Waitākere Ranges Strategic Weed Management Plan

June 2015

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Auckland Council

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1. Chair's foreword

The Waitākere Ranges Local Board commissioned Jack Craw, former Manager of Biosecurity in Auckland Council, to draw up a strategic weed plan for the board. The impetus for this was the huge growth of ecological weeds in the Waitākere Ranges Heritage Area, which stretches from the West Coast and Manukau Harbour coastline to the bush living areas of Titirangi and the rural foothills of Oratia, Henderson Valley and Swanson.

Eighty-two percent of our board area is covered in native vegetation and it provides 40 percent of the native vegetation in the whole Auckland region. The Heritage Area contains the entire 17,000 hectare Waitākere Ranges Regional Park, and the board takes pride in its nationally important natural areas. The Heritage Area faces unique challenges because of its closeness to a large metropolitan area and because it has settlements scattered through and around the natural areas. A particular focus of the plan is to ensure that activities in the coastal and rural settlements do not put at risk the forests of the Waitākere Ranges.

Jack Craw's plan gives the board strong guidance on what its priorities should be. It confirms that the board's focus should be on pest plants rather than pest animals, which he advises are generally well controlled. On the other hand, pest plants have undergone somewhat of an explosion. The plan identifies the places and weeds that should be the primary focus, and he advises us to prioritise work with private land owners, as pest plant control on public land is under the control of other parts of Auckland Council.

Nevertheless, there are recommendations on advocacy the local board can undertake to strengthen the approach of Auckland Council in its various roles as provider of parks, biosecurity services, water supply and manager of transport corridors.

The plan makes clear that while many parts of Council have responsibilities for the health of the Heritage Area, we must join with our communities as stewards of the area. The local board is very comfortable with this approach as it values the efforts already made by groups and individuals, and it gives us the best chance of creating sustainable environmental action.

The challenge before the board now is to implement the plan, along with other parts of Council, in partnership with our communities. This is not a choice but a necessity. The future wellbeing of the Waitākere Ranges, and its people, depend on it.

Sandra Coney
Chair, Waitākere Ranges Local Board

2. Executive Summary

This Strategic Plan was commissioned by the Waitākere Ranges Local Board to address the weed issues in the Waitākere Ranges Heritage Area (WRHA). The Waitākere Ranges Heritage Area Act assigns specific responsibilities to Auckland Council to protect a range of values in the Waitākere Ranges Heritage Area (WRHA), which contains some of New Zealand's finest and best-protected native habitats and recreational areas, of national significance due to their size, condition and species composition. These values are of significant economic benefit to the Auckland region. All of these values are threatened by weed incursion.

Pest animals and kauri dieback disease in the WRHA are generally being managed to a very high level, however pest plant management is not well coordinated across all jurisdictions and is under-resourced. The Waitākere Ranges have very high weed indices, relative to most other habitats of similar size, because the Ranges have a large number of private properties within their borders and a lot of roads and tracks, which all act as weed sources and vectors.

Recent advances in animal pest control technologies are extremely likely to result in a step change in affordable, sustainable and effective pest animal control. There have been no new developments in weed control technologies globally in over 20 years, nor is there any likelihood of any appearing in the next 5-10 years.

These factors point to weeds being more of a problem, absolutely and relative to other threats to WRHA values. It is unlikely that budgets for weed management will be significantly increased over the next 5-10 years, so it is timely that weed issues be looked at strategically to determine where current and emerging threats lie, where best value for existing investment exists, what additional actions could or should be undertaken, and what the roles of the various community players could usefully be.

The rate of establishment of new weeds in the WRHA has slowed dramatically, mainly due to imposition of legislative bans on sale and propagation of weedy species, but also because of greater community awareness that garden plants can become ecological weeds. Most weeds appear first in gardens and spread outwards via roads, tracks, dump sites and areas of disturbance.

There is cascading series of actions that need to be implemented to successfully manage weeds long-term. Keeping weeds out and eradicating new high-threat weeds is being successfully managed by Council. Keeping specific high value areas weed free requires a lot of surveillance and this requirement is currently not being addressed.

Council currently manages weed vectors as much as is possible, by taking wind, water and human vectoring into account when designing programmes. However Auckland Transport needs to implement an ecological weed programme on road

reserves, and a draft programme is included for consideration. Also the Te Henga weed issues will become critical if not addressed with greater vigour. It is also important that Watercare Services allows best-practice weed control programmes to be implemented in catchment areas.

The most important sites requiring weed management in the WRHA are prioritised, including Council owned land and private land. The most important weeds are also similarly prioritised, and a range of management techniques outlined.

The key to achieving successful weed control is adoption of best practice prioritisation and control methods, which have been developed by Auckland Council Biosecurity over many years and are risk-aversion based and cost-effective. The Ecoweeds programme in the Waitākere Ranges Regional Park has been very successful in using this approach in the Park. This methodology needs to be applied to other areas, especially Local Parks and road reserves. It uses site-based and species-based approaches.

The Board should expend its resources on weed management on private land in the WRHA, mainly in assisting community-based projects as these can bring greater return on investment if properly managed. The Pest Free Warrant scheme offers much promise in using peer pressure and awareness of asset values in achieving weed management goals in the WRHA.

It is clear that Council needs to direct more resources to weed management in the WRHA, particularly in coordination of volunteer efforts on private land. This should be accompanied by better on-line advisory resources.

A total of 38 specific recommendations are included to address these issues.

3. Introduction

This plan was commissioned by the Waitākere Ranges Local Board and is a strategic report to enable managers, local elected members and the community to make the most practical and cost-effective choices with regard to policy, programmes and budgetary decisions for weed management in the Waitākere Ranges Heritage Area (WRHA).

The plan is not a weed inventory, as accurate lists of taxa in the Waitākere Ranges Ecological Area have already been compiled by the Auckland Herbarium and Auckland Council and are readily available.

It does not include maps of weed infestations, as accurate weed maps for most species do not exist and the creation of maps is a very expensive exercise that would not well serve a strategic context. Rather the purposes of this plan are to

- establish priority species and areas for protection
- identify key vectors for weed spread and recommend means by which these can be managed
- describe the legal and operational responsibilities for pest plant management in the Waitākere Ranges Heritage Area and recommend priorities for these responsible bodies; and
- set out areas for Waitākere Local Board advocacy and actions, and suggest priorities and timelines.

3.1 Why have a Strategic Weed Management Plan?

The Waitākere Ranges Heritage Area Act assigns specific responsibilities to Auckland Council to protect a range of values in the Waitākere Ranges Heritage Area (WRHA), refer Appendix A. The WRHA contains some of New Zealand's finest and best-protected native habitats and recreational areas, which are of national significance due to their size, condition and species composition. The WRHA also has a multitude of unique intrinsic values, due to proximity to the Auckland urban area, including historic, cultural/ tangata whenua, landscape/scenic, water supply, tourism and recreational values. The WRHA is also a place of learning for the community, a vast field site used frequently for scientific research.

All of these values contribute to the regional economy in vital ways. Most of these values are at considerable or severe risk of degradation or loss due to the incursion of pest animals, pathogens and plants ("weeds"[1] generally).

In the Waitākere Ranges, pest animal indices are comparatively low and in some cases pest species are absent altogether (e.g. feral goat, deer, wallaby species). Some other pests are probably absent (e.g. Argentine ant, rook, most pest fish and exotic reptile species). The pest animals that do exist in the Ranges are under some measure of control, ranging from excellent (feral pig) to good (possum, mustelids, feral cat, rodents, rabbit). There are very few pest animals that are not controlled in some way, with perhaps only some wasp spp. and mouse not being managed.

In addition, recent advances in animal pest control technologies, soon to be made available to pest managers and the community, are extremely likely to result in a step change in affordable, sustainable and effective pest animal control. Managers will be able to maintain extremely low pest indices for most pests, much of it by remote control. These advances are extremely likely to reduce pest animals generally to a lesser rank (than weeds) of risk to biodiversity and other values.

The discovery of kauri dieback disease in the Ranges led to a considerable investment in research, vector control, public education and engagement, track upgrades, area closures and other actions. Although the disease is perhaps the greatest single-species risk to the Ranges, current actions by Auckland Council appear to have greatly slowed or halted the further spread of infestation and it is likely that the disease is now contained. This cannot be claimed for weed spread for most weed species. In any event, it would be desirable to implement the same approach to weeds as to kauri dieback, i.e. to contain spread and protect identified high value areas and key native species in the Waitākere Ranges. For the purposes of this Plan, these high value areas and species are deemed to be the Significant Ecological Areas (SEAs) as defined by Auckland Council and the Department of Conservation. [2]Weed control is much more expensive to undertake than pest animal control, and possibly more than kauri dieback control, on a per-area basis. Weed control is also less likely to be selective than animal pest control, i.e. risks of collateral damage are high. Current budgets have not been sufficient to provide for significant improvement in habitat condition across the whole WRHA. There have been gains. Many small and medium-sized areas have been improved through the removal of pest plants, some high-risk pest plant species have been eradicated

[1] The terms "pest plant" and "weed" have overlapping meanings in this context, refer Glossary

[2] Work on defining and assessing high value areas and key native species is currently being undertaken by the Auckland Council Biodiversity team. Until this work is completed, the Plan will use the Significant Ecological Area (SEA) assessments as the most relevant and up-to-date in the Waitakere Ranges Heritage Area. The SEAs also include species identified by Council's Biodiversity team as priorities for management.

Significant Ecological Areas have been protected by preventing weed ingress, however, it is likely that these improvements have been equalled by incursion of existing weeds into new areas. There has never been sufficient budget to address these weed issues in a manner that will improve habitats to the stage where maintenance-only costs remain, nor is there any likelihood of this budget being made available in the next 10 years. In many respects, weed management in the WRHA has been treading water rather than making major advances.

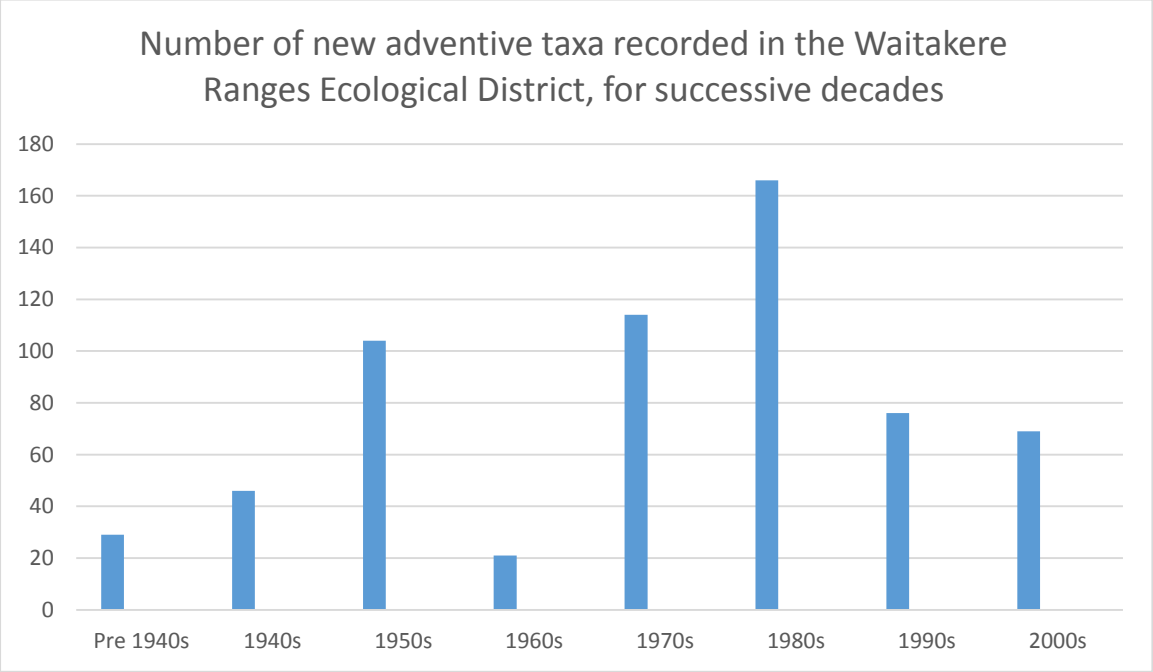
The Waitākere Ranges have very high weed indices, relative to most other habitats of similar size, mainly because the Ranges have a large number of dwellings and gardens within their borders, and a lot of roads and tracks. These gardens are weed factories, continuously adding to weed infestations in adjacent public land. Weeds are also significant threats in other WRHA habitats, e.g. Te Henga wetland, where weeds constitute the greatest threat to biodiversity, water quality, public safety and infrastructure. At Whatipu, weeds pose the biggest threat to dune structure and the survival of rare native plants. At Lake Wainamu, weeds are now the greatest threat to water quality and recreational values. The high total length of roads and vehicle accessways in the Ranges also contributes to weed problems because roads are essentially wounds in the canopy that allow and assist weed ingress.

There have been no new developments in weed control technologies globally in over 20 years, nor is there any likelihood of any appearing in the next 5-10 years, as there has been no research on relevant herbicide chemistry occurring worldwide. Research for over 20 years has focussed on better ways of applying existing herbicides and mechanical control methods and there is little scope for improvement in these areas.

All of these factors point to weeds being more of a problem, absolutely and relative to other threats to WRHA values. It is unlikely that budgets for weed management will be significantly increased over the next 5-10 years, so it is timely that weed issues be looked at strategically to determine where current and emerging threats lie, where best value for existing investment exists, what additional actions could or should be undertaken, and what the roles of the various community players could usefully be.

There is one encouraging trend in the broader weed management area. National and Auckland regional government programmes over the past 20 years to permanently ban the propagation, sale and distribution of the most adventive taxa, has greatly slowed the rate of introduction of new weed taxa. The seemingly endless succession of new recorded weeds, prevalent until the 1990s, has slowed.

Fig 1: Establishment of new adventive taxa in the Waitākere Ranges Ecological District, as recorded in the Auckland Museum Herbarium weeds database



** Note very little surveying was done in the WRHA in the 1960s.*

This is a very pleasing trend, as new subdivision and increases in the number of new gardens, the availability and marketing of new garden plants, and the unassisted spread of weeds from other areas, would all be expected to contribute to a continuing increase in adventive plants. Given the considerable lag phase between introduction into gardens and establishment in the wild (typically 5-60 years), the trend is predicted to continue downwards. This levelling off gives hope that programmes for existing weeds can bring habitat improvement rather than mere replacement of one weed with another.

Despite the downward trend of new adventive taxa establishment in the WRHA, there are more than enough currently existing taxa to compromise or destroy most or all habitats. Perhaps 300 of the 625 taxa are significant-to-serious environmental weeds, with more of them likely to become so. It is therefore vital that immediate and ongoing measures be increased. Given the size of the problem, it is appropriate that a strategic approach be taken, to maximise value for investment, protect the most important habitats and prevent the worst species further compromising natural areas.

At present, there is no overarching strategic weed management plan for the Ranges or the WRHA, however there is a plethora of other planning documents covering

parts of the WRHA or aspects of the problem. The Waitākere Ranges Heritage Area Act 2008 requires a management plan for the Waitākere Ranges Regional Park and this was completed by the former Auckland Regional Council in 2010. This plan must be reviewed every ten years and must include ecological protection measures. The Regional Parks Management Plan also identifies many of the areas that need to be protected from weed impacts, and links to specific site-based management plans.

Local Area Plans produced under this Act have included a strong focus on weeds. These plans would benefit from a high level strategic plan from which to draw and reference. All plans (including this plan) must comply with the Act.

The review of the Regional Pest Management Strategy 2007-2014 is currently being undertaken. The WRHA Strategic Weed Management Plan can and should influence the direction and scope of the new 10-year Regional Pest Management Plan.

4. The Weed Problem in the Waitākere Ranges Heritage Area

As stated above, the Waitākere Ranges is heavily infested with pest plants and nuisance weeds. The Auckland Museum/Auckland Council index of adventive taxa for the Waitākere Ecological District (broadly the same as the WRHA), based only on herbarium specimens, in February 2012 contained 421 dicots, 190 monocots, 8 ferns and 6 gymnosperms, a total of 625 adventive taxa[3]. There will be a small but not insignificant number of unrecorded adventive plants, mostly from peri-urban areas, gardens, ponds, lifestyle blocks, farms, horticultural blocks and commercial areas, some of which are capable of moving into natural areas.

The list of adventive taxa in the adjoining Tamaki Ecological District, which adjoins the Waitākere Ecological District, is over twice as large as that in Waitākere, so further weed movement into the WRHA is inevitable.

There is much land in the WRHA that is not in native habitats and this land serves as an internal source of weeds. Most of this land is in lifestyle and light farming tenure and in fact is not heavily weed-infested. A survey by Auckland Regional Council Biosecurity staff in 2006 found 17 adventive species in several thousand hectares of farmland and lifestyle blocks around Swanson but 50 adventive species on the roadside of Swanson Rd in Swanson Village alone. This demonstrates that most of the environmental weeds originate and radiate from private gardens and roads.

The pattern of weed distribution is very closely aligned with human habitation and activity[4]. Weeds radiate outwards from gardens, roads[5], tracks, dump sites and other areas where soils or habitats have been disturbed. Even weeds with wind-blown seeds that travel very long distances (e.g. pampas, moth plant) are initially and often generally confined to sites of human disturbance. This means that most remote and undisturbed sites have far fewer weeds and some remote sites are pristine.

This pattern brings special challenges for the Waitākere Ranges and other sites in the WRHA. The abundance of houses in the Ranges, the large number of walking tracks, and the very high numbers of visitors, all mean that weeds are more likely to be introduced and spread. These factors cannot be eliminated, but measures can be put in place to minimise risks of weed introduction, lower impacts and control infestations.

[3] Auckland Museum; List of Adventive and Native taxa; 21 February 2012

[4] JON J. SULLIVAN, PETER A. WILLIAMS, EWEN K. CAMERON, and SUSAN M. TIMMINS (*2004*) People and Time Explain the Distribution of Naturalized Plants in New Zealand. Weed Technology: December 2004, Vol. 18, No. sp1, pp. 1330-1333. **doi:** http://dx.doi.org/10.1614/0890-037X(2004)018[1330:PATETD]2.0.CO;2

[5] Sullivan, J. J., Williams, P. A., Timmins, S. M., & Smale, M. C. (2009). Distribution and spread of environmental weeds along New Zealand roadsides. New Zealand Journal of Ecology, 33(2), 190-204.

The scale of the weed problem can be understood by looking at current Auckland Council Biosecurity and Parks investment levels. Over $350,000 pa is expended on weed management in the WRHA, which is considerably more than for possum control and is approximately equal to the combined annual expenditure for all pest animals. In the last ten years, pest animal indices have been lowered but the same cannot be claimed for weeds. The overall lack of success in weed management, indicates that a much greater allocation of resources needs to be made by all parties with responsibilities for weed management.

5. Strategic approach to weed management

The wide range of contributing factors described above all demand that a strategic approach be taken to weed management in the WRHA. Weed management typically follows a cascading series of actions:

1. Keep new weeds out of the Waitākere Ranges Heritage Area altogether
2. Eradicate newly arrived, high-threat weeds
3. Maintain specific weed-free areas as weed-free
4. Manage weed vectors
5. Control most important weeds at key locations
6. Roll back key weed infestations
7. Make weeds less competitive
8. Contain current infestations of most common weeds
9. Clean up, replant and restore other weedy areas; acting on regional, area or local priorities.

These actions are addressed in turn, below.

Weed control programmes need to be designed on either a species-based approach or area-based approach. The former seeks to eradicate or permanently suppress nominated high-threat taxa, whilst the latter seeks to protect pristine areas from all weed ingress. Decisions constantly need to be made as to which approach is to be used, and are based on level of threat, weed incidence and range, and value of each habitat under control (particularly values of threatened native flora and fauna and/or key ecological processes).

The Auckland Council Ecoweeds programme is designed each year, by Auckland Council's Biosecurity, Regional Parks and Biodiversity staff, who all follow Council's established Best Practice principles. Programme design takes into consideration the Auckland Council Regional Pest Management Strategy / Plan, Regional Parks Management Plan and the Biodiversity Strategy. It can therefore be seen that the Waitākere Ranges Regional Park already has a strategic annual programme for pest plant management. Department of Conservation land is similarly managed in a strategic fashion, although budgets are inadequate.

Auckland Council's Local and Sports Parks are not subjected to the same planning processes: rather weed control is generally undertaken on a complaints basis or to priorities set by the contractors employed to undertake control work. This does not pose any problems for local parks without native habitats. However the lack of priority setting has resulted in significant weed infestations in local parks being overlooked. Weed management on natural areas in Local Parks would be better prioritised using the Ecoweeds process and Best Practice methodologies utilised in Regional Parks (refer Recommendation 29).

Private land in the WRHA is not subject to any overall strategic weed management plan, other than the provisions of the Regional Pest Management Plan. This plan can serve as the strategic overview for weed management on private land, under which operational plans can be developed.

1. Keep new weeds out of the Waitākere Ranges Heritage Area altogether

Keeping weeds out of the WRHA is easily the most cost-effective means of weed management. New weeds almost always first appear in gardens. Auckland Council Biosecurity maintains an advisory and identification service for ratepayers, which is reasonably effective in picking up new weeds. The Auckland Weedspotter Network is an informal grouping of people interested in weed matters, who look for new plants on a casual basis and via botanical surveys. It is closely aligned with the Auckland Botanical Society and Auckland Museum, whose members and staff maintain very high standards of accuracy in plant identification and recording. The Network, Society and Museum are assisted by Auckland Council and are very effective in finding and recording new weeds.

The search and discovery of new weeds, and their management, often attract little media or public attention but are extremely cost-effective activities. There are often calls by politicians and senior managers for these activities to cease due to funding pressures, however these calls should always be resisted or other means found to fund these necessary activities.

Recommendation 1 – Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to continue to materially support the Auckland Weedspotter Network and Auckland Museum Herbarium, and to encourage people and groups in the Waitākere Ranges Heritage Area to join the Network.

2. Eradicate newly-arrived, high-threat weeds

Auckland Council Biosecurity currently classifies 36 pest plants as 'Total Control'. These plants are extremely high-threat, low-incidence taxa that Auckland Council eradicates at its own cost. There are nine of these taxa in the WRHA, at approximately 90 sites, most of these now historic or under surveillance, that is, no live plants remain but the sites are inspected regularly and all propagules removed when found.

Auckland Council Biosecurity has also eradicated several new species[6], regardless of their legal status, where the species has shown significant weedy characteristics elsewhere, and where the land occupier agrees. These programmes are extremely cost-effective and successful, mainly because action is taken when infestation levels are very low but also because programme administration costs and time are negligible. Most of these eradicated species were then added to the declared pest plant list in a subsequent review of the Regional Pest Management Strategy.

The Regional Pest Management Strategy will be reviewed by Auckland Council over 2015 through a process that will involve public consultation. A new Regional Pest Management Plan will be adopted in 2016. There are a number of additional taxa recorded from the WRHA that could be added to the 'Total Control' category or eradicated with the agreement of the affected land occupiers. These plants are included in Appendix C.

Recommendation 2 – Advocacy and input into Regional Pest Management Strategy review process: It is recommended that the Waitākere Ranges Local Board and other interested parties submit to Auckland Council to consider the plant taxa included in Appendix C for categorisation as Total Control Plants in the Auckland Regional Pest Management Plan.

3. Maintain Specific Weed-Free Areas as Weed-Free

This is in many ways the most difficult objective to fund, implement and monitor. Pristine areas are almost always remote and difficult to traverse. Staff need to be highly trained to spot a wide range of weed species in fairly dense native plant habitats, and monitoring needs to be reasonably intense and frequent - ideally once every two years but at least once every five years. The work is very unspectacular and arduous. If contractors are used, the expense is considerable ($20/ha -$100/ha).

Currently, inspection of Significant Ecological Areas (SEAs) is undertaken by Auckland Council Biosecurity and Regional Parks staff, the Auckland Botanical Society and other volunteers on an ad-hoc basis, with occasional and limited monitoring undertaken by contractors when budget allows. Coverage is not comprehensive or systematic, however new weeds in most SEAs tend to be discovered reasonably quickly and dealt with where the species and/or habitats are high priority. It would be very useful if regular weed surveys were undertaken in all SEAs. The Auckland Botanical Society does vital voluntary work in this regard but the frequency and coverage are not ideal. Auckland Council Biosecurity, Regional Parks and other parties should consider

[6] Council has eradicated at least 4 taxa in the WRHA since 2003, before these taxa were declared pests

contracting the Botanical Society or its members to undertake monitoring weed incidence in the highest value habitats, as this would likely be more cost-effective than using contractors alone. Alternatively Auckland Council Biosecurity should consider using summer students to do this work. This monitoring could also include simultaneous weed control if very few plants are found. This is extremely cost-effective.

It is expected that the great bulk of the cost of this programme would be in monitoring rather than in weed control per se. However where additional control needs to be funded then this cost should come from reprioritising the existing Auckland Council Regional Parks Ecoweeds budget, as is currently the case.

There are also a small number of areas in private ownership within the WRHA. These lands should be considered as high priority for contract monitoring as, unlike regional or local parks, they do not have any form of systematic weed control in place. Auckland Council delivers a Strategic Weed Initiative (SWI) which funds weed control on private land adjoining Auckland Council parkland. It is designed to protect parkland from external weed threats and where serious weed taxa are found, the SWI budget should be used to fund weed control in these areas. These areas of private land should rank in the highest priority sites for control under this programme.

The SWI programme has been extremely successful in protecting high value WRHA areas. However, Council has had many demands on its biosecurity budgets in recent years (for example, the threat of kauri dieback) and so the SWI budget has been reduced by almost 60% in recent years due to demands in other areas. It is vital that the budget be restored.

It is these areas where the Waitākere Ranges Local Board should expend most of its resources. Priority should be given to augmenting the SWI programme to protect high ecological value sites on private land adjoining the Regional Park (refer also to Section 9).

Recommendation 3 – Advocacy to Auckland Council: It is recommended that Auckland Council ensures that all Significant Ecological Areas within the WRHA be monitored for weed ingress, ideally every two years but at least every five years.

Recommendation 4 – Advocacy to Auckland Council: It is recommended that Auckland Council investigates the creation of partnerships with external groups with botanical expertise, or the use of suitably trained summer students, to ensure that all Significant Ecological Areas in the Waitākere Ranges Heritage Area are monitored for weed status.

Recommendation 5 – Advocacy via the Long-term Plan process: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to increase the Biosecurity Strategic Weeds Initiative budget.

Recommendation 6 – Action for the Local Board: It is recommended that the Waitākere Ranges Local Board makes a priority of allocating resources to pest plant control on private land adjoining the Waitākere Ranges Regional Park

4. Manage weed vectors

Wind

Wind is the primary vector for spread of many significant weeds in the WRHA, especially pampas, moth plant, agapanthus and Mexican daisy. These four taxa are assessed individually below. Although there is nothing that can be done to ameliorate wind forces, the impacts of wind-blown weed spread can be minimised by commencing weed control programmes to windward (almost always the west), moving to leeward (the east). For this reason it is imperative that the pampas infestations on the WRHA coastline continue to be prioritised for eradication. It is vital that Auckland Council Biosecurity's current programme of progressively controlling pampas at Whatipu, Pararaha, Piha South and Te Henga continues, and that it extends to include North Piha, Anawhata and Muriwai south. The programme should aim at permanent suppression of pampas, so that not only the high ecological values at Whatipu/Pararaha are protected but re-infestation of high value sites to the east does not occur after they have been treated.

There is a significant pampas infestation on the northern coastal tip of the Awhitu Peninsula and this poses a threat to the WRHA. This infestation should be controlled to prevent it infesting the WRHA.

Recommendation 7 – Advocacy via Auckland Council's Long-term Plan process and input into the Regional Pest Management Strategy review process: It is recommended that Auckland Council Biosecurity formally commits to permanent suppression of pampas on the coastline from Whatipu to Muriwai, and also ensures the control of the pampas infestation on the northern end of the Awhitu Peninsula to prevent reinfestation of the WRHA.

The wind-dispersed *Agapanthus praecox* has recently colonised some of the coastal cliffs of the WRHA. This species can quickly form dense permanent monocultures, replacing all native habitats and rare native plant species. These small infestations need to be removed before they become major problems that current resources could not cover.

Recommendation 8 – Advocacy via input into the Regional Pest Management Strategy review process: It is recommended that Auckland Council formally commit to permanent suppression of *Agapanthus praecox* from the WRHA coastline through the Regional Pest Management Plan.

Also wind-dispersed, Mexican daisy (*Erigeron karvinskianus*) is a significant pest plant in the WRHA, invading a very wide range of habitats and spreading quickly by wind over long distances and into remote areas. It has already spread over much of the WRHA and there is nothing that can be done to reverse the trend. The species is a primary coloniser but in most habitats, over time, individual plants become twiggy and less dense, and other species grow through them and replace them. Mexican daisy will always be a significant pest on steep coastal areas where little competition exists, other than low-growing (often rare) native species. In these situations, Mexican daisy should be controlled. The species has previously been promoted by Auckland Council for biocontrol research but is currently not included by the National Biocontrol Collective as a priority. It is vital that Mexican daisy be included as a priority for biocontrol research.

Recommendation 9 – Advocacy to Auckland Council: It is recommended that Auckland Council submits to the National Biocontrol Collective that Mexican daisy *Erigeron karvinskianus* be included as a national priority for biological control research.

Lastly, moth plant (*Araujia sericifera*) is a very significant wind-dispersed pest plant that is currently not abundant in the WRHA. In the RPMS, the species is a Containment (Removal) Pest Plant in the Waitākere Weed Control Zone, which requires land occupiers to remove it. It is also currently a top priority species for biocontrol research (refer Biological Control section below) and it is recommended that the current and successful management programme continues without modification until biocontrol programmes are successful.

Roads

The WRHA is effectively dissected by roads and tracks. The roading network is extremely weedy and contributes massively to the weed problem. Surveys of roads through native habitats generally find high weed densities on road reserves, decreasing as the distance away from the road increases. Managing weeds on roadsides is initially costly but, if weeds are controlled selectively, costs fall considerably to low maintenance levels.

The responsibility for pest plant control on the public roading network lies now with Auckland Transport (AT). This is provided under Section 13.2(v) of the Regional Pest Management Strategy according to the agreement made

between the Chief Executives at the time of the formation of Auckland Council and its Council-Controlled Organisations (CCOs). Initially after amalgamation AT did not create a pest plant management plan or undertake significant weed control on its roadsides in the Auckland Region. A comprehensive list of immediate priority pest plant species, roads and responsibilities was agreed to by AT and Biosecurity, and this included the arterial roads of the WRHA (see Appendix D).

In 2014 AT commenced a control programme for gorse and woolly nightshade (and some pampas) for its roads in the Waitākere Ranges and this has signalled a new beginning in road reserve management in the Auckland region which needs to be expanded to include environmental pest plants. The AT road reserve pest plant programme, is comprehensive, staged and ongoing. If followed it has the potential to result in major improvements in the condition of roadsides in the WRHA and will also greatly reduce the threat of further weed ingress. A new timeline needs to be adopted, and a suggested timeline is included at Appendix D.

Recommendation 10 – Advocacy to Auckland Transport and input into the Regional Pest Management Strategy review process: It is recommended that the Waitākere Ranges Local Board continue advocacy to Auckland Transport regarding weed management in the road corridor of the Waitākere Ranges Heritage Area.

Private roadways and driveways do contain weeds, however these are minor problems compared to the weed populations on public roadsides. Private roads can be considered as normal private land and the legal responsibilities are identical to those for private land. Adjoining land occupiers should be encouraged, and eventually required, to control the same pest plants on their land and roadways adjoining the public roads. Auckland Council is bound by the Regional Pest Management Strategy to protect the work done on public roads, by insisting that land occupiers undertake control following completion of work on adjoining road reserves. This policy is working successfully for the state highway network in collaboration with New Zealand Transport Agency and the legal position for local roads is identical. This legal responsibility could be referred to in Auckland Council's current Regional Pest Management Strategy and future Regional Pest Management Plan.

Recommendation 11 – Advocacy via input into the Regional Pest Management Strategy review process: It is recommended that the Waitākere Ranges Local Board, as part of the review of the Regional Pest Management Strategy submits to Auckland Council to amend Section 18 of the new RPMP to include the legal responsibility for land occupiers to be bound by the same pest

plant provisions that are imposed upon Auckland Transport for road reserves, to a minimum of 10 metres back from their common boundary.

Tracks

The Waitākere Ranges is dissected by over 200 km of walking tracks. Tracks act like roads in vectoring weeds, albeit normally in more minor fashion. Propagules of pest plants such as selaginella, tuber ladder fern, tradescantia, aristea, agapanthus, plectranthus, brush wattle, montbretia, broom, periwinkle, crassula, Spanish heath and sweet pea shrub can be carried along tracks by people with muddy footwear.

Many tracks, especially lesser used routes, are in rough condition, with rutting, poor drainage and a lot of bare soil. Auckland Council's Regional Parks has done some track work, predominantly in response to kauri dieback disease, however budgets are insufficient to maintain all tracks without muddy areas in winter. More work needs to be done on keeping tracks dry (e.g. better drainage, raising track profiles, more boardwalks in key areas). This will also assist in preventing spread of kauri dieback disease so the benefits are comprehensive.

The recent creation of the Hillary Trail has increased risk of weed vectoring in several significant ways. Firstly, the increased traffic increases the likelihood of users spreading weeds. Secondly, the resultant additional maintenance burden means that other tracks have received less maintenance. Thirdly, Hillary Trail walkers traverse much greater distances than users of other tracks, increasing the risk of weed spread over long distances and into new catchments. The risk in coastal areas particularly has been increased.

Recommendation 12 – Advocacy to Auckland Council Regional Parks: It is recommended that the Waitākere Ranges Local Board advocates to Auckland Council that all tracks in the Waitākere Ranges Regional Park be temporarily closed when they are in a muddy condition, to prevent spread of weeds, kauri dieback and other pathogens.

Recommendation –13 Advocacy via the Long-term Plan process: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to ensure that:

- all tracks in the Regional Park be maintained to prevent weed and pathogen vectoring, and
- sufficient funding is provided to ensure all-weather condition track access to all major areas of the Park.

Waterways

The Waitākere Ranges streams are free of most significant freshwater aquatic pest plants. This has been largely due to the pristine condition of the headwaters, and sensible management by Auckland Council staff. However the weedy condition of the Waitākere Stream is of considerable concern, with crack and grey willows, alligator weed, Mexican water lily, parrot's feather and other weeds causing considerable ecological damage and posing high infrastructure and public safety risks in the Te Henga wetland. Programmes to control these weeds have been opposed by a number of residents concerned at pesticide use.

The willow removal programme was implemented over 20 years ago at the request of the local community, as a result of flooding caused by willow logs blocking the stream. This flooding threatened both the houses at the bottom of the estuary and the road. The clearing of willows from the main channel has been successful in reducing this threat of flooding. There are also many ecological benefits that will result if the willows are replaced by native vegetation. A fully funded programme (initially $200,000 pa, falling to $40,000 pa) could achieve eradication of willows, alligator weed and Mexican water lily within 10 years.

All of the pest plants of concern in the Te Henga wetland can be controlled and/or eradicated without causing any negative water quality or ecological impacts.

Unfortunately, budget cuts at Auckland Council have meant that some programmes have recently been cut, including part of the $90,000 pa aquatic weed programme at Te Henga. This pest plant programme will need to be restored at some stage and may require external funding assistance.

Recommendation 14 – Advocacy via the Long-term Plan process: It is recommended that the Waitākere Ranges Local Board seeks to secure funding for completion of the Te Henga aquatic weed programme.

Plant nurseries

There is a risk of weed spread via contaminated growing media in plant pots and use of inappropriate taxa (e.g. Australian "ngaio", non-ecosourced and man-modified native hybrids). Weeds can be quickly introduced via planting into new habitats and catchments. This risk has recently increased with the advent of several *Phytopthora* pathogens including kauri dieback disease in the WRHA. These risks are diminished, but not obviated completely, when plants are sourced from reputable local nurseries. Nurseries themselves are at risk of contamination via their supply sources so it is imperative that nurseries

supplying plants for the WRHA are subjected to testing for weeds and pathogens.

The Ministry for Primary Industries, assisted by Auckland Council, is developing a national standard for nurseries, which includes weed and pathogen measures, nutrient management and other sustainability provisions. It would be advantageous for all nurseries operating in the WRHA, or supplying plants for planting in natural areas in the WRHA, to comply with this standard when it is developed.

Recommendation 15– Advocacy via the Regional Pest Management Strategy review process: It is recommended that the Waitākere Ranges Local Board supports the adoption of a nursery hygiene standard for all nurseries within the WRHA or supplying plants for planting in natural areas in the WRHA.

Dumping of plant material

Vegetation dumping is a significant operational issue for Auckland Council. Dumped vegetation typically includes pest plants because they are characteristically serious garden weeds, which tend to grow quickly and are undesirable in gardens. This vegetation is often dumped rather than taken to facilities where charges usually apply.

Dumped vegetation is a primary source of new pest plant infestations. New weed species are frequently introduced from a considerable distance. The illegal nature of dumping means it is done covertly, which usually means in secluded areas of native vegetation. This means that dumps are frequently not detected until after weeds have become established. Dumping is often done over banks and steep slopes, making control of these infestations very difficult and expensive. Dealing with weed dumping is a significant cost to Auckland Council Parks and Biosecurity budgets.

Dumping can probably never be eliminated completely, but it can be successfully minimised via a combination of policies and programmes, which include incentives, disincentives, publicity and enforcement.

Incentives not to dump include removing charges for green waste at recycling depots, provision of transfer stations and bins, and subsidies for green waste and solarisation treatment. The Waitākere Local Board currently commits $80,000 of funding per year to support the provision of permanent and temporary weed bins in the Board area.

Disincentives include warning signs, notification of covert filming and prosecution for offenders, and making known dumping sites unsuitable for utilisation. Regional Parks has recently created bunds at many pull-off areas on Scenic Drive to make dumping difficult and this can be extended.

Publicity should be undertaken stressing the environmental impacts of dumping, the availability of alternatives and the risk of prosecution. Local residents could be invited to report such dumping when they see it occurring. Promotion of home and community composting and weed solarisation methodologies should be included in publicity.

Recommendation 16 – Advocacy and Action: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to implement a campaign to minimise vegetation dumping, and should consider co-funding and or championing this campaign.

Watercare Services

Auckland Council Regional Parks Department manages all of the water catchment areas of the Ranges, and this management is subject to caveats and standards agreed with Watercare Services (WS) to ensure water quality standards are not compromised. The Ranges water catchment area is generally in good condition, with a small number of significant weed infestations, mostly associated with buildings, old building sites, depots, roads, tracks and the dams. WS had previously maintained a policy of pre-empting any risk of herbicide contamination of water supply, by use of a conservative procedures for herbicide use within water catchments and, in some cases, had opposed use of herbicides altogether including drill and fill or stump treatment. This conservative approach was aimed at managing the human health risk to the potable water supply from spray chemicals. This policy made weed control difficult, and, in some places impossible to achieve. Over time this approach could lead to the collapse of the forest canopy, blockage of waterways and lower catchment retention capacity, as shorter vegetation has much lower water retention ability than intact forest. However, recent policy changes at WS have led to a more cooperative relationship with Auckland Council Parks and Biosecurity that is focused on overall environmental health rather than looking exclusively at concerns regarding water contamination. It is hoped that this cooperation Group will lead to implementation of safe and effective weed management programmes in the land administered by WS.

There are a number of carnivorous plant species present at several WS sites (depot, dam, wetlands). Several of these species are pest plants (*Drosera capensis, Utricularia* spp.*)* and others are weedy to a limited degree. These species pose significant ecological threats, at several sites (e.g. WS Christian Road wetland). These plants should be removed, and WS should be requested to co-fund this programme.

There are a small number of infestations associated with old house and building sites within the catchment, where buildings do not now exist but pest plants remain. These infestations need to be eradicated.

There are a number of pest willow infestations in dams that need to be removed. For example, in 2003 there were very few willows in the Lower Nihotipu Dam but in 2015 there is now a sizeable infestation of large trees in the water and at the water's edge. Willows block waterways, affect water quality and infrastructure, and destroy native plant habitats. Drilling and filling would be a simple, safe, effective and cheap way to kill these willows, with no risk of water supply contamination.

There are a small number of WS access roads and tracks associated with infrastructure, which contain a few pest plant species. These also need to be treated.

Intact forest holds more water than weedy forest because it is taller, denser and wetter, and it releases water more slowly. It is an excellent buffer against temporal water fluctuations. Maintaining forest health should therefore be a long term goal of water managers. WS should invest in pest plant control to protect the integrity of the catchment. The WRLB should advocate to Auckland Council that it prepares a business case to show the economic and strategic benefits of pest plant control in water catchment areas in the Waitākere Ranges, with a view to WS contributing to pest plant eradication on this land. It is suggested that the WS investment should match that of Auckland Council (currently approximately $250,000 pa), so that both parties have an equal stake in the outcomes and operational safeguards. This initial investment would quickly fall to a much lower maintenance level.

Recommendation 17 – Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests that Auckland Council implements pest plant control programmes in Watercare catchments, according to its Best Practice guidelines. Such programmes particularly need to focus on ex-house sites, tracks, roads, infrastructure sites and willows in dams and streams.

Recommendation 18 – Advocacy to Watercare Services: It is recommended that Waitākere Ranges Local Board requests that Watercare Services funds the removal of all exotic carnivorous plants from land it administers.

Recommendation 19 – Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to prepare a business case to demonstrate to Watercare Services the value of strategic investment in weed control in the Waitākere catchment to ensure protection of catchment integrity and water quality.

5. Control most important weeds at key locations

There are many places in the WRHA that are not pristine, but are worthy of intensive, publicly funded weed control because they have very high (often unique) values that are threatened by weed invasion and dominance. When weed vectors (above) are being controlled, it is appropriate that these areas be prioritised for weed management programmes. The most important areas in the WRHA that should be targeted for weed programmes have been defined in the Regional Parks Management Plan[7]. The sites in this Plan that are in the WRHA are listed below, with relevant comment as per the Plan. The list of sites will be refined when the assessment of priority ecological areas and species has been completed by the Biodiversity Team.

Top priority sites

Whatipu Scientific Reserve – Of highest priority for pest plant management, due to the nationally ranked ecological values and potential impacts of weeds on dune systems, wetlands and coastal habitats. Pampas, alligator weed, gorse, sundew species, Xmas lily, boxthorn, water paspalum and kikuyu should all be targeted for eradication or permanent suppression.

Mt Donald McLean Lookout – Hand weeding regularly required around the threatened *Hebe bishopiana.* Place signs on roadside to prevent weed spraying in this area.

Pararaha Valley – All significant pest plant spp. need to be controlled at this biodiversity hot spot.

Anawhata - Including its coast, also clean up weeds around Keddle House, especially the *Cotyledon orbiculata* infestation.

Mercer Bay Loop – Control weeds to protect endangered *Myosotis petiolata* var *pansa.*

High Priority sites

Lake Wainamu – Range of very high values (recreational, scenic, ecological, economic). Terrestrial and aquatic weeds being managed. Sand dune must be kept weed free. Stream and lake edges require more work, including private land. Recommend riparian fencing and planting on lake edges to minimise spread of gorse.

[7] Auckland Regional Parks Management Plan 2010

Te Henga wetland – This has nationally significant ecological values and serious weed issues. The willow population needs to be managed for public safety and infrastructure protection reasons, as well as ecological reasons.

Karekare – Protect stream, coastline, bush edges. Nationally significant geological sites. Has significant weed control investment. Gateway to Pararaha and Whatipu. Would benefit from local weed-free property initiative in conjunction with Council programme.

Fairy Falls – High visitor traffic issue in near pristine area, a range of weed vectors to manage.

Huia Valley – Has very high infestations of climbing asparagus and wild ginger in particular. These need to be removed to minimise threat to near pristine forest above the valley. Would benefit from volunteer weed control efforts in conjunction with Council programme.

Hillary Trail – Needs extra resources for weed control, due to extra traffic.

Kakamatua – Estuary and wetland protection needed.

Piha Valley (Wai o Kahu) – The whole Piha area is very heavily infested with climbing asparagus and other pest plants, all surrounded by habitat in good condition. The risks of weed spread into Anawhata and the central Ranges are very high, therefore Piha should be a high-priority area for weed control, especially climbing asparagus but also Cape ivy and agapanthus. A local community programme should also be created to supplement the Council programme.

Cascades Kauri – Has very high ecological, scenic and tourism values. Selaginella is being transported along tracks by human traffic and needs to be managed.

Medium priority sites

Lion Rock – Replacement of kikuyu by planting.

Big Muddy Creek – Very weedy, likely to be reinfested unless local landowners implement weed control on private land. Should be a high priority for formation of a volunteer weed control group.

Arataki – The centre of visitor management, the area is always “on show”, has low weed indices but high vectoring risk.

Piha/ North Piha – Control spread of gazania, gradually replace with native spp.

Cornwallis – Has a wide range of weeds. Pine removal is a low priority, but pines constitute a weed source, fire risk and scenic eyesore. The over-mature pines are a safety issue.

Pae o te Rangi – Woolly nightshade control is a priority.

Lower Priority sites

Huia Lookout – Range of weeds.

Little Huia – Range of weeds.

Karamatura – Many weedy sites.

Bethel's Beach – Includes the beach and private land outside of Te Henga wetland and Lake Wainamu.

Eastern Foothills (Laingholm, Titirangi, Waiatarua, Oratia, Opanuku, etc.) – very wide range of weed species and infestations. Very significant weed vector risk. Typically not high priority for programme funding entirely by Council. Obvious priority for community group action, to remove weeds from private and public land in conjunction with Auckland Transport, Council, WRLB and external funding agencies. These areas are addressed in Section 9.

6. Roll back significant weed infestations

There is a host of pest plant infestations throughout the WRHA. Most of these infestations, and most of the key species, have not been mapped beyond a few localised areas. However the most high-threat species (that are not already being managed for eradication) have been identified[8]. These species, in approximately descending order of threat, are:

- climbing asparagus
- moth plant
- pampas
- wild ginger
- tradescantia
- Japanese honeysuckle
- jasmine
- agapanthus
- boneseed
- Cape ivy
- gazania
- lupin
- plectranthus
- blue morning glory.

[8] Auckland Council pest plant and animal workshop, 6 October 2011; which included scientific assessments from databases and input from Biosecurity and Regional Parks staff and botanists.

Of all the weeds in the WRHA, climbing asparagus has become the most intractable and difficult to control. This is because it is difficult to detect when small, impossible to control absolutely selectively with herbicides, very difficult to dig out, and is spread over short-medium distances by birds. It inhabits a range of habitat types, forms monocultures on the forest floor, dominates sub-canopy niches and is shade-tolerant. Clearance by hand usually leaves tubers in the ground which quickly re-sprout.

It would also be prudent to consider the following species as significant pests (in approximately descending order of threat):

- selaginella
- grey willow
- crack willow
- English ivy
- Chinese privet
- tree privet
- phoenix palm
- giant reed
- Mexican daisy
- woolly nightshade
- monkey apple
- iceplant
- pitted crassula
- aristea
- cotoneaster
- tuber ladder fern
- African pig's ear
- smilax (note subsequent advent of biocontrol programme, see below).

These pest plants are all common and ubiquitous in various parts of the WRHA. There will never be enough resources to treat all of these weeds over all known sites, or even most of these weeds over most high value sites. It is therefore necessary to strategise where effort is to be expended. Auckland Council's Ecoweeds budget is the primary source of funds for the necessary programmes on the Regional Park and it is important that resources be allocated to maintain and increase the investment in this area. The Ecoweeds programme establishes priorities and work programmes annually for the most important weeds, using Council's Best Practice methodologies to provide best return on investment. The programme has been successful in clearing weeds from key areas however the budget has not been increased for many years and is clearly

inadequate to ensure significant improvement in weed management across the Waitākere Ranges.

Recommendation 20: Advocacy via the Long-term Plan process: It is recommended that the Waitākere Ranges Local Board submits to Auckland Council to ensure that the Council's Ecoweeds budget is increased by at least 20% in the Long-term Plan to prevent further environmental damage to the Regional Park.

7. Make weeds less competitive

Weedy species have certain characteristics that confer advantages to them over those of competing species. This usually includes a lack of predators and pathogens (of foliage, seed, roots, etc.) or a lack of competition from native plants (e.g. in waterbodies, on dunes). The former can be addressed by implementation of biological control programmes (see below). The latter cannot readily be addressed, apart from some limited planting regimes and pest animal control (see below), but the risks to these habitats can be understood and the habitats can be prioritised for weed management.

Biological control

Biological control (biocontrol) offers sustainable, selective, free (once-established) control of otherwise intractable weed species. When biocontrol is most effective the weed species essentially changes from being a major or insurmountable problem to a minor nuisance or insignificant occurrence. For example, mistflower was once one of the worst pest plants in the WRHA due to its extreme shade-tolerance, long distance windblown distribution and ability to form a dense monoculture on the forest floor. In some areas it was the only exotic plant species present. The only previous control method was to spray with a residual herbicide that causes a lot of collateral damage. It was perhaps the single greatest pest plant threat to kauri forest. After the successful use of biocontrol, mistflower is now a minor weed that does not warrant any programmes for its control.

However some biocontrol agents can fail to reach sufficient densities to impact significantly on the host species. Auckland Council is leading New Zealand in funding, assessing and monitoring research programmes for pest plants. Many of the most important weeds in the WRHA have been assessed as candidates for biocontrol, and several current programmes involve these species. Some current programmes look very promising, and it is likely that biocontrol will, in the next 10-20 years, bring significant control levels for these weeds. For this

reason, it is recommended that no additional resources (i.e. above current levels) be allocated to control of the following species.

Agents released:

- smilax (bridal creeper) – existing agent achieving excellent control levels
- ragwort – three existing agents achieving good control
- gorse – many agents released, 20-30 years required for them to reach critical mass and achieve significant control levels
- tradescantia – three agents recently released, new pathogen release imminent
- woolly nightshade – new agent showing promise in shaded habitats
- buddleia – new agent showing great promise
- boneseed – agent struggling to establish due to predation, more time required before likely success can be assessed, use of other agents likely
- Japanese honeysuckle – agent has recently been released at two New Zealand sites.

Agent release likely within one to five years:

- moth plant
- Chinese privet
- wild ginger
- brush wattle
- Sydney golden wattle
- Lantana

Other serious weeds in the WRHA are being targeted for biocontrol research, with no agents identified to date. These include selaginella and willows. Searches for likely biocontrol agents for climbing asparagus (*Asparagus scandens*) were undertaken in South Africa in 1999 and 2007. No agents were identified. Climbing asparagus is still on the priority list for biocontrol, however it is unlikely that any agents will be found and released in New Zealand in the short-medium term. For this reason it is recommended that, given the high threats posed by this plant, additional resources be found to expand current control programmes for climbing asparagus.

The status of biocontrol programmes for the pampas species are very similar to that for climbing asparagus. The taxonomic complexity of the several pampas species means that it is unlikely that entirely host-specific biocontrol agents will be found, at least in the short-medium term. Current management programmes

for pampas will need to continue for at least the next 10-15 years and perhaps indefinitely.

Biocontrol programmes are unspectacular and successes are often quickly forgotten as the targeted weed disappears from sight and complaint. The benefits to cost of biocontrol are well established and it is vital that the programmes continue because often they offer the only long term answer to intractable weed problems.

Recommendation 21 Advocacy via the Long-term Plan process: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to maintain its current level of commitment to national biological control research programmes

Pest animal control

Other means to make weeds less competitive include removing or controlling other factors that weaken habitat health and give weeds more light and room. This means keeping possum indices low, as possums damage the canopy and allow more light into the forest floor, which favours weedy exotics over native species. Conversely, killing possums keeps the forest more resilient to weed invasion. Rats consume native plant propagules at a disproportionate rate to exotics. Predators remove native birds that are the primary distributors for many key native plant species. It is vital in the battle against weeds to maintain pest animal indices as low as possible.

Volunteer groups do valuable and cost-effective work in controlling pest animals. The Ark in the Park group has been successful in reducing all significant pest indices and this means that as the forest health improves, weeds are less competitive and native plant vectors (e.g. kereru) ensure ongoing forest recovery and maintenance. It is vital that these groups continue to be assisted as much as possible.

New pest animal control methodologies are now being made available that will enable better pest control, at lower cost than ever before. It is important that AC takes advantage of these new developments, to bring down possum, rodent and mustelid indices over all natural areas of the WRHA. In addition to the direct benefits of pest animal control, this will assist greatly with preventing weed ingress.

Recommendation 22 Advocacy via the Long-term Plan process and Regional Pest Management Strategy review process: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to maintain possum indices in natural areas of the Waitākere Ranges Heritage Area at two per cent Residual Trap Catch or below in perpetuity.

Recommendation 23 Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to deploy new pest animal technologies in the Waitākere Ranges Heritage Area as soon as they become available.

Management of disturbance, fire, water, nutrients, light, etc.

Native plants germinate and grow best in a normal successional fashion, which may occasionally result from disturbance (e.g. fire, tree fall). Many weeds are early colonisers of disturbed sites, and their presence typically sets off a whole new successional process that usually graduates through groundcovers to shrubs and vines, which reduce habitat height, and lead often to kikuyu as the terminal cover. Many primary coloniser species (e.g. gorse, pampas) are fire-prone and/or encourage fires and/or rely on fire for propagation. It is therefore important to minimise habitat disturbance. Planning controls on disturbance and mitigation measures need to be rigorously administered for land clearance, plantation forestry, roading and other activities that cause land disturbance.

Fire management is an area that is frequently under-funded and under-prepared. Fire management is not prominent politically until a major fire occurs, and usually only for a short while. It is important that fire managers' requests for organisational and infrastructural improvement be heeded.

Recommendation 24 Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board seeks information from Auckland Council's Rural Fire and Regional Parks team that fire prevention and response provisions are adequate in the Waitākere Ranges Heritage Area.

Weed control causes disturbance because it removes weeds. If not done selectively, weed control can cause significant disturbance which will lead to replacement by primary coloniser weeds e.g. pampas, gorse. This can be clearly seen on many roadsides, where current methods of control (e.g. bulldozing, spraying indiscriminately with glyphosate) have led to more gorse, pampas, woolly nightshade, agapanthus and tradescantia. The Auckland Council Best Practice guidelines for weed management (which can be found on Council's website) require that the Method Of Least Disturbance (MOLD) is used in all natural areas and roadsides under Auckland Council control, to protect desirable vegetation, minimise or prevent weed invasion, and ensure succession to a weed free natural habitat as quickly as possible. MOLD often means higher initial treatment costs but always costs less long-term as need for follow up treatments drops rapidly, compared with non-selective methods that will require permanent ongoing treatments.

It is very important that all weed control in the WRHA be undertaken using MOLD principles and techniques, including on all Council-owned land.

Recommendation 25 Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to ensure that Best Practice control methods are used on all council-owned land, including Method Of Least Disturbance principles.

Where deliberate disturbance is undertaken (e.g. removal of exotic pines), or where fire has destroyed habitat, land managers need to ensure that restoration plans are created and implemented to prevent rapid colonisation by weedy exotic species. This particularly needs to occur in the Regional Park.

Recommendation 26 Advocacy to Auckland Council Regional Parks: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to ensure that restoration plan templates have been created and that restoration plans are put in place after all significant habitat disturbance instances.

Pest plant infestations can arise where normal water flows have been disrupted, e.g. channelling of water off roads into native habitats. This causes significant increases in flows in some areas and lower flows in other areas. Both of these can lead to weed spread and diminish habitat health. For example, wetter areas are likely to support giant reed, glyceria etc. and areas becoming drier are more likely to support agapanthus, boneseed, aristea, hakea, etc. All drainage design in the WRHA needs to take these factors into account, and planning controls need to enshrine catchment protection.

Recommendation 27 Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to ensure that planning controls protect catchment values at all scales in natural areas of the Waitākere Ranges Heritage Area.

Nutrient run off frequently causes water quality problems in streams and rivers. Most of the worst freshwater aquatic weeds thrive in high nutrient situations and some require it. It is very fortunate that all waterways in the WRHA have their headwaters in pristine or near pristine habitats, and water quality in these streams is generally very high. However, some of the streams become nutrient enhanced as they pass through farmland and habitated areas. The Waitākere River at Te Henga is at risk of nutrient pollution and it is important that nutrient levels are regularly monitored.

Recommendation 28 Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to ensure that regular water quality monitoring is undertaken in the Waitākere River and other streams in the Waitākere Ranges Heritage Area, and that steps be taken

to ensure reinstatement of high quality water values where these have been compromised.

8. Contain current infestations of most weeds

In addition to the range of measures outlined above, it is necessary to contain significant existing infestations of key pest plant species, to minimise risk of vectoring into new areas via wind and birds. The most important pest plant species listed above should be the first priorities for action, at sites closest to the Regional Park and coastline.

A number of local parks in the WRHA have significant pest plant infestations. The focus for management of local parks has tended to be for recreational rather than ecological values. It would be advantageous for weed management on local parks to be prioritised and implemented in the same fashion as for the Waitākere Ranges Regional Park, and Council should ensure that this occurs. In this way, current pest control programmes (and other ecological protection programmes) on the Regional Park can be extended seamlessly to include local parks.

The Piha Domain is a special case. It is essentially a recreational reserve but contains a very large and highly visible infestation of climbing asparagus. This serves as a primary source of contagion for the Regional Park. It is important that this infestation be eradicated.

Recommendation 29 Advocacy to Auckland Council's Local and Sports Parks: It is recommended that the Waitākere Ranges Local Board requests Auckland Council's Local and Sports Parks to adopt the site and species prioritisation model and Best Practice guidelines for weed control that are currently used on Regional Parks.

Recommendation 30 Advocacy to Auckland Council Local and Sports Parks and Biosecurity: It is recommended that the Waitākere Ranges Local Board requests Auckland Council's Local and Sports Parks ensure that the Piha Domain is maintained free of climbing asparagus, and Biosecurity commits to maintaining a programme to control this weed over the rest of Piha.

9. Clean up weedy areas, replant and restore

There are many very weedy sites in the WRHA in private ownership that do not in themselves contain high ecological values. However they almost all have high scenic and recreational value, and considerable asset value. These sites are also weed nurseries and are often weed fronts adjoining areas of high ecological value, especially those areas adjacent to the Waitākere Ranges

Regional Park. It is these areas where community effort should be best directed, and where the WRLB should direct resources to assist private landowners to manage ecological weeds.

The best means, and in all likelihood the only practical means, to deal with the considerable weed issues in these areas is by cooperative community action, integrated with Local Board and Council resources and effort. This is described in the section on Community Effort (below).

The Ecoweeds prioritisation process, Best Practice methodologies and costings used on Regional Parks and SWI programmes should be used when managing weeds on private land, whether by individuals or community groups. The process should also be used to advise the WRLB in how it allocates resources in relevant settlements, for species and area selection, methodologies to be used and costing. The WRLB and Council staff should be guided by the priorities established in the relevant Local Area Plans (LAPs) as these priorities have been developed in consultation with local residents. The Biosecurity team should continue to advise the Board, groups and individuals on Best Practice weed control methods.

The areas of highest priority in this category, and high priority for Board and Council assistance, are:

i) Karekare – This settlement has few weeds and adjoins very high ecological value sites. In addition to Council's programmes, a community weed group should be formed to eradicate or permanently suppress most ecological weeds. This could be achieved at low cost.

ii) Piha – The very significant weed infestations are contained essentially within the Waitākere Ranges Regional Park. Council is very unlikely in the next 20 years or so to have sufficient resources to deal with all of the weed issues at Piha. A community weed control group needs to be formed to complement Council's efforts.

iii) Huia – Like Piha, this settlement is surrounded by high ecological value ecosystems. Although the Huia community has done a lot of weed control work, there is a pressing need for a lot more to be done, e.g. on climbing asparagus. A more concerted effort is required, assisted by Council and the Board.

iv) Waiatarua – The very significant areas of weed infestation, range of weed species and elevation, make Waiatarua a primary weed nursery and distribution area. There is a pressing need for more community-led weed programmes, augmented by a Council programme.

v) Big Muddy Creek / Parau – Council has done a lot of week control in the parkland between the sea and private properties. However reinvasion from private land needs to be halted and a programme of weed control on private land implemented, otherwise the continuing need for weed control

will undermine the ecosystem and eventually become unsustainable to maintain.

vi) Cornwallis – Most of the weed issues (e.g. pines and other weeds on the coastline) need to be managed by Council, however a relatively modest collaborative effort from local landowners would result in much ecological and scenic improvement.

vii) Opanuku – Because it is surrounded on most sides by regional parkland, this settlement poses invasion threats to high value ecosystems. However its low population means that it could be managed reasonably easily with a joint community/ Council/ Board programme.

viii) Oratia – This area has significant weed issues, however the large areas of relatively clean farmland act as a buffer to many weeds. It would be relatively easy for a community weed programme to manage these weeds and remove the threats to the regional parkland.

ix) Woodlands Park – This settlement has lower weed indices than most others, and community management of weeds here could be relatively easily achieved.

x) Laingholm – This settlement is characterised by mostly high ecological values and low weed indices in its centre and coastline, with a very significant weedy band along its northern border and roadsides. A community-led approach is needed to deal with this area.

xi) Titirangi – Although this large settlement has the largest areas of weed infestation, greatest number of weed species, highest potential weed control costs and highest population, there exists in Titirangi many pockets of high value habitat and very high scenic values which are all threatened by weed invasion. The community has also demonstrated the ability to work together on many social, environmental and related issues. A community-led initiative would likely have to be initially focussed on specific areas, expanding as these areas are cleaned up.

In addition to the areas and settlements mentioned above, there is a very small number of very weedy sites where weeds pose an intolerable threat to surrounding values, where these areas would benefit from a major intervention by mechanical clearing of the very heavy weed infestations. This type of intervention creates areas of bare land, which very quickly become weed nurseries. In these cases, full site restoration programmes need to be implemented. These are very costly, so should only be implemented according to regional, area or local priorities that have funding surety over at least 10 years, and that have appropriate organisational support. A range of funding and operational mechanisms needs to be explored for these programmes, including formation of trusts to manage the sites. In this regard, the Project Twin Streams (PTS)

project can be used as a teaching experience. PTS has created some fine habitat, dealt with flood risks, and raised water quality and scenic values, however the initial and ongoing costs have been very high. It is not suggested that PTS was not a good investment, but its costs need to be considered as a good pointer to what can be expected for similar restoration projects.

6. Community and Volunteer effort, Coordination, Information Exchange, Publicity

As outlined above, there is very little that can be achieved on private land without coordinated community effort. Weed problems are simply too numerous, widespread and costly, and weed reinvasion too likely from neighbouring properties, for most landowners to successfully manage individually. Community partnerships are absolutely necessary if any worthwhile progress is to be made against weeds. The Waitākere Ranges Local Board should channel most or all of its weed management budget on programmes that are community-led and involve private land. The Board should also seek assistance form Council and other funding sources for these programmes.

Given the current focus on reducing maintenance costs, Auckland Council is lately encouraging a greater involvement of local community groups in environmental action, and is focussing on how it can assist this action. In this regard, Council policy mirrors recent Department of Conservation policy development. Council would therefore be more likely to be receptive to approaches for community assistance if it could be convinced that this assistance would save Council money in the short-to-medium term. This would not be difficult to demonstrate for many programmes.

There is a lot of voluntary effort already occurring, and these serve as examples of what can be achieved. Examples are listed below.

Local campaigns against specific weeds, e.g. Ginger Out Week, have worked well in the past to educate communities regarding weed threats and to achieve significant progress in control of the species. They also have some limited success in obtaining ongoing land occupier action against these and other weeds. The shortcomings include lack of focus on other weeds (the nominated weed is sometimes replaced by other adventive species), lack of focus on the causes of weed ingress and impacts, lack of long term commitment, and an increasing sense of hopelessness when successive single species campaigns are implemented (i.e. there will always be too many weeds). Nevertheless, these campaigns have greatly raised the profile of ecological weeds generally and led to other more holistic programmes.

Landcare and Weedbuster group formation and action on a suite of weeds have been very successful in some parts of the Auckland region and throughout New Zealand. Places with a strong local community focus are particularly adept at this type of approach, e.g. Waiheke Island. The group approach works very well because ownership of issues sits squarely with the land occupiers, shared problems become easier to overcome, groups can tap into external resources more readily than individuals, and peer pressure works better than officialdom in stimulating locals to action. There are a few groups in the WRHA that are doing excellent work on pest animals (e.g. Ark in the Park, Operation Possum Blitz, Bethel's Beachcare, Friends

of Whatipu, Friends of Arataki, Lone Kauri, Forest Ridge, La Trobe). There are also groups engaged in native planting and weed control (for example, through the Sustainable Neighbourhoods) but there is not the same level of community group involvement in weed control. Perhaps this is due to a sense of the problem being overwhelming or communities not knowing where to start.

Existing groups with a pest animal focus could also be encouraged to widen their ambit to include pest plants, to achieve more integrated solutions for their land, and capitalising on successful pest animal programmes. There is a range of external funding sources that can be utilised to support these groups, in addition to the budgets provided by Auckland Council. The growth in community pest initiatives regionally, while a welcome development, has required investment from Auckland Council through their Community Pest Control budget and the programme requires additional funds. Community assistance programmes offer great value for investment and should be encouraged in the Ranges, e.g. possum control is $25/ha - $55/ha if undertaken by contractor but $5/ha - $9/ha if materials are supplied to the landowner to use. The costs for weed control have not similarly been calculated but would be likely to be even more differentiated as weed control is almost always more labour-intensive than pest animal control. The Waitākere Ranges Local Board currently provides $90,000 a year to support the Sustainable Neighbourhoods Programme, which supports community groups to engage in weed control and other activities. Since funding for this programme from Auckland Council is currently forecast to end in 2014/2015 in the draft Long-term Plan, the Board will also need to review its investment in this programme. AC also needs to improve the quality of its online and call centre advisory service for weed management, to match and update that provided by the former Auckland Regional Council. When ratepayers call with enquiries, the call centre staff should direct all complex matters to Biosecurity staff.

Adoption of local “Pest Free” programmes can be locally-driven, with advice, resources and publicity supplied by Council, WRLB and other public bodies. The objectives would be firstly to get all private land in a given area (e.g. a catchment or village) registered and working on clearing a list of nominated pest plants, and secondly, attaining the recognised standard. Incentives can be provided by way of pest free certification, celebrations and awards, advice, subsidised resources and the like. This approach is focused, uses peer pressure well, makes communities more connected, and increases individual property and community asset values. Such a programme would require employment of a local weed identification and advisory expert, who would assess properties initially, provide Best Practice advice, and reinspect properties prior to awarding of Weed Free certificates. Auckland Council Biosecurity should assist with publicity and advice. Programmes could be coordinated by an umbrella conservation organisation such as the Waitākere Ranges Conservation Network (WRCN). This idea has much merit and a business case should be prepared for WRLB and Council joint funding.

Volunteer programmes can be extended to programmes to manage weeds on local parks[9] and on some parts of the regional parks network, typically perimeter areas. Auckland Council urgently needs to investigate how it can give operational impetus to this policy, by assisting "friends of", Landcare, Weedbuster and other community groups to take ownership of weed issues on their local parks, irrespective of whether parks' are categorised by Council as local or regional.

The Department of Conservation (DOC) owns some land in the WRHA and has recently adopted a policy of assisting local groups and individuals to achieve conservation outcomes on its lands.

One issue that has recently become a significant impediment to volunteer participation on Council land is the reticence of Council to permit volunteers to undertake weed control involving pesticides (e.g. at Ark in the Park). This is due to concerns over spillages, exposure and other safety matters. These concerns could probably be overcome by development of a strict protocol for volunteer involvement, limiting this to drill and fill or stump treatment and gel application (i.e. no spraying), plus provision of training and certification to an approved external standard. If the Growsafe Basic standard is deemed inappropriate then Council could sponsor development of a standard that is acceptable to its internal risk management principles.

Almost all community weed control programme assistance from Council comes from the Biosecurity Community Pest Control budget (currently $130,000 for the Auckland region), which also covers pest animal control. Given the excellent return on investment (outlined above) this budget needs to be modestly increased each year to assist the community to take ownership of its weed problems. Council also needs to better assess how it can meld contractor and volunteer efforts in managing community weed control programmes. This would likely involve reworded contract specifications to include a degree of volunteer supervision and advice.

Recommendation 31 Advocacy via the Long-term Plan process: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to increase the Community Pest Control budget by $30,000 pa to ensure that assistance can be provided to community care groups to undertake weed control in the Waitākere Ranges Heritage Area.

Recommendation 32 Action: It is recommended that the Waitākere Ranges Local Board investigates funding and administrative options for creation of weed free community programmes.

Recommendation 33 Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests the Auckland Council Regional Parks Department and Local and Sports Parks Department to develop resources to assist

[9] Auckland Council Long Term Plan 2015-2025, sec 5.5, Parks, Community and Lifestyle.

the formation of local support groups for Regional and Local Parks in the Waitākere Ranges Heritage Area.

The WRLB has identified weeds as a strategic issue and is keen to be involved in information exchange, coordination of effort and publicity. It has a small budget earmarked for assistance to specific strategic projects, especially those that bring added value as seeding or co-funded initiatives.

The emergence of kauri dieback disease in the Waitākere Ranges, and consequent implementation of phytosanitary measures - which were initially not well accepted by many in the community - forced Council to examine individuals' motivations to comply with the measures and be involved in the wider programme. The need for community behaviour change was quickly identified, and campaigns were developed to encourage the required attitudinal and behaviour changes. The same study and measures need to be adopted for weeds. This should accompany any major community weed campaign.

There is no non-governmental coordinating body recognised or supported to act as the hub for information exchange. The Waitākere Ranges Conservation Network (WRCN) has recently been set up as such a body for a range of conservation outcomes. This body liaises with a very wide collection of groups (27 at last count) and has a strong focus on weed issues. It is suggested that WRCN would be an appropriate body to coordinate information exchange between council and community groups.

Other prominent groups in the WRHA include the Waitākere Ranges Protection Society, Forest & Bird, Friends of Regional Parks, Waitākere Weed Free Trust (notably its War On Weeds campaign which is also partially funded by WRLB), Friends of Arataki, Friends of Whatipu, several Residents and Ratepayers groups, Ecomatters Trust, Keep Waitākere Beautiful, and others. There are, at last count, 42 Sustainable Neighbourhoods groups in the WRHA and 33 Landcare/ Waicare/ Weedbuster groups as well as other school, scientific, recreational and religious groups with an environmental focus. All of these organisations and groups would benefit from a degree of coordination of information exchange and programme effort.

Recommendation 34 Action: It is recommended that the Waitākere Ranges Local Board investigates which body could best act as the hub for information exchange between Auckland Council and community groups regarding weed management in the Waitākere Ranges Heritage Area.

Recommendation 35 Action: It is recommended that the Waitākere Ranges Local Board investigates partnership relationships with local environmental and community groups to improve coordination and ensure efforts are targeted to areas where the greatest ecological gain can be made.

Recommendation 36 Action: It is recommended that the Waitākere Ranges Local Board investigates the provision of a paid coordinator to assist and support volunteer pest plant control efforts in the WRHA.

There is a wealth of disparate information covering problems, activities and other weed issues in the WRHA, much of which is generated by community groups. Auckland Council has a lot of information on weed and animal pest management, biodiversity values and threats, restoration principles, community environmental assistance programmes (e.g. Environmental Initiatives Fund, Sustainable Neighbourhoods) and related advisory material. However much of this information is not currently on the Council website so is not readily available to the community. It is important that this be rectified so information is readily accessible to all interested parties.

Recommendation 37 Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to improve its online weed management advisory resources so communities can easily access information on this topic.

Publicity

There are many paper and online publicity resources available to the communities in the WRHA. A degree of coordination would be desirable, to minimise overlaps or gaps and to ensure accuracy and consistency with policies, but which also allows for local issues, local solutions and interested local people to be highlighted. Although online resources are needed, their existence may never be discovered without more personal and tactile communication methods e.g. flyers and pamphlets. The creation, distribution and updating of advisory pamphlets is quite properly the responsibility of Auckland Council but there remains the need for a flyer template that can be adapted for each local community and local issue. This template could be funded by the WRLB, and possibly also production of individual print runs. Flyers can raise immediate issues, give basic advice, call for involvement, refer to more detailed advisory material, and stress achievements and progress to date.

A separate website could be considered but, given the existence of other sites with similar functions, this would only be advisable if a talented and hardworking individual or small team volunteered to undertake this ongoing task. It would be preferable if AC could create an interactive section of its own website or coordinated input into the Nature Space portal.

Recommendation 38 Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests Auckland Council's environmental services unit to coordinate local group effort and progress on the Nature Space website or other preferred website that allows for self-reporting.

7. Consolidated list of recommendations – with indicative timelines for implementation

Part A: Actions for Waitākere Ranges Local Board

Immediate i.e. within 3 months

Recommendation 34 Action: It is recommended that the Waitākere Ranges Local Board investigates which body could best act as the hub for information exchange between Auckland Council and community groups regarding weed management in the Waitākere Ranges Heritage Area.

Recommendation 36 Action: It is recommended that the Waitākere Ranges Local Board investigates the provision of a paid coordinator to assist and support volunteer pest plant control efforts in the WRHA.

Within 1 year

Recommendation 6 – Action: It is recommended that the Waitākere Ranges Local Board makes a priority of allocating resources to pest plant control on private land adjoining the Waitākere Ranges Regional Park.

Recommendation 32 Action: It is recommended that the Waitākere Ranges Local Board investigates funding and administrative options for creation of weed free community programmes.

Recommendation 35 Action: It is recommended that the Waitākere Ranges Local Board investigates partnership relationships with local environmental and community groups to improve coordination and ensure efforts are targeted to areas where the greatest ecological gain can be made.

Within 3 years

Recommendation 16 – Advocacy and Action: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to implement a campaign to minimise vegetation dumping, and should consider co-funding and or championing this campaign.

Part B: Advocacy by Waitākere Ranges Local Board

Immediate i.e. within 3 months

Recommendation 1 – Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to continue to materially

support the Auckland Weedspotter Network and Auckland Museum Herbarium, and to encourage people and groups in the Waitākere Ranges Heritage Area to join the Network.

Recommendation 3 – Advocacy to Auckland Council: It is recommended that Auckland Council ensures that all Significant Ecological Areas within the WRHA be monitored for weed ingress, ideally every two years but at least every five years.

Recommendation 4 – Advocacy to Auckland Council: It is recommended that Auckland Council investigates the creation of partnerships with external groups with botanical expertise, or the use of suitably trained summer students, to ensure that all Significant Ecological Areas in the Waitākere Ranges Heritage Area are monitored for weed status.

Recommendation 9 – Advocacy to Auckland Council: It is recommended that Auckland Council submits to the National Biocontrol Collective that Mexican daisy *Erigeron karvinskianus* be included as a national priority for biological control research.

Recommendation 10 – Advocacy to Auckland Transport and input into the Regional Pest Management Strategy review process: It is recommended that the Waitākere Ranges Local Board continue advocacy to Auckland Transport regarding weed management in the road corridor of the Waitākere Ranges Heritage Area.

Recommendation 12 – Advocacy to Auckland Council Regional Parks: It is recommended that the Waitākere Ranges Local Board advocates to Auckland Council that all tracks in the Waitākere Ranges Regional Park be temporarily closed when they are in a muddy condition, to prevent spread of weeds, kauri dieback and other pathogens.

Recommendation 17 – Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests that Auckland Council implements pest plant control programmes in Watercare catchments, according to its Best Practice guidelines. Such programmes particularly need to focus on ex-house sites, tracks, roads, infrastructure sites and willows in dams and streams.

Recommendation 18 – Advocacy to Watercare Services: It is recommended that Waitākere Ranges Local Board requests that Watercare Services funds the removal of all exotic carnivorous plants from land it administers.

Recommendation 19 – Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to prepare a business case to demonstrate to Watercare Services the value of strategic investment in weed control in the Waitākere catchment to ensure protection of catchment integrity and water quality.

Recommendation 23 Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to deploy new pest

animal technologies in the Waitākere Ranges Heritage Area as soon as they become available.

Recommendation 24 Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board seeks information from Auckland Council's Rural Fire and Regional Parks team that fire prevention and response provisions are adequate in the Waitākere Ranges Heritage Area.

Recommendation 25 Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to ensure that Best Practice control methods are used on all council-owned land, including Method Of Least Disturbance principles.

Recommendation 26 Advocacy to Auckland Council Regional Parks: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to ensure that restoration plan templates have been created and that restoration plans are put in place after all significant habitat disturbance instances.

Recommendation 27 Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to ensure that planning controls protect catchment values at all scales in natural areas of the Waitākere Ranges Heritage Area.

Recommendation 28 Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to ensure that regular water quality monitoring is undertaken in the Waitākere River and other streams in the Waitākere Ranges Heritage Area, and that steps be taken to ensure reinstatement of high quality water values where these have been compromised.

Recommendation 29 Advocacy to Auckland Council's Local and Sports Parks: It is recommended that the Waitākere Ranges Local Board requests Auckland Council's Local and Sports Parks to adopt the site and species prioritisation model and Best Practice guidelines for weed control that are currently used on Regional Parks.

Recommendation 30 Advocacy to Auckland Council Local and Sports Parks and Biosecurity: It is recommended that the Waitākere Ranges Local Board requests Auckland Council's Local and Sports Parks ensure that the Piha Domain is maintained free of climbing asparagus, and Biosecurity commits to maintaining a programme to control this weed over the rest of Piha.

Recommendation 31 Advocacy via the Long-term Plan process: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to increase the Community Pest Control budget by $30,000 pa to ensure that assistance can be provided to community care groups to undertake weed control in the Waitākere Ranges Heritage Area.

Recommendation 33 Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests the Auckland Council Regional Parks Department and Local and Sports Parks Department to develop resources to assist the formation of local support groups for Regional and Local Parks in the Waitākere Ranges Heritage Area.

Recommendation 37 Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to improve its online weed management advisory resources so communities can easily access information on this topic.

Recommendation 38 Advocacy to Auckland Council: It is recommended that the Waitākere Ranges Local Board requests Auckland Council's environmental services unit to coordinate local group effort and progress on the Nature Space website or other preferred website that allows for self-reporting.

Within the Long Term Plan process timeframe

Recommendation 5 – Advocacy via the Long-term Plan process: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to increase the Biosecurity Strategic Weeds Initiative budget.

Recommendation 7 – Advocacy via Auckland Council's Long-term Plan process and input into the Regional Pest Management Strategy review process: It is recommended that Auckland Council Biosecurity formally commits to permanent suppression of pampas on the coastline from Whatipu to Muriwai, and also ensures the control of the pampas infestation on the northern end of the Awhitu Peninsula to prevent reinfestation of the WRHA.

Recommendation –13 Advocacy via the Long-term Plan process: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to ensure that:

- all tracks in the Regional Park be maintained to prevent weed and pathogen vectoring, and
- sufficient funding is provided to ensure all-weather condition track access to all major areas of the Park.

Recommendation 14 – Advocacy via the Long-term Plan process: It is recommended that the Waitākere Ranges Local Board seeks to secure funding for completion of the Te Henga aquatic weed programme.

Recommendation 20: Advocacy via the Long-term Plan process: It is recommended that the Waitākere Ranges Local Board submits to Auckland Council to ensure that the Council's Ecoweeds budget is increased by at least 20% in the Long-term Plan to prevent further environmental damage to the Regional Park.

Recommendation 21 Advocacy via the Long-term Plan process: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to maintain its current level of commitment to national biological control research programmes.

Recommendation 22 Advocacy via the Long-term Plan process and Regional Pest Management Strategy review process: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to maintain possum indices in natural areas of the Waitākere Ranges Heritage Area at two per cent Residual Trap Catch or below in perpetuity.

Within the timeframe of the Regional Pest Management Strategy review

Recommendation 2 – Advocacy and input into Regional Pest Management Strategy review process: It is recommended that the Waitākere Ranges Local Board and other interested parties submit to Auckland Council to consider the plant taxa included in Appendix C for categorisation as Total Control Plants in the Auckland Regional Pest Management Plan.

Recommendation 7 – Advocacy via Auckland Council's Long-term Plan process and input into the Regional Pest Management Strategy review process: It is recommended that Auckland Council Biosecurity formally commits to permanent suppression of pampas on the coastline from Whatipu to Muriwai, and also ensures the control of the pampas infestation on the northern end of the Awhitu Peninsula to prevent reinfestation of the WRHA.

Recommendation 8 – Advocacy via input into the Regional Pest Management Strategy review process: It is recommended that Auckland Council formally commit to permanent suppression of *Agapanthus praecox* from the WRHA coastline through the Regional Pest Management Plan.

Recommendation 9 – Advocacy to Auckland Council: It is recommended that Auckland Council submits to the National Biocontrol Collective that Mexican daisy *Erigeron karvinskianus* be included as a national priority for biological control research.

Recommendation 10 – Advocacy to Auckland Transport and input into the Regional Pest Management Strategy review process: It is recommended that the Waitākere Ranges Local Board continue advocacy to Auckland Transport regarding weed management in the road corridor of the Waitākere Ranges Heritage Area.

Recommendation 11 – Advocacy via input into the Regional Pest Management Strategy review process: It is recommended that the Waitākere Ranges Local Board, as part of the review of the Regional Pest Management Strategy submits to Auckland Council to amend Section 18 of the new RPMP to include the legal

responsibility for land occupiers to be bound by the same pest plant provisions that are imposed upon Auckland Transport for road reserves, to a minimum of 10 metres back from their common boundary.

Recommendation 15– Advocacy via the Regional Pest Management Strategy review process: It is recommended that the Waitākere Ranges Local Board supports the adoption of a nursery hygiene standard for all nurseries within the WRHA or supplying plants for planting in natural areas in the WRHA.

Recommendation 22 Advocacy via the Long-term Plan process and Regional Pest Management Strategy review process: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to maintain possum indices in natural areas of the Waitākere Ranges Heritage Area at two per cent Residual Trap Catch or below in perpetuity.

Within 2 years

Recommendation 16 – Advocacy and Action: It is recommended that the Waitākere Ranges Local Board requests Auckland Council to implement a campaign to minimise vegetation dumping, and should consider co-funding and or championing this campaign.

8. Glossary

Adventive: A plant taxon that has established, either in the wild or in modified habitats, without human assistance

Land occupier: The legal definition of the person or persons responsible, under the Biosecurity Act, for pest plants on the property they occupy. In most cases this is the **landowner** but an occupier can be a long term leasee or other occupier. The terms are often interchangeable in this document.

Pest plant: A plant species, subspecies, variety or other taxon that is declared to be a pest in the Auckland Regional Pest Management Plan

Regional Pest Management Strategy (RPMS) 2007-2014: The statutory plan developed under the Biosecurity Act 1993, by the Auckland Regional Council (now the Auckland Council), that declares which taxa are pests, the programmes for management of these pests and who funds the implementation of these programmes

Regional Pest Management Plan: The replacement for the RPMS 2007-14 (see above). The Biosecurity Law Reform Act 2012 made several changes to the process of creating statutory pest management documents, including their name. All current RPMSs are now called RPMPs.

Taxon: A name covering any distinct plant type, i.e. species, sub-species, cultivar, hybrid or unique genetic or morphological form of a plant

Taxa: Plural of taxon

Weed: A plant that is a nuisance or problem due to invasiveness, poisonous nature or other characteristics deemed to be contrary to values stated or implied.

Weed Management Working Group: A cross-sector working group of officials from all parts of Auckland Council and its constituent bodies that have responsibilities for pest plant and vegetation management. It includes staff from Biosecurity, Regional and Local Parks, Watercare Services, Auckland Transport, Volcanic Cones, Environmental Services, Solid Waste, Stormwater, Botanical Gardens and Cemeteries. (Refer Appendix B).

9. Appendices

APPENDIX A

Extract from the Regional Parks Management Plan 2010, re the Waitākere Ranges Heritage Area Act 2008

This Act creates a distinct statutory identity for the Waitākere Ranges Heritage Area. The purpose of the Act is two-fold: to recognise the national, regional and local significance of the Waitākere Ranges Heritage Area which includes the regional park; and to promote the protection and enhancement of its heritage features for present and future generations.

Section 7 of the Act outlines the heritage features to be protected, including:

- its terrestrial and aquatic ecosystems of prominent indigenous character that:
    - include large contiguous areas of primary and regenerating lowland and coastal rain forest, wetland and dune systems with intact ecological sequences,
    - have intrinsic value,
    - provide a diversity of habitats for indigenous flora and fauna,
    - collect, store and produce high quality water,
    - provide opportunities for ecological restoration,
    - are of cultural, scientific or educational interest,
    - have landscape qualities of regional and national significance,
    - have natural scenic beauty
- the different classes of natural landforms and landscapes within the area that contrast and connect with each other, and which collectively give the area its distinctive character
- the coastal areas, which:
    - have a natural and dynamic character, and
    - contribute to the area's vistas, and
    - differ significantly from each other.
- the quietness and darkness of the Waitākere Ranges and the coastal parts of the area
- the dramatic landform of the Ranges and foothills, which is the visual backdrop to metropolitan Auckland, forming its western skyline
- the opportunities that the area provides for wilderness experiences, recreation and relaxation in close proximity to metropolitan Auckland,
- the historical, traditional and cultural relationships of people, communities and tangata whenua with the area and their exercise of kaitiakitanga and stewardship
- the evidence of past human activities in the area, including those in relation to timber extraction, gum digging, flax milling, mineral extraction, quarrying, extensive farming, and water impoundment and supply
- the Waitākere Ranges Regional Park and its importance as an accessible public place with significant natural, historical, cultural and recreational resources
- the public water catchment and supply system, the operation and maintenance, and development of which serves the people of Auckland.

APPENDIX B – Description of Auckland Council Weed Management Working Group

The best practice weed management working group is a cross council weed management working party established in 2014, by the Chief Operating Officer, Dean Kimpton, to deliver the weed management project. The scope of this project includes weed management on all council owned and managed lands and excludes methodologies to control algae and fungi.

It aims to deliver on the actions prescribed in the Auckland Council Weed Management Policy which are (broadly) to:

- complete an operational review of existing weed practices;
- evaluate different options (change scenarios);
- develop an implementation plan.

The operational review is an internal council exercise and is currently underway. It will investigate and report on current practices across council – including existing methods, costs, benefits and risks. This stocktake will be used as a basis for the evaluation of future options which will be carried out in consultation with key stakeholders.

The operational review is currently being completed in collaboration with:

- Watercare Services
- Regional Parks
- Volcanic Cones
- Local & Sports Parks
- Auckland Transport
- Environmental Services
- Solid Waste
- Stormwater
- Botanical Gardens
- Cemeteries

Alternative approaches will be evaluated according to an agreed set of criteria including, but not limited to target species, value for money, community acceptance and efficacy. The evaluation will include only those options which can be implemented within the available funding as prescribed by the Long-term Plan.

Options that will be evaluated include:

- continued use of existing methodologies (status quo);
- use agrichemical only to control weeds (including basal application, drill and inject, motorised application, back-pack application, boom spray by helicopter);
- use only non-agrichemical methods to control weeds (including hand-pulling, cut-stump, hot water, bio-control);
- species-led methodologies;
- site-led methodologies.

The development of options and the implementation plan will be consistent with the Regional Pest Management Strategy (RPMS) which prescribes controls for 192 introduced pest plants categorised as Total Control Plants (eradication required), Containment Plants (landowner control in specified locations) or Surveillance Pest Plants (restrictions on sale and distribution). It will target investment across the region based on protection of native ecosystems and infrastructure assets.

The implementation plan will be guided by the action agreed in Auckland Council's Weed Management Policy and prescribe actions to:

- include best practice guidelines for weed management in all council contracts and ensure compliance with these through regular auditing and reporting;
- document costs, benefits and risks of weed management approaches and best practice methodology
- develop and maintain best practice guidelines for weed management and vegetation control
- assist local boards to set and deliver prescribed levels of service;
- include regional levels of services in CCOs statements of intent;
- identify, map and protect sites of high value from ecological and council infrastructure perspectives.

APPENDIX C

Plant taxa recorded from, or likely to be occurring in, the Waitākere Ranges Heritage Area that should be assessed for inclusion as Total Control Pest Plants in the Auckland Regional Pest Management Plan.

Phragmites karka

Equisetum spp.

Drosera spp (exotic spp only)

Kennedia rubicunda

Passiflora apetala

Macfadyena unguis-cati

Ochna serrulata

In addition, Auckland Council should consider adopting local or area eradication programmes for the following taxa (subject to CBA)

Pteris cretica

Actinidia deliciosa (wild populations only)

Alternanthera philoxeroides

Arbutus unedo

Cotyledon orbiculata

Fuchsia boliviana

Gazania linearis, Gazania rigens

Gunnera tinctoria

Myoporum insulare

Agapanthus praecox

Succulent spp. on coastline

Freshwater aquatic pest plants

APPENDIX D

Suggested amended timelines for completion of legal responsibilities of Auckland Transport for pest plant management on road reserves in the Auckland Region (originally established 27 October 2011)

The Regional Pest Management Strategy (RPMS) requires, in Section 4.2 (p17) and Section 18.1.1 (p160) that the owner/occupier of the road reserve create and implement management plans to control specified pest plants. The various memoranda between Auckland Council and Auckland Transport confirm that Auckland Transport has control and jurisdiction on the management of road reserves in the Auckland region (outside of the state highway network).

Note there is no requirement for Auckland Transport to manage pest animals in the road corridor.

It is recommended that all terrestrial pest plant species in the RPMP (except for Total Control Species) be included in Auckland Transport's roadside management plans, and that these plans cover all roads in the region-wide network. However it is acknowledged that many of these species pose minor problems in the road corridor and that Auckland Transport needs to prioritise its resources. It is also vital that the weed management programmes implemented by the former territorial councils be maintained, in order to prevent and/or minimise complaints, protect previous investment and pre-empt need for significant new work in the future. The previous councils responded to their roadside pest plant responsibilities reasonably well, however there are a number of roads currently subject to complaint that need to be treated immediately. These roads are listed below.

Please note: Biosecurity has an almost identical programme in place with NZ Transport Agency, and this covers all state highways in the Auckland region. NZTA is generally doing an excellent job of managing pest plants and restoring highway reserve land. In a few areas, clearance of pest plants on the highway reserve has revealed adjoining land that is still infested and likely to reinfest the cleared reserve. Where this has occurred, Biosecurity acts to have this adjoining land cleared. This rule will also apply to support Auckland Transport's programmes.

Treatment methods and management approaches in roadside management plans need to be as per the Biosecurity Best Practice methods listed on the Auckland Council website. This is to ensure that previous and inappropriate methods used in the past by some councils are not continued, as these have merely led to greater medium-to-long term weed problems. It is possible to manage almost all areas to the point where desirable vegetation is healthy and effectively suppressing or excluding pest plants, thereby requiring minimal or nil weed control.

Biosecurity staff are available at all times to assist Auckland Transport in developing roadside management plans, to ensure that treatment methodologies are:

- appropriate for the existing or desired groundcover
- integrated and efficient (e.g. treatment regimes cover multiple species wherever possible to minimise need for repeat visits)

- safe (i.e. comply with Council's Air, Land & Water Plan, all legislation) and community risk-averse (e.g. include non-spray options wherever possible)
- seasonally timed for maximum effectiveness (e.g. greatest control level, lowest herbicide rates)
- the most cost-effective

Staff can also give advice on maintenance of desired vegetation, including (with Council's Biodiversity Team) advice on recommended species to plant. Staff can also advise on control of non-pest plants that Auckland Transport wishes to control e.g. bamboo.

Species in the Auckland Regional Pest Management Strategy that need to be included (as a minimum) in region-wide roadside management plans 2015-16 and thereafter:

Pampas (2 species), Chinese privet, tree privet, moth plant, gorse, woolly nightshade, Japanese honeysuckle, brush wattle, alligator weed, castor oil plant, boneseed, wild ginger (2 species), giant reed, climbing asparagus, cotoneaster (2 species), lantana (urban areas only), jasmine, Madeira vine, broom, Montpellier broom, buddleia, mile-a-minute, sweet pea shrub, blue morning glory, blue passion flower, elaeagnus, Spanish heath, periwinkle, ragwort, smilax, tutsan.

Of these species, the most invasive, and the most subject to complaint, are woolly nightshade, moth plant, gorse, both privet species, and wild ginger. These species need to be treated immediately.

Species in Auckland Regional Pest Management Strategy that need to be included in region-wide roadside management plans from 2016-17 and thereafter:

Monkey apple, Japanese spindle tree, grey willow, crack willow, phoenix palm, agapanthus (large forms), banana passionfruit, Cape ivy, English ivy, rhaphiolepis (sexton's bride), tuber ladder fern.

Biosecurity will meet with Auckland Transport in 2015 to determine which species need to be added to roadside management plans from 2017-18 onwards. The list of additional species is likely to be small and have minor resource implications. It is more likely that additional resources will need to be applied to managing the existing pest plant list for additional roads.

Roads requiring urgent attention i.e. by 31 December 2015

These roads are subject to ongoing and frequent complaint. Due to significant delays (i.e. since 1 November 2010) these roads need to be immediately treated irrespective of the time needed to create roadside management plans.

(Note: only the affected roads in the WRHA have been included here)
Scenic Drive from Titirangi to Te Henga Rd corner
Te Henga Rd and on down the Bethels Rd to the coast
Piha Rd and associated side roads to Karekare and Anawhata
Huia Rd from Titirangi to Huia
Waitākere Rd from Swanson to Taupaki

Waitākere Ranges Local Board

Auckland Council