remove existing culvert under existing SH1 2 x 900 dia.
40.1	17465	Hadfield Drain /Te Kowhai Stream	104.06	Alliance	3x2	40		ww only		7.5	12	59.5		0.02	
40.2	17465	Hadfield Drain /Te Kowhai Stream	104.06	Alliance	3x2	20		ww only		7.5	12	39.5		0.02	Hadfield Drain - Remove existing culvert under existing SH1 2 x 900 dia.
40.3	17630	Hadfield Drain /Te Kowhai Stream	104.06	Alliance	3x2	20		ww only		7.5	12	39.5		0.02	Hadfield Drain - Allow undercut 2m deep x 20m x 20m

Wetlands and Offset Stroage Area Schedule

Reference	Wetland (WL) or Offset Storage (OS) Area	Chainage (m)	Location	Wetland Area (m2)	New Offset Storage Area (m2)	Offset Storage Area Above Existing Ground (m2)	1%AEP Attenuation Volume (m3)	Offset Flood Storage Volume (m3)	Earth Bunding Length (m)	Approx Bund Volume (m3)	Total Earthworks Volume (m3)
0A	WL	3700	208 Main Rd	4950			500	4460			7979
0B	OS	3700	Raumati Wetland		13700			2740			26030
0C	OS	3700	East of Expressway		19853			8140	50	90	13897
2	OS	5200	Wharemauaku		53500			38000			37450
3A	OS	5200	Wharemauku		51500			3800			25750
3	WL	5400	Kiwi Pond	1800			2600				500
4	WL	6200	Kapiti rd	2214	9384		6250		250	750	7420
5	WL	7500	Mazengarb rd	800	5100	4000	6234				8080
6	OS	8500	Opposite WWTP		6070		2120	2734	280	1650	21677
6A	OS	8500	Landfill			10000		1789			
7	-		Not used								
8	WL	10200	South of Waikanae River	1625	6175		1850				4472
8B	-	10800	Not used								
9A	OS	10800	Elrancho access			1200	1613		25	190	
9	WL	11200	Puriri Rd	1520	2622			6206	300	1500	2031
10	OS	11700	Te Monana Rd		1071		750				750
10A	WL	13200	Ngarara Creek W	450							467
10B	WL	13200	Ngarara Creek E	1021							1570
10C	OS	12950	South of Ngarara Creek		2450			1500			3000
10D	OS	13400	Ngarara road		1250			500			1000
10E	-	11700	Te Monana floodway		22000						11000
10F	OS	11700	Waimeha stream		3000			3000			5000
11	OS	14200	Kakariki / Smithfield Complex		51000			25000			25500
11A	WL	14200	Smithfield rd	200							916
11B	WL	14200	Smithfield rd	250							270
12	WL	14200	Kakariki Stream complex	786		786			620	3720	849
13	OS	16600	Paetawa / Kensington block		43000			6000			6000
13A	OS	16900	South of Peka Peka Int			24300		30000			
			Total	**15616**	**291675**	**40286**	**21917**	**133869**	**1525**	**7900**	**211608**