8. Management Units

8.1 Overview

The project area contains a number of reserves within the Pourewa Valley, including the Pourewa stream and its tributaries that require restoration work including pest plant control, pest animal control and planting. These reserves have been identified as management units (MU's) in Figure 26, with required weed and pest animal control and planting options outlined.

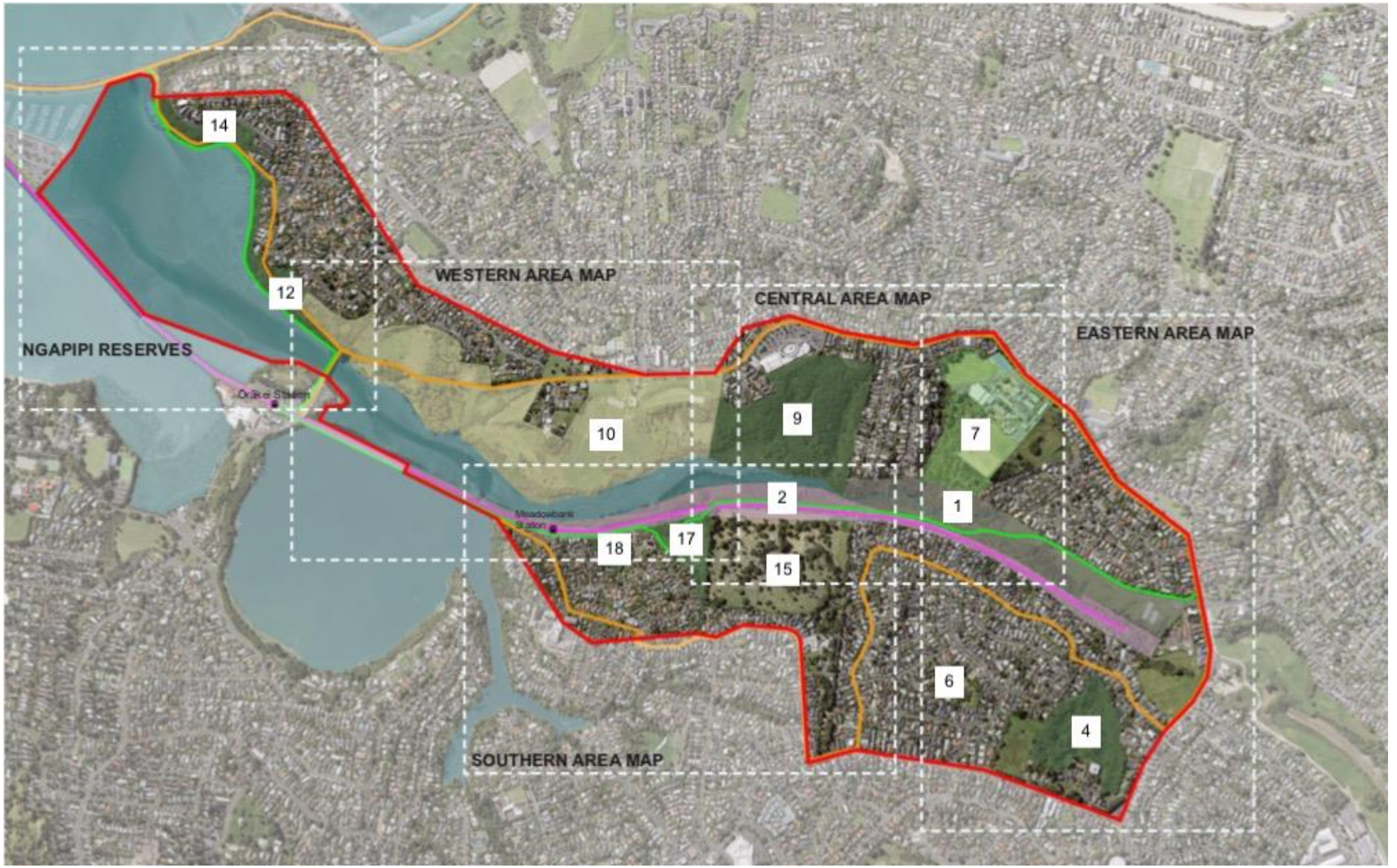


Figure 26: ***Management Units***

8.3 Kiwi Rail (Management Unit 2)

The land parcel is Kiwi Rail land runs the length of the valley network along the rail corridor from St Johns Road down to the coast at Tamaki Drive. The land parcel includes the adjoining shared pathway, which has a mulched native planted area on either side.

Apart from this planted area next to the shared pathway, the land parcel contains forest areas next to the train tracks consisting of exotic canopy trees; mainly tree privet. Exotic trees are dominant in the canopy with over 50% cover/biomass exotic. An understory exists beneath these canopy species, dominated by pest plants comprising mainly climbing asparagus, english ivy and wild ginger. The dominance of tree privet in the canopy means that high amounts of privet seedlings are present in the understory. There are also contiguous areas of mangrove on the north side of the Pourewa Stream adjacent to Kepa Bush. This part of the land parcel is a Significant Ecological Area (SEA) – Mangrove Forest and Scrub (SA1.2) terrestrial ecosystem, and the land in the upper catchment above the John Rymer entrance near St Johns Road is Exotic Scrub (ES) and some Coastal Broadleaved Forest (WF4) .

There are a number of pest plant incursions within the reserve as shown in figure 30; both in the forest area to the south of the lower section of the Pourewa Stream. In addition, there are infestations of pest plants on adjoining planted areas immediately below Orakei Train Station. This includes concentrated incursions of moth plant and other species (ID numbers 1 and 2) and single species incursion of Tree Privet (ID Number 9) within the SEA (SA1.2) in the lower parts of the forest between Kepa Bush and the Pourewa Stream.

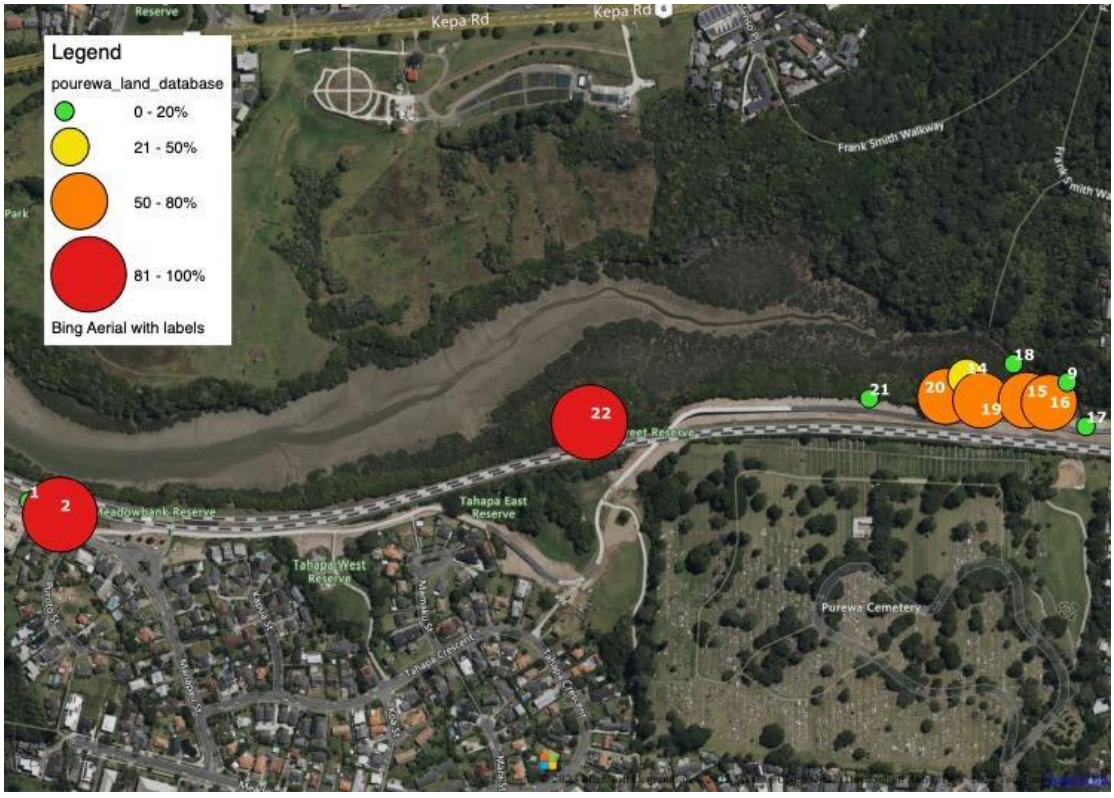


Figure 30: Pest plant abundance (density % of biomass)

8.3.1 Pest Plant Species & Control Method

Common name	Threat	ID	Method (chem; non-chem)	Who
Black Wattle (*Acacia mearnsii)*	Not listed	1,2	CP; R; DF H (seedlings); C; CM	Volunteer Volunteer (seedlings)/Eco-Contractor (Trees)
Climbing asparagus* *(Asparagus scandens)*	Sustained Control	15,16,17,18,1920,21	FS	Eco- Contractor
English Ivy *(Hedera helix)*	Sustained Control	14,15,16,18,20	FS; CP H	Eco- Contractor Volunteer
Ginger* (*Hedychium gardnerianum; H. flavescens)*	Sustained Control	14,15,16,19	CP H	Volunteer Volunteer
Gorse *(Ulex*spp.)	Sustained Control	17,21	CP; FS CM	Eco-Contractor Eco-Contractor
Moth Plant (*Araujia sericifera)*	Sustained Control	1,2	CP; FS H	Eco-Contractor Volunteer
Pampas (*Cortaderia jubata and C. selloana)*	Sustained Control	1,18	FS H	Eco-Contractor Eco-Contractor
Privet – Tree* *(Ligustrum lucidum)*	Sustained Control	1,**9**,16,17,18,19,20,21,**22**	CP; R; DF H (seedlings); C; CM	Volunteer Volunteer (seedlings)/Eco-Contractor (Trees)
Woolly Nightshade (*Solanum mauritianum)*	Sustained Control	1,2	CP; R H;C	Volunteer Volunteer

Method code: Cut & Paste (CP) Cut – non chemical (C) Ringbark (R) Foliar spray (FS) Drill & Fill (DF) Hand (H) Chip & Mulch (CM)

***Species where areas of incursion are one species only (ID numbers in bold)**

8.3.2 Indicative planting schedule for mangrove forest and scrub

Common name	Species	Plant Grade	Spacing (m)
Oioi	*Apodasmia similis*	PB3	0.5
Giant Umbrella Sedge	*Cyperus ustulatus*	PB3	0.5

8.3.3 Indicative planting schedule for forest canopy and understory

Common name	Species	Plant Grade	Spacing (m)
Kahikatea	*Dacrycarpus dacrydioides*	PB3	1
Kawakawa	*Piper excelsum*	PB3	1
Mahoe	*Melicytus ramiflorus*	PB3	1
Cabbage Tree Ti Kouka	*Cordyline australis*	PB3	1
Koromiko	*Hebe stricta*	PB3	1

Figure 31: Pest animal control sites

8.3.4 Pest Animal Species & Control Method

Species	Method	Trap Type	Who
Rat	B; T	Protecta Ambush T-rex in Wooden Tunnel Timms	Volunteer Residential Trapper
Possum	T	Timms	Volunteer
Mice	B; T	Protecta Ambush T-rex in Wooden Tunnel	Volunteer Residential Trapper
Hedgehogs	T	Timms T-rex in Wooden Tunnel	Volunteer
Stoat	T	DOC200	Volunteer
Wasp	S	Sprays	Volunteer

Method code: Bait (B) Trap (T) types of trap Spray (S)

8.3.5 Volunteer Groups

- Pourewa Restoration Group
- Forest & Bird

Appendix 1 Weed List and Recommended Control Methodologies

Recommended Control Methodologies

Weed Species	Description
Agapanthus ***(Agapanthus praecox)*** 	Forms a dense ground cover, which stops regeneration of native plants. • **Control Method(s):** Dig out including roots (corms) and dispose off site at a refuse transfer station. OR Foliage spray (backpack). • **Chemicals(s):** Triclopyr (6ml/L) and penetrant (1ml/L) on to leaves. • **Timing:** Year round. • **Contractor(s):** N/A
Arum lily ***(Zantedeschia aethiopica)*** 	Forms a dense ground cover, which stops regeneration of native plants. • **Control Method(s):** Dig out including roots and dispose off site at a refuse transfer station. • **Chemicals(s):** N/A • **Timing:** Year round. • **Contractor(s):** N/A
Bear's Breeches ***(Acanthus mollis)***	Forms a dense ground cover, which stops regeneration of native plants. • **Control Method(s):** Dig out including roots and dispose off site at a refuse transfer station.

OR

Fell/cut and paint stump. Place cut leaves over the top of painted stems to keep rain off.

- **Chemicals(s):** Metsulfuron gel (1-2 mm layer).
- **Timing:** October – March.
- **Contractor(s):** N/A

Black Wattle *(Acacia mearnsii)*

Sours soil preventing regrowth of many natives.

- **Control Method(s):** Ringbark and paint edges.
- **Chemicals(s):** Glyphosate gel (1-2 mm layer).
- **Timing:** October – April.
- **Contractor(s):** Yes. Undertake ringbark.

Blue Morning Glory *(Ipomoea indica)*

Climbs up trees and shrubs and smothers them.

- **Control Method(s):** Dig out including roots and dispose off site at a refuse transfer station.

  OR

  Fell/cut and paint stumps and leave vines in trees to die. Foliage spray (backpack) new growth and areas where no natives.

- **Chemicals(s):** Metsulfuron gel (1-2 mm layer); Metsulfuron (0.5g/L).
- **Timing:** October - March.
- **Contractor(s):** Yes. Supervise herbicide treatment(s).

Cape Wattle *(Paraserianthes lophantha)*

Sours soil preventing regrowth of many natives.

- **Control Method(s):** Dig out including roots and dispose off site at a refuse transfer station.

OR

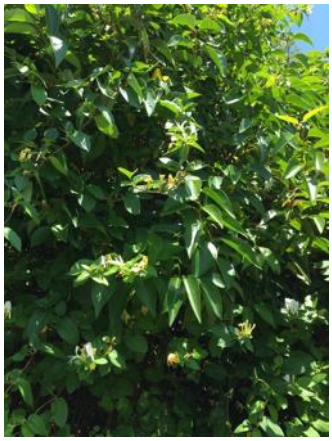
Ringbark and paint edges.

- **Chemicals(s):** Glyphosate gel (1-2 mm layer).

	• **Timing:** October – April. • **Contractor(s):** Yes. Undertake ringbark.
Climbing asparagus *(Asparagus scandens)* 	Climbs up trees and shrubs and smothers them. • **Control Method(s):** Dig out including roots and dispose off site at a refuse transfer station. OR Foliage spray (backpack). • **Chemicals(s):** Glyphosate (20ml/L) and penetrant (1ml/L). • **Timing:** Year round. • **Contractor(s):** Yes. Also upskill volunteers with GrowSafe
Cotoneaster *(Cotoneaster glaucophyllus)* 	Seeds eaten by birds and dispersed a long distance into other gardens and bush areas. • **Control Method(s):** Dig out including roots and dispose off site at a refuse transfer station. OR Fell/cut and paint stumps. • **Chemicals(s):** Glyphosate gel (1-2 mm layer). • **Timing:** October – April. **Contractor(s):** N/A.
English Ivy *(Hedera helix)*	Climbs up trees and shrubs and smothers them. • **Control Method(s):** Dig out including roots and dispose off site at a refuse transfer station. OR Foliage spray (backpack).

- **Chemicals(s):** Metsulfuron (0.5g/L) and penetrant (1ml/L).
- **Timing:** December - April.
- **Contractor(s):** Yes. Supervise herbicide treatment(s).

Japanese Honeysuckle *(Lonicera japonica)*



Climbs up trees and shrubs and smothers them.

- **Control Method(s):** Dig out including roots and dispose off site at a refuse transfer station.

  OR

  Fell/cut and paint stumps and leave vines in trees to die. Foliage spray (backpack) new growth and areas where no natives.

- **Chemicals(s):** Metsulfuron gel (1-2 mm layer); Metsulfuron (0.5g/L).
- **Timing:** October - March.
- **Contractor(s):** Yes. Supervise herbicide treatment(s).

Loquat *(Eryobotria japonica)*

Seeds eaten by birds and dispersed a long distance into other gardens and bush areas.

- **Control Method(s):** Dig out including roots and dispose off site at a refuse transfer station.

OR

Fell/cut and paint stumps.

- **Chemicals(s):** Glyphosate gel (1-2 mm layer).
- **Timing:** October – April.
- **Contractor(s):** Yes. Supervise fell/cut and herbicide treatment(s).

Monkey apple *(Syzgium smithii)*

Seeds eaten by birds and dispersed a long distance into other gardens and bush areas.

- **Control Method(s):** Fell/cut and cover stump with thick black polythene to exclude light, cover polythene and entire root zone with 150mm deep mulch for 12 months.

OR

Fell/cut and paint stumps.

- **Chemicals(s):** Glyphosate gel (1-2 mm layer).
- **Timing:** October – April.
- **Contractor(s):** Yes. Supervise fell/cut and herbicide treatment(s).

Nasturtium *(Tropaeolum majus)*

Climbs up trees and shrubs and smothers them.

- **Control Method(s):** Dig out including roots and dispose off site at a refuse transfer station.

OR

Fell/cut and paint stumps and leave vines in trees to die. Foliage spray (backpack) new growth and areas where no natives.

- **Chemicals(s):** Metsulfuron gel (1-2 mm layer); Metsulfuron (0.5g/L).
- **Timing:** November - March.
- **Contractor(s):** Yes. Supervise herbicide treatment(s).

Palm grass *(Setaria palmifolia)*

Forms a dense ground cover which stops regeneration of native plants.

- **Control Method(s):** Dig out including roots and dispose off site at a refuse transfer station. (CAUTION: leaf stalks covered in irritating hairs, wear protective clothing when handling plant.)

OR

Foliage spray (backpack).

- **Chemicals(s):** Glyphosate (20ml/L) and penetrant (1ml/L).
- **Timing:** December - April.
- **Contractor(s):** N/A.

Pampas grass *(Cortaderia selloana)*

Forms a dense ground cover which stops regeneration of native plants.

- **Control Method(s):** Dig out including roots and dispose off site at a refuse transfer station.

OR

Foliage spray (backpack).

- **Chemicals(s):** Haloxyfop
- **Timing:** October – April.
- **Contractor(s):** Yes. Supervise herbicide treatment(s).

Phoenix palm *(Phoenix canariensis)*

Seeds eaten by birds and dispersed a long distance into other gardens and bush areas.

- **Control Method(s):** Fell/cut and cover stump with thick black polythene to exclude light, cover polythene and entire root zone with 150mm deep mulch for 12 months.

OR

Fell/cut and paint stumps. Foliage spray (backpack) new growth and areas where no natives.

- **Chemicals(s):** Glyphosate gel (1-2 mm layer); Glyphosate (20ml/L) and penetrant (1ml/L).
- **Timing:** October – April.
- **Contractor(s):** Yes. Supervise fell/cut and herbicide treatment(s).

Privet – Chinese *(Ligustrum sinensis)*

Seeds eaten by birds and dispersed a long distance into other gardens and bush areas.

- **Control Method(s):** Dig out seedlings including roots and dispose off site at a refuse transfer station; Fell/cut and cover stump with thick black polythene to exclude light, cover polythene and entire root zone with 150mm deep mulch for 12 months.

OR

Drill and inject.

- **Chemical(s):** Metsulfuron gel (10g/L)
- **Timing:** October – April.

	• **Contractor(s):** Yes. Supervise drill/inject herbicide treatment(s).
Privet – Tree *(Ligustrum lucidum)* 	Seeds eaten by birds and dispersed a long distance into other gardens and bush areas. • **Control Method(s):** Dig out seedlings including roots and dispose off site at a refuse transfer station; Fell/cut and cover stump with thick black polythene to exclude light, cover polythene and entire root zone with 150mm deep mulch for 12 months. OR Drill and inject. • **Chemical(s):** Metsulfuron gel (10g/L) • **Timing:** November – March. • **Contractor(s):** Yes. Supervise drill/inject herbicide treatment(s).
Sydney Golden Wattle *(Acacia longifolia)* 	Seeds eaten by birds and dispersed a long distance into other gardens and bush areas. Sours soil preventing regrowth of many natives. • **Control Method(s):** Dig out seedlings including roots and dispose off site at a refuse transfer station; Fell/cut – no need to paint stump if greater 100mm diameter. OR Drill and inject. • **Chemicals(s):** Glyphosate (500ml/L). • **Timing:** October – April. • **Contractor(s):** Yes. Supervise drill/inject herbicide treatment(s).
Wandering willie *(Tradescantia)* 	Forms a dense ground cover, which stops regeneration of native plants. Will regrow from small fragments. • **Control Method(s):** Dig out including roots and dispose off site at a refuse transfer station. OR Foliage spray (backpack). • **Chemicals(s):** Triclopyr (6ml/L) and penetrant (1ml/L) on to leaves.

	• **Timing:** November – March. • **Contractor(s):** Yes. Supervise herbicide treatment(s).
Woolly nightshade *(Solanium mauritianum)* 	10Health risk – e.g. injury from spines, breathing issues, allergies. Seeds eaten by birds and dispersed a long distance into other gardens and bush areas. Sours soil preventing regrowth of many natives. • **Control Method(s):** Dig out including roots and dispose off site at a refuse transfer station. OR Scrape and paint stumps. • **Chemicals(s):** Glyphosate gel (1-2 mm layer). • **Timing:** October – April. • **Contractor(s):** Yes. Supervise herbicide treatment(s).