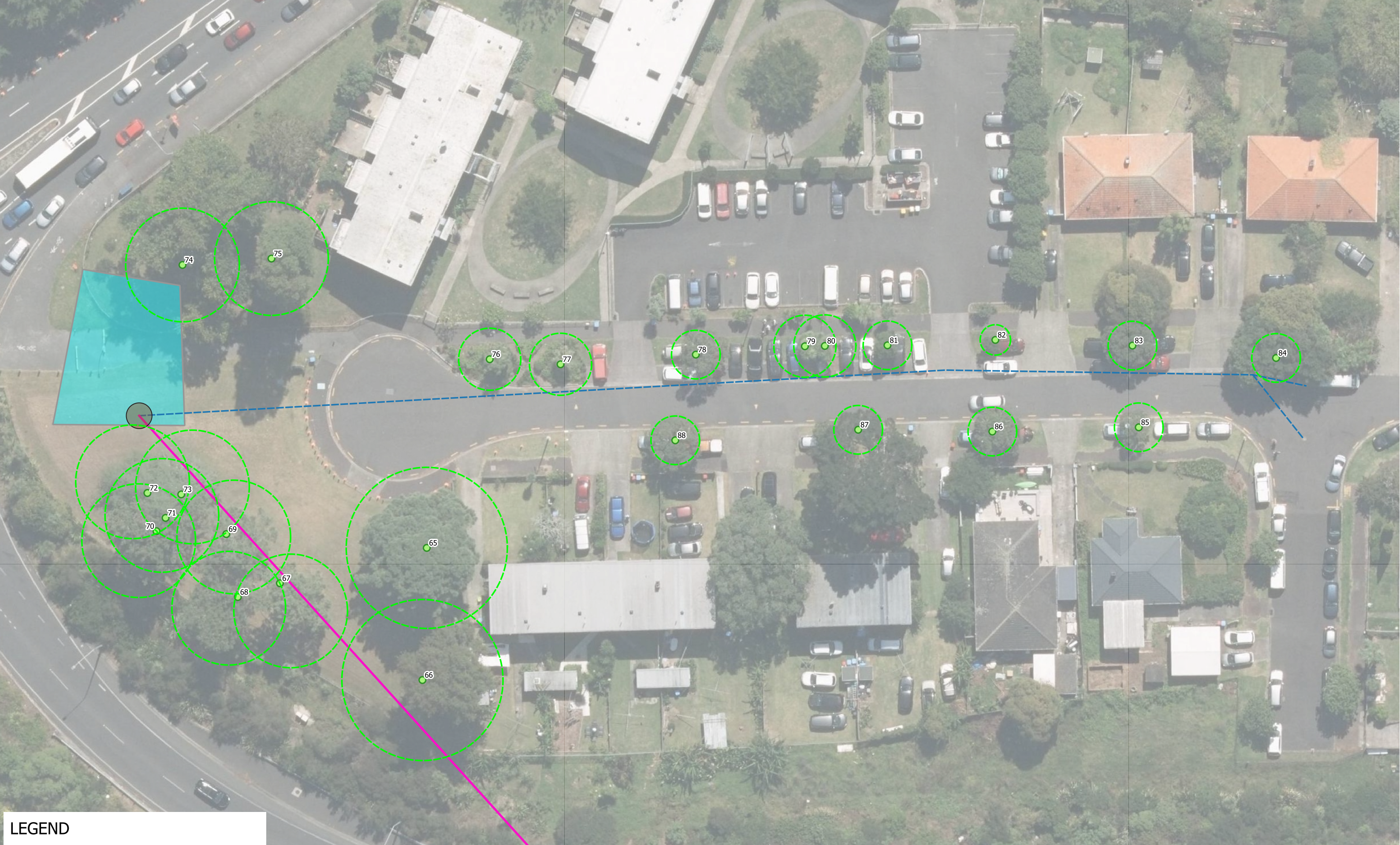




LEGEND

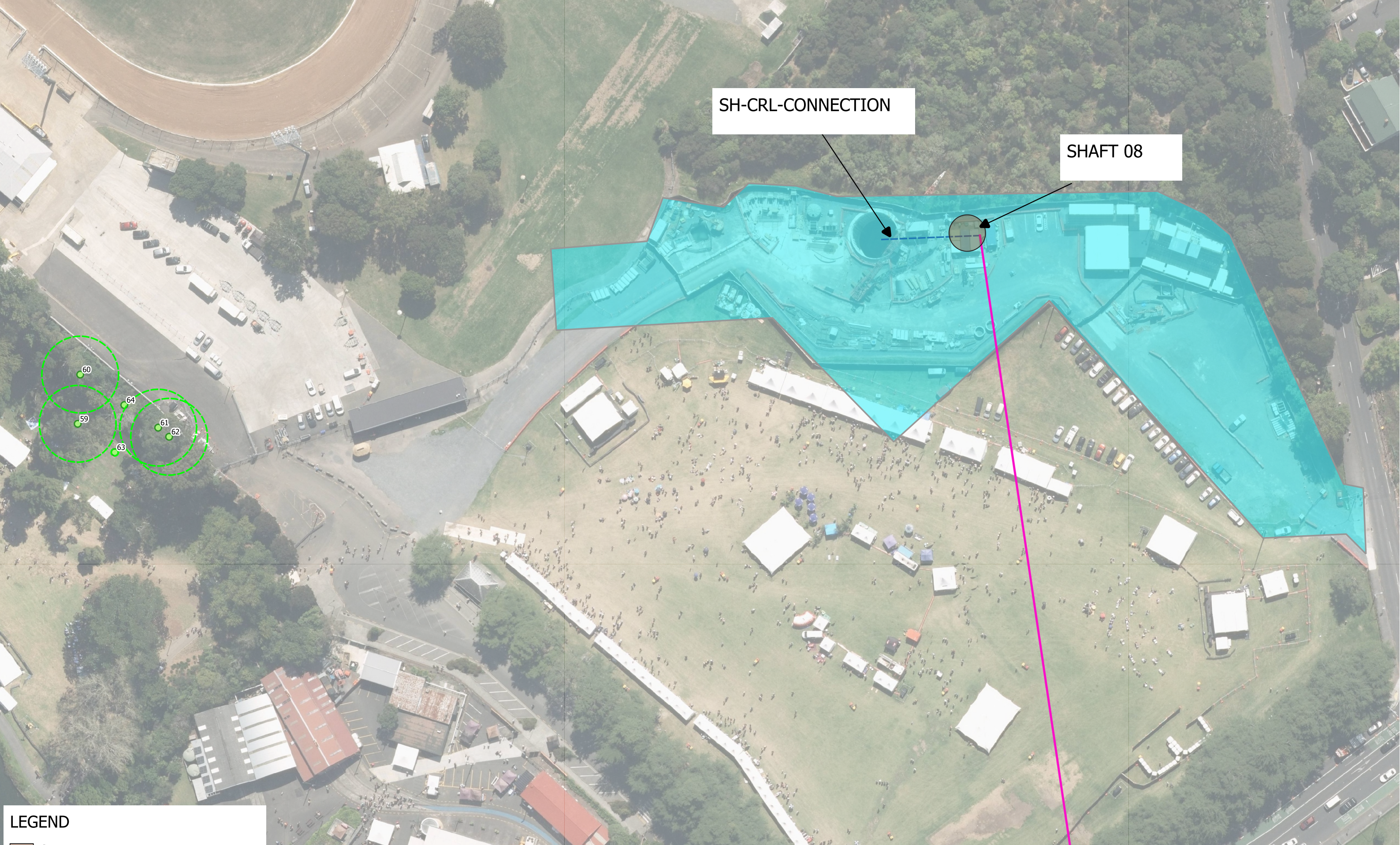
- SHAFT 07a
- PROPOSED CONSTRUCTION AREA
- INDICATIVE PIPELINE ALIGNMENT
- EOP/LOCAL CONNECTION
- TREE
- TREE PROTECTION ZONE



MOTIONS CATCHMENT IMPROVEMENT
TREE LOCATION PLAN



Project: 3533
Drawing: SH07a - 001 - B



SH-CRL-CONNECTION

SHAFT 08

LEGEND

- SHAFT
- PROPOSED CONSTRUCTION AREA
- INDICATIVE PIPELINE ALIGNMENT
- EOP/LOCAL CONNECTION
- TREE
- TREE PROTECTION ZONE



MOTIONS CATCHMENT IMPROVEMENT TREE LOCATION PLAN



Project: 3533
Drawing: SH08 - 001 - B



LEGEND

- SHAFT
- PROPOSED CONSTRUCTION AREA
- INDICATIVE PIPELINE ALIGNMENT
- EOP/LOCAL CONNECTION

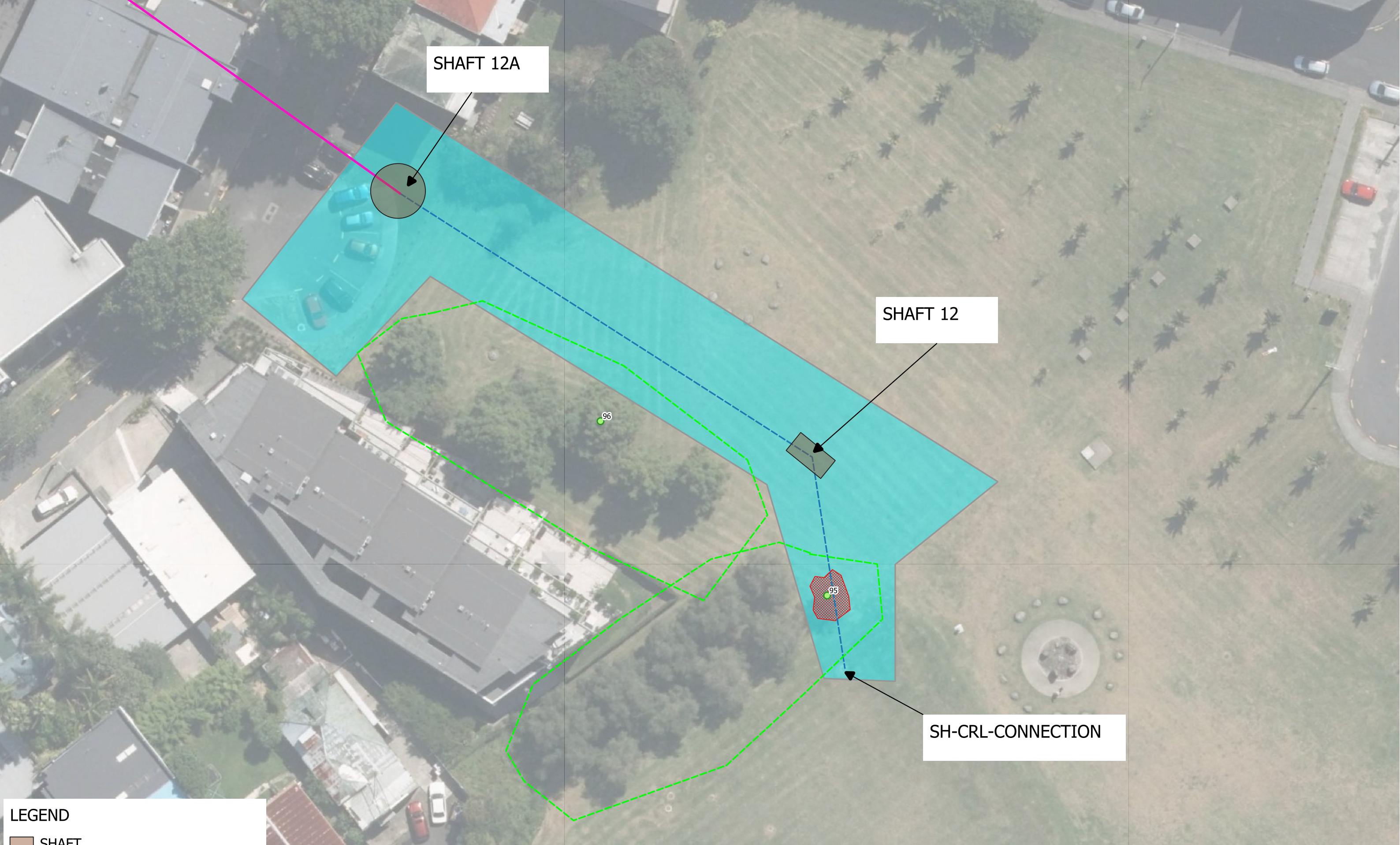


MOTIONS CATCHMENT IMPROVEMENT
TREE LOCATION PLAN



Project: 3533

Drawing: SH09_10_11 - 001 - B



SHAFT 12A

SHAFT 12

SH-CRL-CONNECTION

LEGEND

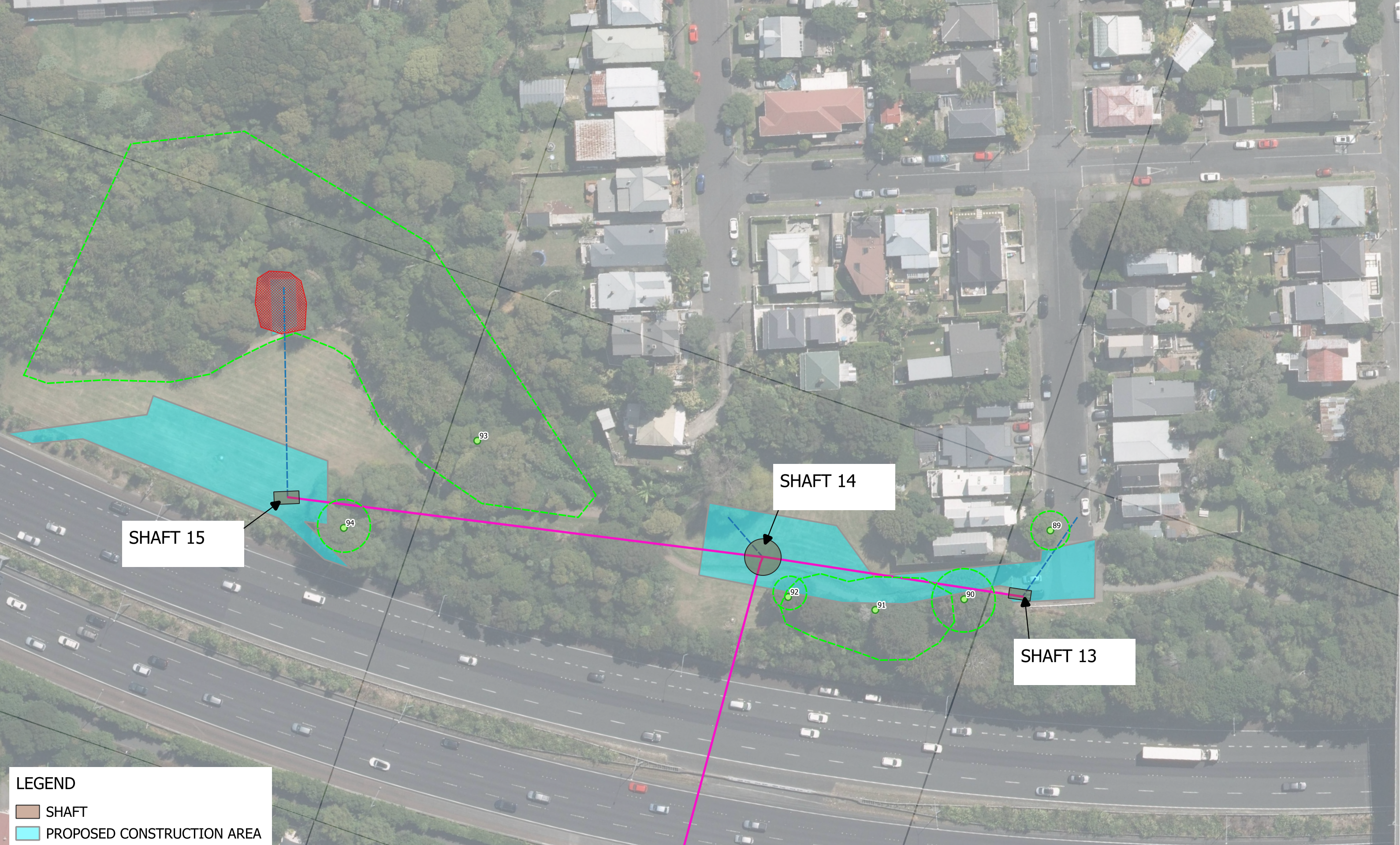
- SHAFT
- PROPOSED CONSTRUCTION AREA
- INDICATIVE PIPELINE ALIGNMENT
- EOP/LOCAL CONNECTION
- TREE
- TREE PROTECTION ZONE
- VEGETATION CLEARANCE



MOTIONS CATCHMENT IMPROVEMENT
TREE LOCATION PLAN



Project: 3533
Drawing: SH12 - 001 - B



LEGEND

- SHAFT
- PROPOSED CONSTRUCTION AREA
- INDICATIVE PIPELINE ALIGNMENT
- EOP/LOCAL CONNECTION
- TREE
- TREE PROTECTION ZONE
- VEGETATION CLEARANCE



MOTIONS CATCHMENT IMPROVEMENT
TREE LOCATION PLAN



Project: 3533
Drawing: SH13_14_15 - 001 - B

Appendix D – Tree Inventory

Key:

* - Partial removal of group

WWRZ – Works Within Root Zone

TBC – To Be Confirmed – Alignment under review

OS – Open Space Zoned land

SEA – Significant Ecological Area Overlay

STCZ – Strategic Transport Corridor Zone

Shaft No.	Tree No.	Qty of trees	Species / Common name	Height (m)	DBH (cm)	Crown spread radius (m)	Structural root zone radius (m) (Coder, 1996)	Tree protection zone radius (m) (AS4970)	Overall vitality	Age class	Zone	Impact	m2 canopy removal	Replacement tree no.
1	Group 1	20	Mixed species (Coprosma, manuka, rewa rewa, cabbage, kapuka)	4	-	2	-	-	Good	Early mature	STCZ	Prune	-	-
	Group 2	16	Mixed species (Cabbage, titoki, pōhutukawa)	6	-	-	-	-	Good	Mature	STCZ	nil	-	-
2	Group 3	2	Cupressus sp. / Cupressus	18	70.0	8	2.8	8.4	Good	Mature	ROAD/OS	nil	-	-
	4	1	Pittosporum tenuifolium / Kohuhu	6	15.9	3	1.2	1.9	Good	Mature	ROAD/OS	Remove	28	2
	Group 5	3	Hakea globosa / Downy hakea	5	22.3	5	1.5	2.7	Good	Mature	ROAD/OS	Remove	234	13
	6	1	Pittosporum tenuifolium / Kohuhu	6	16.9	3	1.3	2.0	Good	Mature	ROAD/OS	Remove	28	2
	7	1	Vitex lucens / Pūriri	12	41.4	5	2.1	5.0	Good	Mature	ROAD/OS	Remove	41	2
	Group 8	100+	Mixed species (kanuka, karamu, karo, ti kouka, kapuka)	5	0.0	0	0.0	0.0	Good	Mature	ROAD/OS	Remove	*284	16
3	9	1	Cordyline australis / Cabbage tree	6	22.3	2	NA	3.0	Poor	Mature	ROAD	nil	-	-
	10	1	Cordyline australis / Cabbage tree	6	12.7	2	NA	3.0	Good	Mature	ROAD	Remove	12	1
	11	1	Podocarpus totara / Tōtara	8	34.1	5	1.9	4.1	Good	Early mature	ROAD	Remove	29	2
	12	1	Podocarpus totara / Tōtara	8	34.1	5	1.9	4.1	Good	Early mature	ROAD	WWRZ	-	-
	13	1	Olea europaea / Olive	6	14.3	5	1.2	1.7	Good	Mature	OS	WWRZ	-	-
	14	1	Podocarpus totara / Tōtara	10	46.2	6	2.2	5.5	Good	Mature	OS	WWRZ	-	-
	15	1	Alectryon excelsus / Titoki	9	19.7	5	1.4	2.4	Good	Mature	OS	Remove	79	4
	16	1	Casuarina cunninghamiana / She oak	24	99.3	9	3.4	11.9	Good	Mature	OS	WWRZ	-	-
	17	1	Quercus robur / English oak	9	42.7	5	2.1	5.1	Good	Mature	OS	WWRZ	-	-
	18	1	Ligustrum lucidum / Tree privet	4.5	10.5	3	1.0	1.3	Good	Mature	OS	Nil	-	-
	19	1	Podocarpus totara / Tōtara	10	34.1	8	1.9	4.1	Good	Early mature	ROAD	WWRZ/Prune	-	-
	20	1	Podocarpus totara / Tōtara	7	70.0	5	2.8	8.4	Good	Mature	ROAD	Remove	29	2
	Group 21	10	Mixed species	8	0.0	6	0.0	0.0	Good	Mature	OS	WWRZ	-	-
	22	1	Casuarina cunninghamiana / She oak	15	23.6	4	1.5	2.8	Fair	Early mature	OS	WWRZ/Prune	-	-
4	23	1	Alectryon excelsus / Titoki	4	8.0	2	0.8	1.0	Good	Early mature	OS	WWRZ/Prune	-	-
	24	1	Pittosporum tenuifolium / Kohuhu	6	20.7	4	1.4	2.5	Fair	Mature	OS	WWRZ/Prune	-	-
	Group 25	2	Alectryon excelsus / Titoki	6	6.1	3	0.7	0.7	Good	Early mature	OS	WWRZ/Prune	-	-
	Group 26	2	Alectryon excelsus / Titoki	6	6.1	3	0.7	0.7	Good	Early mature	OS	WWRZ/Prune	-	-
	27	1	Cupressus sp. / Cupressus	14	45.8	7	2.2	5.5	Fair	Mature	OS	WWRZ/Prune	-	-
	Group 28	2	Cupressus sp. / Cupressus	14	42.0	7	2.1	5.0	Fair	Mature	OS	WWRZ/Prune	-	-
	29	1	Albizia julibrissin / Silk tree	10	71.6	9	2.8	8.6	Good	Mature	OS	Remove	147	8
	30	1	Magnolia grandiflora / Evergreen magnolia	8	36.3	8	2.0	4.4	Excellent	Mature	ROAD	nil	-	-
	31	1	Magnolia grandiflora / Evergreen magnolia	9	68.4	9	2.8	8.2	Excellent	Mature	ROAD	nil	-	-

Shaft No.	Tree No.	Qty of trees	Species / Common name	Height (m)	DBH (cm)	Crown spread radius (m)	Structural root zone radius (m) (Coder, 1996)	Tree protection zone radius (m) (AS4970)	Overall vitality	Age class	Zone	Impact	m2 canopy removal	Replacement tree no.
5	32	1	Metrosideros excelsa / Pōhutukawa	6	9.4	4	0.9	1.1	Good	Early mature	STCZ	nil	-	-
	33	1	Metrosideros excelsa / Pōhutukawa	7	36.6	6	2.0	4.4	Good	Early mature	STCZ	nil	-	-
	34	1	Kunzea robusta / Kanuka	7	36.6	6	2.0	4.4	Good	Early mature	STCZ	nil	-	-
	35	1	Pittosporum crassifolium / Karo	7	36.6	6	2.0	4.4	Good	Early mature	STCZ	nil	-	-
	36	2	Griselinia littoralis / Kapuka 'littoralis'	4	23.9	2	1.5	2.9	Poor	Mature	STCZ	nil	-	-
	37	1	Syzygium australe / Australian brush cherry	12	87.5	6	3.2	10.5	Good	Mature	STCZ	nil	-	-
	38	3	Kunzea robusta / Kanuka	6	17.5	3	1.3	2.1	Fair	Early mature	STCZ	nil	-	-
6	39	1	Magnolia grandiflora / Evergreen magnolia	2	9.5	1	0.9	1.1	Good	Juvenile	ROAD	nil	-	-
	Group 40	2	Ligustrum lucidum / Tree privet	7	38.2	6	2.0	4.6	Good	Mature	ROAD	Remove	64	4
	Group 41	6	Casuarina cunninghamiana / She oak	18	49.3	8	2.3	5.9	Good	Mature	ROAD	WWRZ	-	-
	Group 42	3	Casuarina cunninghamiana / She oak	16	36.6	6	2.0	4.4	Good	Mature	ROAD	Remove	*37	2
7	43	1	Washingtonia robusta / Washingtonia palm	12	36.6	6	NA	7.0	Good	Mature	ROAD	WWRZ	-	-
	44	1	Washingtonia robusta / Washingtonia palm	12	36.6	6	NA	7.0	Good	Mature	ROAD	WWRZ	-	-
	45	1	Washingtonia robusta / Washingtonia palm	12	36.6	6	NA	7.0	Good	Mature	ROAD	WWRZ	-	-
	46	1	Albizia julibrissin / Silk tree	9	36.6	6	2.0	4.4	Good	Mature	ROAD	WWRZ	-	-
	47	1	Magnolia grandiflora / Evergreen magnolia	2	9.5	1	0.9	1.1	Good	Juvenile	ROAD	WWRZ	-	-
	Group 48	24	Alectryon excelsus / Titoki	3	8.0	2	0.8	1.0	Fair	Early mature	ROAD	WWRZ	-	-
	49	1	Tristanopsis laurina / Water gum	6	31.2	4	1.8	3.7	Good	Mature	ROAD	WWRZ	-	-
	50	1	Tristanopsis laurina / Water gum	6	31.2	4	1.8	3.7	Good	Mature	ROAD	WWRZ	-	-
	51	1	Tristanopsis laurina / Water gum	6	0.0	4	0.0	0.0	Dead	Mature	ROAD	WWRZ	-	-
	Group 52	3	Pittosporum crassifolium / Karo	5	31.2	4	1.8	3.7	Good	Mature	ROAD	WWRZ	-	-
	Group 53	6	Pittosporum tenuifolium / Kohuhu	5	14.3	3	1.2	1.7	Fair	Mature	ROAD	Remove	168	9
	54	1	Corynocarpus laevigatus / Karaka	2	9.5	1	0.9	1.1	Good	Juvenile	ROAD	Remove	4	transplant
	55	1	Corynocarpus laevigatus / Karaka	2	9.5	1	0.9	1.1	Good	Juvenile	ROAD	Remove	5	transplant
	56	1	Ligustrum lucidum / Tree privet	5	23.9	3	1.5	2.9	Good	Mature	ROAD	Remove	28	2
	Group 57	4	Pittosporum tenuifolium / Kohuhu	5	14.3	3	1.2	1.7	Fair	Mature	ROAD	Remove	112	6
	Group 58	4	Coprosma robusta / Karamu	5	14.3	3	1.2	1.7	Fair	Mature	ROAD	Remove	27	2

Shaft No.	Tree No.	Qty of trees	Species / Common name	Height (m)	DBH (cm)	Crown spread radius (m)	Structural root zone radius (m) (Coder, 1996)	Tree protection zone radius (m) (AS4970)	Overall vitality	Age class	Zone	Impact	m2 canopy removal	Replacement tree no.
7a	65	1	Pinus radiata / Monterey pine	15	84.4	7	3.1	10.1	Good	Mature	ROAD	WWRZ	-	-
	66	1	Liquidambar styraciflua / American sweetgum	17	84.4	9	3.1	10.1	Good	Mature	ROAD	WWRZ	-	-
	67	1	Pinus radiata / Monterey pine	15	59.5	7	2.6	7.1	Fair	Mature	ROAD	WWRZ	-	-
	68	1	Pinus radiata / Monterey pine	15	59.5	7	2.6	7.1	Fair	Mature	ROAD	WWRZ	-	-
	69	1	Pinus radiata / Monterey pine	15	59.5	7	2.6	7.1	Fair	Mature	ROAD	WWRZ	-	-
	70	1	Pinus radiata / Monterey pine	15	59.5	7	2.6	7.1	Fair	Mature	ROAD	WWRZ	-	-
	71	1	Cedrus deodara / Himalayan cedar	12	59.5	7	2.6	7.1	Fair	Mature	ROAD	WWRZ	-	-
	72	1	Cedrus deodara / Himalayan cedar	12	59.5	7	2.6	7.1	Fair	Mature	ROAD	WWRZ	-	-
	73	1	Cedrus deodara / Himalayan cedar	12	59.5	7	2.6	7.1	Fair	Mature	ROAD	WWRZ	-	-
	74	1	Populus yunnanensis / Chinese poplar	12	59.5	7	2.6	7.1	Fair	Mature	ROAD	WWRZ	-	-
	75	1	Populus nigra 'Italica' / Lombardy poplar	12	59.5	7	2.6	7.1	Fair	Mature	ROAD	WWRZ	-	-
	76	1	Cordyline australis / Cabbage tree	5	12.7	3	NA	4.0	Good	Mature	ROAD	WWRZ	-	-
	77	1	Cordyline australis / Cabbage tree	5	12.7	3	NA	4.0	Good	Mature	ROAD	WWRZ	-	-
	78	1	Metrosideros excelsa / Pōhutukawa	7	25.5	3	1.6	3.1	Good	Mature	ROAD	WWRZ	-	-
	79	1	Cordyline australis / Cabbage tree	5	12.7	3	NA	4.0	Good	Mature	ROAD	WWRZ	-	-
	80	1	Cordyline australis / Cabbage tree	5	12.7	3	NA	4.0	Good	Mature	ROAD	WWRZ	-	-
	81	1	Metrosideros excelsa / Pōhutukawa	7	25.5	3	1.6	3.1	Good	Mature	ROAD	WWRZ	-	-
	82	1	Metrosideros excelsa / Pōhutukawa	4	15.9	2	1.2	1.9	Good	Mature	ROAD	WWRZ	-	-
	83	1	Metrosideros excelsa / Pōhutukawa	7	25.5	3	1.6	3.1	Good	Mature	ROAD	WWRZ/Prune	-	-
	Group 84	3	Metrosideros excelsa / Pōhutukawa	7	25.5	3	1.6	3.1	Good	Mature	ROAD	WWRZ/Prune	-	-
	85	1	Metrosideros excelsa / Pōhutukawa	7	25.5	3	1.6	3.1	Good	Mature	ROAD	WWRZ	-	-
	86	1	Metrosideros excelsa / Pōhutukawa	7	25.5	3	1.6	3.1	Good	Mature	ROAD	WWRZ	-	-
	87	1	Metrosideros excelsa / Pōhutukawa	7	25.5	3	1.6	3.1	Good	Mature	ROAD	WWRZ	-	-
	88	1	Metrosideros excelsa / Pōhutukawa	7	25.5	3	1.6	3.1	Good	Mature	ROAD	WWRZ	-	-
8	59	1	Casuarina cunninghamiana / She oak	14	84.4	5	3.1	10.1	Good	Mature	SEA/OS	nil	-	-
	60	1	Populus yunnanensis / Chinese poplar	14	84.4	5	3.1	10.1	Good	Mature	SEA/OS	nil	-	-
	61	1	Syzygium smithii / Monkey apple	11	84.4	5	3.1	10.1	Good	Mature	SEA/OS	nil	-	-
	62	1	Casuarina cunninghamiana / She oak	19	84.4	7	3.1	10.1	Good	Mature	SEA/OS	nil	-	-
	Group 63	4	Taxodium distichum / Swamp cypress	2	8.0	1	0.8	1.0	Good	Juvenile	SEA/OS	nil	-	-
	Group 64	14	Mixed Olive, cabbage tree, lemonwood, euc, bottlebrush /	6	0.0	3	0.0	0.0	Good	Early mature	SEA/OS	nil	-	-
12	Group 95	10	Olea europaea / Olive	5	15.9	3	1.2	1.9	Good	Mature	OS	Remove	*20	1
12a	Group 96	11	Mix of taxodium species /	9	27.1	5	1.7	3.2	Good	Mature	OS	WWRZ	-	-
13	89	1	Tristanopsis laurina / Water gum	9	35.0	4	1.9	4.2	Good	Mature	ROAD	WWRZ	-	-
	90	1	Quercus robur / English oak	14	57.3	8	2.5	6.9	Good	Mature	OS	WWRZ/Prune	-	-
14	Group 91	20	Mixed, oak, karo, kanuka /	8	0.0	4	0.0	0.0	Good	Mature	OS/STCZ	WWRZ/Prune	-	-
	92	1	Kunzea robusta / Kanuka	10	30.2	4	1.8	3.6	Good	Mature	OS	WWRZ	-	-
15	Group 93	50	Mixed cabbage, privet, karo, kanuka /	8	0.0	4	0.0	0.0	Good	Mature	OS	Remove	*136	8
	94	1	Salix cinerea / Grey willow	12	47.7	6	2.3	5.7	Fair	Mature	STCZ	WWRZ	-	-