Contaminant Load Model

Version MAY06

Auckland Regional Council
TE RAUHITANGA TAIAO

SOURCE	SOURCE TYPE		Source Area (m^2)	First management option	Second management option	Third management option	Fraction of area draining to train	Sediment Yield (g m^{-2} a^{-1})	Sediment Initial load (g a^{-1})	Sediment Load reduction efficiency	Sediment Reduced load (g a^{-1})	Zinc Yield (g m^{-2} a^{-1})	Zinc Initial load (g a^{-1})	Zinc Load reduction efficiency	Zinc Reduced load (g a^{-1})	Copper Yield (g m^{-2} a^{-1})	Copper Initial load (g a^{-1})	Copper Load reduction efficiency	Copper Reduced load (g a^{-1})	Total Petroleum Hydrocarbons Yield (g m^{-2} a^{-1})	Total Petroleum Hydrocarbons Initial load (g a^{-1})	Total Petroleum Hydrocarbons Load reduction efficiency	Total Petroleum Hydrocarbons Reduced load (g a^{-1})
	Site area (m^2)		**151443932**	**Source contaminant management train**				**Contaminant yields, loads, and load reduction efficiencies**															
Roofs	Galvanised unpainted		62611					5	313056	0.00	313056	2.200	137744.5	0.00	137744.48	0.0008	50.1	0.00	50.1				
	Galvanised steel poor paint		42741					5	213703	0.00	213703	1.600	68384.9	0.00	68384.88	0.0008	34.2	0.00	34.2				
	Galvanised well painted		25480					5	127402	0.00	127402	0.150	3822.1	0.00	3822.06	0.0008	20.4	0.00	20.4				
	Zinc/aluminium unpainted		1715					5	8573	0.00	8573	0.300	514.4	0.00	514.35	0.0008	1.4	0.00	1.4				
	Colorsteel/colorcote		205558					5	1027790	0.00	1027790	0.040	8222.3	0.00	8222.32	0.0008	164.4	0.00	164.4				
	Concrete							10	0	0.00	0	0.020	0.0	0.00	0.00	0.0013	0.0	0.00	0.0				
	Clay							5	0	0.00	0	0.020	0.0	0.00	0.00	0.0008	0.0	0.00	0.0				
	Slate							5	0	0.00	0	0.020	0.0	0.00	0.00	0.0008	0.0	0.00	0.0				
	Copper							5	0	0.00	0	0.000	0.0	0.00	0.00	3.0000	0.0	0.00	0.0				
	Decramastic		101922					5	509609	0.00	509609	0.200	20384.3	0.00	20384.34	0.0017	173.3	0.00	173.3				
	Other materials		671921					5	3359604	0.00	3359604	0.020	13438.4	0.00	13438.42	0.0008	537.5	0.00	537.5				
	Unknown (no galvanised steel/copper)							7	0	0.00	0	0.200	0.0	0.00	0.00	0.0008	0.0	0.00	0.0				
		Length (m)																					
Roads	<1000	52032	884544					4	3538176	0.00	3538176	0.021	18991.7	0.00	18991.68	0.0070	6172.3	0.00	6172.3	0.11	94958.4	0.00	94958.4
	1000-500	2402	40833					30	1227380	0.00	1227380	0.107	4383.5	0.00	4383.50	0.0349	1424.6	0.00	1424.6	0.54	21917.5	0.00	21917.5
Vehicles/day	5000-20000	15519	263824					150	39651121	0.00	39651121	0.537	141611.1	0.00	141611.15	0.1744	46023.6	0.00	46023.6	2.68	708055.7	0.00	708055.7
	20000-50	6334	129852					299	38841565	0.00	38841565	1.068	138719.9	0.00	138719.88	0.3472	45084.0	0.00	45084.0	5.34	693599.4	0.00	693599.4
	50000-100000		0					300	0	0.00	0	2.281	0.0	0.00	0.00	0.7414	0.0	0.00	0.0	11.41	0.0	0.00	0.0
	>100000		0					300	0	0.00	0	3.532	0.0	0.00	0.00	1.1480	0.0	0.00	0.0	17.66	0.0	0.00	0.0
Paved Surfaces other than roads	Residential		1491795					20	29835909	0.00	29835909	0.070	104425.7	0.00	104425.68	0.0100	14918.0	0.00	14918.0				
	Industrial		155473					50	7773645	0.00	7773645	0.100	15547.3	0.00	15547.29	0.1300	20211.5	0.00	20211.5				
	Commercial		13720					100	1372025	0.00	1372025	0.050	686.0	0.00	686.01	0.0500	686.0	0.00	686.0				
Urban Grass lands		<10	2865588					35	100295569	0.00	100295569				3510.3				702.1				
	Slope	10-20						80	0	0.00	0				0.0				0.0				
		>20						160	0	0.00	0				0.0				0.0				
Urban Stream Channel	*length x width*							6000	0	0.00	0				0.0				0.0				
	Urban area without construction sites		**6957575.313**					**Totals**	**228095125**	**0.00**	**228095125**	**Totals**	**676876.0**	**-0.01**	**680386.4**	**Totals**	**135501.2**	**-0.01**	**136203.3**	**Totals**	**1518531.0**	**0.00**	**1518531.0**
Construction Site (1) open for 2 months/year		<10						400	0	0.00	0				0.0				0.0				
	Slope	10-20						2500	0	0.00	0				0.0				0.0				
		>20						7000	0	0.00	0				0.0				0.0				
Construction Site (2) open for 6 months/year		<10						1300	0	0.00	0				0.0				0.0				
	Slope	10-20						7500	0	0.00	0				0.0				0.0				
		>20						20000	0	0.00	0				0.0				0.0				
Construction Site (3) open for 12 months/year		<10						2500	0	0.00	0				0.0				0.0				
	Slope	10-20						15000	0	0.00	0				0.0				0.0				
		>20						40000	0	0.00	0				0.0				0.0				
	Urban area with construction sites		**6957575**					**Totals**	**228095125**	**0.00**	**228095125**	**Totals**	**676876.0**	**-0.01**	**680386.4**	**Totals**	**135501.2**	**-0.01**	**136203.3**	**Totals**	**1518531.0**	**0.00**	**1518531.0**
Exotic production forest		<10	529932					10	5299318	0.00	5299318				185.5				37.1				
		10-20	796306					60	47778373	0.00	47778373				1672.2				334.4				
	Slope	20-30	1223490					200	244698023	0.00	244698023				8564.4				1712.9				
		>30	3045348					500	1522673885	0.00	1522673885				53293.6				10658.7				
Stable bush		<10	1606688					5	8033441	0.00	8033441				281.2				56.2				
		10-20	808727					30	24261814	0.00	24261814				849.2				169.8				
	Slope	20-30	88967289					100	8896728930	0.00	8896728930				311385.5				62277.1				
		>30	1505658					250	376414603	0.00	376414603				13174.5				2634.9				
Farmed pasture		<10	9073214					50	453660700	0.00	453660700				15878.1				3175.6				
		10-20	2197295					100	219729487	0.00	219729487				7690.5				1538.1				
	Slope	20-30	31310950					500	15655474939	0.00	15655474939				547941.6				109588.3				
		>30	3310192					1000	3310192170	0.00	3310192170				115856.7				23171.3				
Retired pasture		<10						20	0	0.00	0				0.0				0.0				
		10-20						100	0	0.00	0				0.0				0.0				
	Slope	20-30						200	0	0.00	0				0.0				0.0				
		>30						500	0	0.00	0				0.0				0.0				
Horticulture		Volcanic						50	0	0.00	0				0.0				0.0				
	Soil type	Sediment						100	0	0.00	0				0.0				0.0				
		Unknown	111267					100	11126664	0.00	11126664				389.4				77.9				
	Total area of sources (m^2)		**151443932**					**Site totals**	**31004167473**	**0.00**	**31004167473**	**Site totals**	**676876.0**	**-1.60**	**1757548.9**	**Site totals**	**135501.2**	**-1.60**	**351635.8**	**Site totals**	**1518531.0**	**0.00**	**1518531.0**

ERROR!!! Site and source area's do not agree

Difference = 0

Bottom of Site contaminant management train				Bottom of Site out-fall Loads (kg a^{-1})				Average yields				Average concentrations (mg kg^{-1})			
First management option	Second management option	Third management option	Fraction of area draining to train	TSS	Zn	Cu	TPH	TSS kg ha^{-1} a^{-1}	Zn g ha^{-1} a^{-1}	Cu g ha^{-1} a^{-1}	TPH g ha^{-1} a^{-1}	TSS	Zn	Cu	TPH
				31004167.5	1757.5	351.6	1518.5	2047	116	23	100		57	11	49

Waikanae River Catchment – Existing

Contaminant Load Model

Version MAY06

Auckland Regional Council
TE RAUHITANGA TAIAO

	Site area (m^2)		151443932	Source contaminant management train				Contaminant yields, loads, and load reduction efficiencies															
SOURCE	SOURCE TYPE							Sediment				Zinc				Copper				Total Petroleum Hydrocarbons			
			Source Area (m^2)	First management option	Second management option	Third management option	Fraction of area draining to train	Yield (g m^{-2} a^{-1})	Initial load (g a^{-1})	Load reduction efficiency	Reduced load (g a^{-1})	Yield (g m^{-2} a^{-1})	Initial load (g a^{-1})	Load reduction efficiency	Reduced load (g a^{-1})	Yield (g m^{-2} a^{-1})	Initial load (g a^{-1})	Load reduction efficiency	Reduced load (g a^{-1})	Yield (g m^{-2} a^{-1})	Initial load (g a^{-1})	Load reduction efficiency	Reduced load (g a^{-1})
Roofs	Galvanised unpainted		62611					5	313056	0.00	313056	2.200	137744.5	0.00	137744.48	0.0008	50.1	0.00	50.1				
	Galvanised steel poor paint		42741					5	213703	0.00	213703	1.600	68384.9	0.00	68384.88	0.0008	34.2	0.00	34.2				
	Galvanised well painted		25480					5	127402	0.00	127402	0.150	3822.1	0.00	3822.06	0.0008	20.4	0.00	20.4				
	Zinc/aluminium unpainted		1715					5	8573	0.00	8573	0.300	514.4	0.00	514.35	0.0008	1.4	0.00	1.4				
	Colorsteel/colorcote		205558					5	1027790	0.00	1027790	0.040	8222.3	0.00	8222.32	0.0008	164.4	0.00	164.4				
	Concrete							10	0	0.00	0	0.020	0.0	0.00	0.00	0.0013	0.0	0.00	0.0				
	Clay							5	0	0.00	0	0.020	0.0	0.00	0.00	0.0008	0.0	0.00	0.0				
	Slate							5	0	0.00	0	0.020	0.0	0.00	0.00	0.0008	0.0	0.00	0.0				
	Copper							5	0	0.00	0	0.000	0.0	0.00	0.00	3.0000	0.0	0.00	0.0				
	Decramastic		101922					5	509609	0.00	509609	0.200	20384.3	0.00	20384.34	0.0017	173.3	0.00	173.3				
	Other materials		671921					5	3359604	0.00	3359604	0.020	13438.4	0.00	13438.42	0.0008	537.5	0.00	537.5				
	Unknown (no galvanised steel/copper)							7	0	0.00	0	0.200	0.0	0.00	0.00	0.0008	0.0	0.00	0.0				
		Length (m)																					
Roads	<1000	52032	884544					4	3538176	0.00	3538176	0.021	18991.7	0.00	18991.68	0.0070	6172.3	0.00	6172.3	0.11	94958.4	0.00	94958.4
	1000-500	3633	61757					30	1856333	0.00	1856333	0.107	6629.8	0.00	6629.76	0.0349	2154.7	0.00	2154.7	0.54	33148.8	0.00	33148.8
Vehicles/day	5000-20000	25118	427009					150	64176896	0.00	64176896	0.537	229203.2	0.00	229203.20	0.1744	74491.0	0.00	74491.0	2.68	1146016.0	0.00	1146016.0
	20000-50	30	623					299	186495	0.00	186495	1.068	666.1	0.00	666.05	0.3472	216.5	0.00	216.5	5.34	3330.3	0.00	3330.3
	50000-100000		0					300	0	0.00	0	2.281	0.0	0.00	0.00	0.7414	0.0	0.00	0.0	11.41	0.0	0.00	0.0
	>100000		0					300	0	0.00	0	3.532	0.0	0.00	0.00	1.1480	0.0	0.00	0.0	17.66	0.0	0.00	0.0
Paved Surfaces other than roads	Residential		1476878					20	29537559	0.00	29537559	0.070	103381.5	0.00	103381.46	0.0100	14768.8	0.00	14768.8				
	Industrial		155455					50	7772745	0.00	7772745	0.100	15545.5	0.00	15545.49	0.1300	20209.1	0.00	20209.1				
	Commercial		13720					100	1372025	0.00	1372025	0.050	686.0	0.00	686.01	0.0500	686.0	0.00	686.0				
Urban Grass lands		<10	2865588					35	100295569	0.00	100295569				3510.3				702.1				
	Slope	10-20						80	0	0.00	0				0.0				0.0				
		>20						160	0	0.00	0				0.0				0.0				
Urban Stream Channel	*length x width*							6000	0	0.00	0				0.0				0.0				
	Urban area without construction sites		**6997520.627**					**Totals**	**214295533**	**0.00**	**214295533**	**Totals**	**627614.5**	**-0.01**	**631124.8**	**Totals**	**119679.7**	**-0.01**	**120381.8**	**Totals**	**1277453.5**	**0.00**	**1277453.5**
Construction Site (1) open for 2 months/year		<10						400	0	0.00	0				0.0				0.0				
	Slope	10-20						2500	0	0.00	0				0.0				0.0				
		>20						7000	0	0.00	0				0.0				0.0				
Construction Site (2) open for 6 months/year		<10						1300	0	0.00	0				0.0				0.0				
	Slope	10-20						7500	0	0.00	0				0.0				0.0				
		>20						20000	0	0.00	0				0.0				0.0				
Construction Site (3) open for 12 months/year		<10						2500	0	0.00	0				0.0				0.0				
	Slope	10-20						15000	0	0.00	0				0.0				0.0				
		>20						40000	0	0.00	0				0.0				0.0				
	Urban area with construction sites		**6997521**					**Totals**	**214295533**	**0.00**	**214295533**	**Totals**	**627614.5**	**-0.01**	**631124.8**	**Totals**	**119679.7**	**-0.01**	**120381.8**	**Totals**	**1277453.5**	**0.00**	**1277453.5**
Exotic production forest		<10	529932					10	5299318	0.00	5299318				185.5				37.1				
		10-20	776100					60	46565979	0.00	46565979				1629.8				326.0				
	Slope	20-30	1223490					200	244698023	0.00	244698023				8564.4				1712.9				
		>30	3045348					500	1522673885	0.00	1522673885				53293.6				10658.7				
Stable bush		<10	1606688					5	8033441	0.00	8033441				281.2				56.2				
		10-20	806842					30	24205257	0.00	24205257				847.2				169.4				
	Slope	20-30	88967289					100	8896728930	0.00	8896728930				311385.5				62277.1				
		>30	1505658					250	376414603	0.00	376414603				13174.5				2634.9				
Farmed pasture		<10	9073214					50	453660700	0.00	453660700				15878.1				3175.6				
		10-20	2186310					100	218631048	0.00	218631048				7652.1				1530.4				
	Slope	20-30	31310950					500	15655474939	0.00	15655474939				547941.6				109588.3				
		>30	3310192					1000	3310192170	0.00	3310192170				115856.7				23171.3				
Retired pasture		<10						20	0	0.00	0				0.0				0.0				
		10-20						100	0	0.00	0				0.0				0.0				
	Slope	20-30						200	0	0.00	0				0.0				0.0				
		>30						500	0	0.00	0				0.0				0.0				
Horticulture		Volcanic						50	0	0.00	0				0.0				0.0				
	Soil type	Sediment						100	0	0.00	0				0.0				0.0				
		Unknown	104398					100	10439754	0.00	10439754				365.4				73.1				
	Total area of sources (m^2)		**151443932**					**Site totals**	**30987313580**	**0.00**	**30987313580**	**Site totals**	**627614.5**	**-1.72**	**1708180.5**	**Site totals**	**119679.7**	**-1.81**	**335792.9**	**Site totals**	**1277453.5**	**0.00**	**1277453.5**

ERROR!!! Site and source area's do not agree

Difference = 0

Bottom of Site contaminant management train				Bottom of Site out-fall Loads (kg a^{-1})				Average yields				Average concentrations (mg kg^{-1})			
First management option	Second management option	Third management option	Fraction of area draining to train	TSS	Zn	Cu	TPH	TSS kg ha^{-1} a^{-1}	Zn g ha^{-1} a^{-1}	Cu g ha^{-1} a^{-1}	TPH g ha^{-1} a^{-1}	TSS	Zn	Cu	TPH
				30987313.6	1708.2	335.8	1277.5	2046	113	22	84		55	11	41

Waikanae River Catchment – Future (2031) with Expressway – Unmitigated

Contaminant Load Model

Version MAY06

Auckland Regional Council
TE RAUHITANGA TAIAO

SOURCE	SOURCE TYPE			Source Area (m^2)	First management option	Second management option	Third management option	Fraction of area draining to train	Sediment Yield (g m^{-2} a^{-1})	Sediment Initial load (g a^{-1})	Sediment Load reduction efficiency	Sediment Reduced load (g a^{-1})	Zinc Yield (g m^{-2} a^{-1})	Zinc Initial load (g a^{-1})	Zinc Load reduction efficiency	Zinc Reduced load (g a^{-1})	Copper Yield (g m^{-2} a^{-1})	Copper Initial load (g a^{-1})	Copper Load reduction efficiency	Copper Reduced load (g a^{-1})	Total Petroleum Hydrocarbons Yield (g m^{-2} a^{-1})	Total Petroleum Hydrocarbons Initial load (g a^{-1})	Total Petroleum Hydrocarbons Load reduction efficiency	Total Petroleum Hydrocarbons Reduced load (g a^{-1})
	Site area (m^2)			**151443932**	**Source contaminant management train**				**Contaminant yields, loads, and load reduction efficiencies**															
Roofs	Galvanised unpainted			62611					5	313056	0.00	313056	2.200	137744.5	0.00	137744.48	0.0008	50.1	0.00	50.1				
	Galvanised steel poor paint			42741					5	213703	0.00	213703	1.600	68384.9	0.00	68384.88	0.0008	34.2	0.00	34.2				
	Galvanised well painted			25480					5	127402	0.00	127402	0.150	3822.1	0.00	3822.06	0.0008	20.4	0.00	20.4				
	Zinc/aluminium unpainted			1715					5	8573	0.00	8573	0.300	514.4	0.00	514.35	0.0008	1.4	0.00	1.4				
	Colorsteel/colorcote			205558					5	1027790	0.00	1027790	0.040	8222.3	0.00	8222.32	0.0008	164.4	0.00	164.4				
	Concrete								10	0	0.00	0	0.020	0.0	0.00	0.00	0.0013	0.0	0.00	0.0				
	Clay								5	0	0.00	0	0.020	0.0	0.00	0.00	0.0008	0.0	0.00	0.0				
	Slate								5	0	0.00	0	0.020	0.0	0.00	0.00	0.0008	0.0	0.00	0.0				
	Copper								5	0	0.00	0	0.000	0.0	0.00	0.00	3.0000	0.0	0.00	0.0				
	Decramastic			101922					5	509609	0.00	509609	0.200	20384.3	0.00	20384.34	0.0017	173.3	0.00	173.3				
	Other materials			671921					5	3359604	0.00	3359604	0.020	13438.4	0.00	13438.42	0.0008	537.5	0.00	537.5				
	Unknown (no galvanised steel/copper)								7	0	0.00	0	0.200	0.0	0.00	0.00	0.0008	0.0	0.00	0.0				
			Length (m)																					
Roads		<1000	52032	884544					4	3538176	0.00	3538176	0.021	18991.7	0.00	18991.68	0.0070	6172.3	0.00	6172.3	0.11	94958.4	0.00	94958.4
		1000-500	3633	61757					30	1856333	0.00	1856333	0.107	6629.8	0.00	6629.76	0.0349	2154.7	0.00	2154.7	0.54	33148.8	0.00	33148.8
	Vehicles/day	5000-20000	25118	427009	Swale			0.18	150	64176896	0.75	55513015	0.537	229203.2	0.47	209812.61	0.1744	74491.0	0.57	66848.3	2.68	1146016.0	0.47	1049063.1
		20000-50	30	623					299	186495	0.00	186495	1.068	666.1	0.00	666.05	0.3472	216.5	0.00	216.5	5.34	3330.3	0.00	3330.3
		50000-100000		0					300	0	0.00	0	2.281	0.0	0.00	0.00	0.7414	0.0	0.00	0.0	11.41	0.0	0.00	0.0
		>100000		0					300	0	0.00	0	3.532	0.0	0.00	0.00	1.1480	0.0	0.00	0.0	17.66	0.0	0.00	0.0
Paved Surfaces other than roads	Residential			1476878					20	29537559	0.00	29537559	0.070	103381.5	0.00	103381.46	0.0100	14768.8	0.00	14768.8				
	Industrial			155455					50	7772745	0.00	7772745	0.100	15545.5	0.00	15545.49	0.1300	20209.1	0.00	20209.1				
	Commercial			13720					100	1372025	0.00	1372025	0.050	686.0	0.00	686.01	0.0500	686.0	0.00	686.0				
Urban Grass lands		<10		2865588					35	100295569	0.00	100295569				3510.3				702.1				
	Slope	10-20							80	0	0.00	0				0.0				0.0				
		>20							160	0	0.00	0				0.0				0.0				
Urban Stream Channel	*length x width*								6000	0	0.00	0				0.0				0.0				
	Urban area without construction sites			**6997520.627**					**Totals**	**214295533**	**0.04**	**205631652**	**Totals**	**627614.5**	**0.03**	**611734.2**	**Totals**	**119679.7**	**0.06**	**112739.0**	**Totals**	**1277453.5**	**0.08**	**1180500.5**
Construction Site (1) open for 2 months/year		<10							400	0	0.00	0				0.0				0.0				
	Slope	10-20							2500	0	0.00	0				0.0				0.0				
		>20							7000	0	0.00	0				0.0				0.0				
Construction Site (2) open for 6 months/year		<10							1300	0	0.00	0				0.0				0.0				
	Slope	10-20							7500	0	0.00	0				0.0				0.0				
		>20							20000	0	0.00	0				0.0				0.0				
Construction Site (3) open for 12 months/year		<10							2500	0	0.00	0				0.0				0.0				
	Slope	10-20							15000	0	0.00	0				0.0				0.0				
		>20							40000	0	0.00	0				0.0				0.0				
	Urban area with construction sites			**6997521**					**Totals**	**214295533**	**0.04**	**205631652**	**Totals**	**627614.5**	**0.03**	**611734.2**	**Totals**	**119679.7**	**0.06**	**112739.0**	**Totals**	**1277453.5**	**0.08**	**1180500.5**
Exotic production forest		<10		529932					10	5299318	0.00	5299318				185.5				37.1				
		10-20		776100					60	46565979	0.00	46565979				1629.8				326.0				
	Slope	20-30		1223490					200	244698023	0.00	244698023				8564.4				1712.9				
		>30		3045348					500	1522673885	0.00	1522673885				53293.6				10658.7				
Stable bush		<10		1606688					5	8033441	0.00	8033441				281.2				56.2				
		10-20		806842					30	24205257	0.00	24205257				847.2				169.4				
	Slope	20-30		88967289					100	8896728930	0.00	8896728930				311385.5				62277.1				
		>30		1505658					250	376414603	0.00	376414603				13174.5				2634.9				
Farmed pasture		<10		9073214					50	453660700	0.00	453660700				15878.1				3175.6				
		10-20		2186310					100	218631048	0.00	218631048				7652.1				1530.4				
	Slope	20-30		31310950					500	15655474939	0.00	15655474939				547941.6				109588.3				
		>30		3310192					1000	3310192170	0.00	3310192170				115856.7				23171.3				
Retired pasture		<10							20	0	0.00	0				0.0				0.0				
		10-20							100	0	0.00	0				0.0				0.0				
	Slope	20-30							200	0	0.00	0				0.0				0.0				
		>30							500	0	0.00	0				0.0				0.0				
Horticulture		Volcanic							50	0	0.00	0				0.0				0.0				
	Soil type	Sediment							100	0	0.00	0				0.0				0.0				
		Unknown		104398					100	10439754	0.00	10439754				365.4				73.1				
	Total area of sources (m^2)			**151443932**					**Site totals**	**30987313580**	**0.00**	**30978649699**	**Site totals**	**627614.5**	**-1.69**	**1688789.9**	**Site totals**	**119679.7**	**-1.74**	**328150.1**	**Site totals**	**1277453.5**	**0.08**	**1180500.5**

ERROR!!! Site and source area's do not agree

Difference = 0

Bottom of Site contaminant management train				Bottom of Site out-fall Loads (kg a^{-1})				Average yields				Average concentrations (mg kg^{-1})			
First management option	Second management option	Third management option	Fraction of area draining to train	TSS	Zn	Cu	TPH	TSS kg ha^{-1} a^{-1}	Zn g ha^{-1} a^{-1}	Cu g ha^{-1} a^{-1}	TPH g ha^{-1} a^{-1}	TSS	Zn	Cu	TPH
				30978649.7	1688.8	328.2	1180.5	2046	112	22	78		55	11	38

Waikanae River Catchment – Future (2031) with Expressway – Mitigated