SWEETMAN PROPERTY, AWAAWAROA ROAD, WAIHEKE ISLAND:

SIGNIFICANCE OF THE VEGETATION AND NATURAL FEATURES

By

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September 1999

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INTRODUCTION AND SITE VISIT

1. I was commissioned to assess and report on the significance of the vegetation and natural features on the property of O.Sweetman and T.Winslade at Awaawaroa Road, inland from Awaawaroa Bay on the south-eastern coast of Waiheke Island (Map ref: NZMS 260 S11 / *c.*989-996E 857-863N).

2. The main objectives of my study were to:
   - identify and record the species composition, habitat quality and other features of the communities in each of the main natural vegetation types on the property;
   - assess and report on the conservation significance of the natural vegetation; and,
   - assess the potential to protect and enhance the natural environment, including opportunities to restore species richness and diversity in the regenerating communities and to restore bush cover on sites of environmental sensitivity.

3. I understand the property includes a land area of approximately 30.4 hectares. This assessment and report is to provide information to help assess the potential for subdivision of the property into smaller Lots.

4. I inspected the property with the landowner, Mr. Owen Sweetman. I examined a representative part of the natural communities on the property, including the remnant stands of native forest and the regenerating forest communities, during a traverse of much of the property on foot. A more general inspection and canopy scan of the vegetation was made of parts of the property not directly on the lines traversed.

Terrain and catchment features:

5. The property lies on moderately steeply to very steeply sloping terrain that rises up the northwestern and northern slopes of Maunganui from the valley of the Awaawaroa Stream on the western edge of the property and the tributary valleys to the south of Orapiu Road. A northerly running spur that drops from the upper slopes on the southern boundary bisects the property into eastern and western sectors.

6. The eastern part of the property includes the largely bush-covered head catchment and upper reaches of a valley on a tributary of the Awaawaroa Stream. This large natural area is a dominant natural feature in the broader landscape. It is a particularly prominent part of the natural character in the landscape in views from the Piemelon ridge and the western parts of Orapiu Road. The north-facing slopes in and above the bush line to the south of the stream head rise very steeply to the summit ridge of Maunganui, the highest land on Waiheke Island.

7. The southern boundary drops very steeply down a prominent spur, from the Maunganui summit ridge to the western boundary bordering Awaawaroa Road in the bottom of the Awaawaroa valley. The west to northwesterly facing slopes that rise from the valley bottom to the crest of the bisecting spur are mostly moderately steep to steep, although there are local areas of more gentle terrain. The higher slopes on the western sector are also a prominent visual feature of the landscape. The open shafts of abandoned manganese mines are an historic feature of significance, on the middle slopes towards the southern part of the western sector.

VEGETATION AND NATURAL HABITATS

8. **Pattern and extent of natural habitat:** More than half of the land area of the property has a natural or near-natural cover of native forest and regenerating shrublands. The pattern of distribution and extent of the bush cover is shown in the aerial photograph in Figure 1. Since the air photo in Figure 1 was taken (in 1996), the shrublands cover has spread and consolidated further, especially on the slopes in the western sector.

9. The large contiguous area of closed-canopy native bush on the basin and valley in the eastern sector covers more than one-third of the land area of the property (Figure 2). It is a dominant natural and visual feature in the landscape (see Figure 3). Corridors of more broken-canopy natural habitat extend from this large area of natural habitat over the bisecting spur and westward down the northern and southern sides of the property to join the remnant stands of native riparian forest on the valley bottom of the Awaawaroa Stream (Figure 4). Strategically, this is an important sequence and corridor of native habitat, providing one of the few habitat links or natural corridors between the native forest communities on the eastern and western parts of Waiheke Island.

FIGURE 1: (over page)

Aerial photograph of the Sweetman-Winslade property, taken in 1996, showing the pattern of distribution and extent of the bush cover. Kanuka regeneration has since spread and consolidated.

10. **Recent vegetation history:** Until recently the property has been grazed. Earlier clearance had removed much of the original forest cover, although substantial stands of native forest trees remained in the gullies and on some of the gully heads in the basin on the eastern sector. Smaller patches of remnant trees survived, as on the damper sites in the northwestern and southwestern corners of the property. In the basin on the eastern sector, much of the more low-lying land in the valleys that was cleared earlier has "reverted" to kanuka-dominated forest over many years. The stature of the kanuka, often 12-15 metres tall (x 12-30cm d.b.h.[1]) on the lower slopes adjacent to the remnant stands and 7.5-12 metres tall (x 5-12.5cm d.b.h.) on the middle slopes, indicates that the "reversion" to natural cover has occurred over many years (30-45 years or more).

11. The natural regeneration to native cover has successively spread out onto the higher slopes. Younger kanuka on the upper slopes is 6-7.5 metres tall (x 2.5-10cm d.b.h.). The process of natural spread of the kanuka cover continues, especially out from the consolidated stands in the eastern basin and on the higher slopes on the western sector where the corridor of natural habitat is expanding and consolidating (see Figure 4).

12. Natural regeneration to species-rich and more diverse native forest in the teatree stands was curtailed substantially over the years by browsing livestock and later also by feral goats. I understand that the owners have excluded livestock for the past 5 years. Goats (approximately 40) were removed over a period of approximately a year and I understand the area has been free of goats for 3-4 years.

Plant communities:

13. The main vegetation types in the natural areas on the property are:

- Remnant stands and pockets of native forest, with taraire and mixed native species of broadleaf and podocarp trees, on the stream banks and heads and slopes of the gullies;
- Regenerating teatree communities in which kanuka predominates, in extensive stands on steep to very steep parts of the valley slopes and basin walls;
- A relatively small area of freshwater wetlands communities on the swampy stream flats in the valley bottom on the eastern sector, near the northern boundary;
- grasslands ('rough hill pasture') in which the native grass *Microlaena stipoides* is often plentiful amongst mixed pasture grasses, on mostly moderately steep to very steep slopes, where the topsoil mantle is mostly thin and in places the soil is skeletal.

14. The general distribution of these vegetation types is shown on the air photo - in Figure 1. The natural establishment of kanuka regeneration has spread to a wider area and consolidated to a significantly greater extent since the air photo was taken (in 1996).

[1] d.b.h. = stem diameter at 1.4m above ground level.

FIGURE 2: A view of the large contiguous area of closed-canopy native bush on the basin and valley in the eastern sector, looking down slope into the main valley. Note the large remnant stands of taraire-mixed species forest (centre and right-hand foreground) surrounded by regeneration.

FIGURE 3: The Sweetman-Winslade property on the northern and northwesterly slopes of Maunganui, viewed from the main road to the northwest. Note the prominence of the natural habitats in the landscape.

FIGURE 4:

Regenerating kanuka shrublands spreading and consolidating naturally on the higher slopes on the western sector. Viewed from the former house site. Note the recent plantings (foreground), growing vigorously.

15. The main stands of natural vegetation on the property, and the plant communities and habitat in them that are of significance to conservation are described in the following paragraphs.

16. **Taraire-mixed species forest:** Remnant and old-established regenerating native forest of mixed tree species forms a closed canopy in patches on the stream banks and lower slopes, especially in the gully heads and slopes in the eastern sector (see Figure 2).

17. The forest canopy is uneven, ranging in average height between approximately 12 metres and 17 metres, with emergent trees to 21 metres tall. Taraire (*Beilschmiedia tarairi* – mostly c.20m tall x 36cm d.b.h.) mostly is dominant on the middle to lower gully slopes and tawa (*Beilschmiedia tawa*) is plentiful to dominant locally on the higher slopes. Other species in the canopy include much kohekohe (*Dysoxylum spectabile*) on the lower slopes and gully bottoms, much totara (*Podocarpus totara* – to 20m tall x 50cm d.b.h.), and more local or scattered puriri (*Vitex lucens* – to 18m tall x 1m d.b.h.), rewarewa (*Knightia excelsa – to 21m tall x 26-30cm d.b.h.*), karaka (*Corynocarpus laevigatus*), tanekaha (*Phyllocladus trichomanoides*), and lancewood (*Pseudopanax crassifolius*). On the upper gully heads there is occasional large pohutukawa (*Metrosideros excelsa* – to 17m tall x 90cm d.b.h.) and matai (*Prumnopitys taxifolia* – to 23m tall x 54cm d.b.h.). Smaller trees in the canopy and sub canopy include mahoe (*Melicytus ramiflorus*), mapou (*Myrsine australis*),) and tree coprosma (*Coprosma arborea*), nikau palm (*Rhopalostylis sapida*), and tree ferns (mamaku - *Cyathea medullaris* and ponga *Cyathea dealbata*). Tall, old-established kanuka (*Kunzea ericoides* – to 15m tall x 30cm d.b.h.) is plentiful in the canopy in places, especially on the outer fringe of the remnant forest stands.

18. The understorey and floor are open, but young regeneration of tree seedlings and saplings is good, since the exclusion of livestock. Other species recorded in the stands include divaricate coprosmas (especially *Coprosma rhamnoides*, and some *Coprosma* cf. *crassifolia* and *C. rigida*), hangehange (*Geniostoma rupestre*), *Solanum* aviculare, *Rhabdothamnus solandri*, *Coprosma grandifolia*, and wheki ponga (*Dicksonia squarrosa*). There is a wide variety of ferns in the ground flora including *Doodia media, Asplenium polyodon, Anarthropteris lanceolata*, *Lastreopsis glabella*, native maidenhairs (*Adiantum* spp.), species of *Blechnum* (including *Blechnum filiforme B. membranaceum*, and *B. chambersii*), *Pneumatopteris pennigera, Phymatosorus scandens*, *Phymatosorus diversifolius*, *Pyrrosia eleagnifolia*, and species of *Pteris* (including *Pteris comans* and *P.tremula*). Native vines include supplejack – (*Ripogonum scandens*), bush lawyer (*Rubus cissoides*), clematis (*Clematis paniculata*), *Parsonsia heterophylla* and white rata (*Metrosideros perforata*). On the forest floor there are native grasses including *Oplismenus imbecillis* in the forest shade and *Microlaena stipoides* on more open sites, native sedges including *Gahnia lacera, Uncinia uncinata,* and *Carex dissita*, and native orchids including *Acianthus sinclairii* and species of *Corybas*. Epiphytes include *Collospermum hastatum*.

19. **Kanuka shrublands:** The extensive teatree shrublands and regenerating forest stands established initially on the lower slopes, surrounding and spreading out from the remnant pockets of forest, especially in the eastern sector. The stature of the kanuka, often 12-15 metres tall (x

12-30cm d.b.h.[2]) on the lower slopes adjacent to the remnant stands and 7.5-12 metres tall (x 5-12.5cm d.b.h.) on the middle slopes, indicates that the "reversion" to natural cover has occurred over many years (30-45 years or more). Species diversity is highest in the older-established stands, although natural regeneration was severely curtailed in the past by browsing animals. This has resulted in the high incidence of relatively unpalatable species in the understorey, especially small leaved or divaricating coprosmas (especially *Coprosma rhamnoides*) and seedling and sapling totara. A much broader range of forest species is now establishing as seedlings, out from the remnant forest stands, since the exclusion of livestock and goats.

20. Species recorded in the shrublands during my visit included seedling and sapling totara and tanekaha, small tree and shrub species including divaricate coprosmas (especially *Coprosma rhamnoides*, and less *Coprosma* cf. *crassifolia* and *C. rigida*), mapou, mingimingi (both *Leucopogon fasciculata* and more locally *Cyathodes juniperina*), mahoe, karamu (*Coprosma robusta*), *Pseudopanax lessonii* hybrids, and ponga. Ground-cover species include ferns (*Doodia media, Pteris tremula*, bracken), native grasses (*Microlaena stipoides, Rytidosperma* spp., and *Dichelachne* sp.), and lycopods (*Lycopodium volubile*). Vines include clematis (*Clematis paniculata*).

21. **Freshwater wetlands:** Native wetlands communities grow on the swampy stream flats in the valley bottom on the eastern sector, near the northern boundary. Immediately downstream from the bush edge, the narrow swampy floodplain has a dense wetlands cover of native sedges, with *Carex lessoniana,* and *Cyperus ustulatus* most prominent, and some *Carex virgata*. Downstream approximately 30 metres from the northern boundary, on the adjoining property, the sedge cover merges into a stand of raupo (*Typha orientalis*).

22. **Wildlife:** Birds observed in the bush stands during our visit included native wood pigeon, tui, fantail, silver eye, and grey warbler.

23. **Weeds:** The closed-canopy bush stands are largely free of damaging weeds. The most prominent exotic species in the natural areas are scattered emergent wilding pines (both *Pinus radiata* and maritime pine – *Pinus pinaster*), both in the eastern sector and on the high slopes in the western sector. These trees should be felled or ring-barked, as part of a programme of environmental enhancement.

24. Patches of black wattle (*Acacia mearnsii*) near the southwestern corner of the property should be thinned out and under-planted or the larger trees all removed on sites that are to be set aside for nature conservation purposes. The owners may wish to retain some patches for a sustainable source of firewood. Where wattles are removed, there will be a need for local ongoing control of wattle seedlings that establish from the existing seed-bank in the soil, until a replacement native cover is established.

25. There are occasional to scattered shrubs of woolly nightshade (*Solanum mauriteanum*). Small populations of the potentially damaging vine smilax (*Asparagus asparagoides*) occur along the northern boundary. Early and ongoing control of smilax is important.

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[2] D.b.h. = stem diameter at 1.4m above ground level.

SIGNIFICANCE OF THE NATURAL VEGETATION ON THE PROPERTY

Conservation of biodiversity and genetic resources:

22. A substantial range and diversity of native tree species characteristic of the natural forest communities on the Waiheke hill country grow in the remnant and regenerating bush stands on the property. There is also a substantial range of native shrubs, vines, ferns, sedges, herbs, epiphytes and other smaller plants. These bush stands are locally important as a reservoir of the remnant genetic biodiversity that remains on this part of the island.

23. A moderate diversity of native wetlands species survives on the small swampy reaches of the stream in the valley bottom on the eastern sector.

24. Effective protection of the bush on the property will be necessary, to enhance and sustain biodiversity and the quality of the natural habitat in the longer term. Many of the remnant forest stands on this part of the island survive in small isolated patches that will not sustain their habitat quality and biodiversity in the long term, largely because they are isolated and are not protected effectively from stock access and the harmful associated effects of rangeland farming.

25. The forest stands on the property provide habitat and food sources for native birds including wood pigeons and tui and many of the smaller bush birds such as fantail and grey warbler. My visit did not include scope for a study of the other animal populations. There is likely to be a substantial fauna of insects and other small native animals present.

26. Some of the species growing on the site and included in the proposed plantings, including pohutukawa and kohekohe, are especially vulnerable to possum browsing and are threatened in the medium to long term on the mainland. Remnant and regenerating stands of coastal hinterland forest on islands free of possums have special and increasing significance to nature conservation, as refuges for the survival in the long term of representative examples of the native character of the northern coastal areas of New Zealand.

Ecological corridor:

27. The large area of closed-canopy native bush on the basin and valley in the eastern sector of the property and the contiguous natural habitat that extends westward into the valley of the Awaawaroa Stream are a highly significant ecological feature. Strategically, this is an important sequence and corridor of native habitat, providing one of the few habitat links or natural corridors between the native forest communities on the eastern and western parts of Waiheke Island.

28. If this sequence of natural habitats is covenanted and protected, the bush areas will mature and consolidate. Species richness and diversity will quickly re-establish, attracting and sustaining more native wildlife (especially larger birds) and facilitating their movement and the associated dispersal of

propagules. As they mature, the bush stands will become increasingly significant and important as an ecological corridor.

Regeneration:

29. Kanuka is spreading naturally out onto the steep slopes from the older-established cover around the bush remnants. Natural colonisation will be a much quicker and more complete process if livestock remain excluded. This is likely to happen in the longer term only if the land is subdivided into smaller, more easily managed lots, in association with a prescribed land management plan which includes natural areas covenanted for protection.

30. Kanuka establishment on the very steep slopes could be enhanced effectively by laying of kanuka brushwood (slash), pegged across the contour, when the kanuka branches are laden with ripe capsules full of seed (usually around late May-early June).

31. The established and expanding kanuka stands provide good 'nurse' conditions for native forest establishment. Conditions for seed dispersal are good; especially for dispersal of large seeds such as those of tawa, taraire, karaka, nikau, puriri, and miro. The stands are large and diverse enough to attract and be frequented by a substantial population of wood pigeons, which now are the only effective natural means of dispersing these seeds. Native wood pigeons are becoming rare on substantial parts of the mainland.

32. Seedlings of many forest tree species are plentiful through the remnant forest stands and under the adjoining kanuka, now that livestock have been excluded. The regenerating teatree stands, being contiguous with the stands of remnant forest, will regenerate to species-rich mixed forest stands if stock remain excluded from these sites.

Erosion and slope stability:

33. Much of the area of natural habitat on the property is on steep to very steep slopes (often exceeding 30^0 slope and commonly 40^0 or more). These steep slopes are prone to surface erosion and some mass movement, and are inappropriate terrain for livestock grazing. The natural scrub and forest vegetation cover serves an important role in stabilising the steep slopes, protecting the soil mantle and conserving water quality entering the downstream coastal habitat by regulating surface runoff during storms and reducing surface erosion and sediment transport.

34. Soil protection and conservation of water quality will be enhanced substantially if the regeneration of natural scrub cover is promoted on the steep slopes, and native forest can extend out from the remnant stands.

35. Conservation of water quality is important in this steep part of the catchment where the watercourses are short and the stream heads grade steeply. There are substantial protected freshwater wetland communities on the floodplain and channels along the lower reaches of the Awaawaroa Stream. These wetlands sustain rich natural communities in which raupo (*Typha orientalis*) and native sedges dominate the plant cover and provide important habitat for native birdlife. The freshwater wetlands open onto extensive

saltmarsh and mangrove estuarine communities at the head of Awaawaroa Bay. The long-term sustenance of habitat quality and biodiversity in each of these wetland communities and the marine communities in the bay is dependent on soil protection and conservation of water quality in the steep hinterland.

Visual significance:

36. The native forest and scrub stands on the property are on elevated ground and are a prominent and locally significant feature of the natural landscape viewed from a range of locations. The bush on the property is a particularly prominent part of the natural character in the landscape in views from the Piemelon ridge and the western parts of Orapiu Road. The north and westerly facing slopes rise very steeply to the summit ridge of Maunganui, the highest land on Waiheke Island.

37. If the natural vegetation on the steep slopes is protected, it will become an increasingly conspicuous and important feature of the natural landscape as the teatree stands spread to a larger area, consolidate and regenerate to diverse native forest communities that are rich in species.

EFFECTS OF LAND USE ON HABITAT QUALITY AND SUSTAINABILITY

38. **Effects of livestock and browsing:** The effects of removing livestock and goats are evident in the early establishment of many seedlings and young saplings of palatable forest species that are absent or poorly represented in the sparse sub canopy and taller undergrowth. The change in land use to exclude stock has arrested the degradation of natural habitat on the property and facilitated the early stages of recovery and natural regeneration of species-rich native forest amongst the large areas of established teatree stands. Natural seed sources of a substantial variety of forest species are available in the established stands of remnant forest and the more scattered remnant trees on the property. Seed is also brought in by birds, from remnant patches of forest on adjacent properties on the slopes of Maunganui.

39. If stock continue to be excluded from the extensive areas of natural habitat, the natural processes of regeneration to species-rich native forest will progress and accelerate, as seed sources within the regenerating stands establish and the habitat attracts and sustains larger populations of pigeons and other seed-dispersing birds. Native forest rich in species will become self-perpetuating and a sustainable and prominent feature in the landscape.

40. **Critical effects of land use on environmental outcomes:** The processes of natural regeneration are relatively fragile and sensitive at this stage, and can easily be disrupted by inappropriate land use. The outcome, in terms of environmental quality, will primarily be determined by land use. If, through force of circumstance or whatever other cause there is a return to a grazing regime with stock access into the "regenerating" stands, the regeneration process will be severely curtailed or disrupted. Diverse and

species-rich native forest will not establish and biodiversity and native character will not be sustained in the medium to longer term. If the regenerating natural habitat is protected regeneration and biodiversity will flourish and be a sustainable feature of this important site.

41. **Facilitating a change in land use:** The property is too small to be an economic unit for traditional grazing use, with current land values. Extensive livestock grazing is not compatible with habitat enhancement or sustainable conservation of environmental quality. However, given the realities of high land values and infrastructure costs (including rates, etc) and economic pressures including opportunity costs, it is difficult and expensive to keep substantial areas of potentially productive land clear and free of weeds without the assistance of grazing stock on a block this large on such steep and difficult terrain.

42. A mechanism is needed, to protect the regionally important natural features on the property and facilitate a change in land use that will enhance the natural habitats and provide for the sustainable conservation of environmental quality. The ongoing exclusion of livestock and adequate or optimal provision for conservation of environmental quality is likely to happen in the longer term only if the land is subdivided into smaller, more easily managed lots, in association with a prescribed land management plan which includes natural areas covenanted for protection.

RESTORATION PLANTINGS

43. Plantings could be used to advantage, to augment and supplement natural regeneration and to more rapidly re-vegetate parts of the site that are environmentally most sensitive.

44. Young plantings on the property (flax, pohutukawa, and many other native species) have established well and re growing vigorously.

45. The objectives of a planting programme would be to help extend and consolidate the natural bush cover and to restore species-rich native communities and habitat to environmentally sensitive parts of the site. Some enrichment plantings in the established teatree stands could be used to re-introduce many native forest species that have been lost from the site. Establishment of closed native cover that is self-perpetuating and sustainable is the most effective long-term control of weeds in natural areas.

46. "Saturation" plantings at high density, which substitute rather than promote and augment natural regeneration, would be neither necessary nor appropriate on this site, where conditions for natural regeneration are good provided there is compatible land use and provision for protection.

47. A schedule of supplementary plantings on parts of the site that would benefit most could be part of a proposal for environmental enhancement in association with a subdivision proposal.

48. **Ongoing weed control:** Initial and ongoing control of weeds is a very important part of a programme to restore species-rich forest cover and habitat quality. Early detection and eradication of potentially aggressive weeds is critical, especially vines such as the asparagus vines (smilax – *Asparagus asparagoides* and climbing asparagus - *Asparagus scandens*), Japanese honeysuckle (*Lonicera japonica*), and moth plant (*Araujia sericifera*), which can smother and overwhelm regenerating native seedlings and saplings.

CONCLUSIONS AND RECOMMENDATIONS

49. The natural vegetation on the property is highly significant to nature conservation and to the sustained conservation of environmental quality both on the property and on the natural areas in the surrounding landscape. This natural cover also provides catchment protection, conserving the quality of runoff and thereby contributing to the quality of the waterways downstream including the protected freshwater and estuarine wetlands and coastal waters in Awaawaroa Bay. The reasons for the significance and value of the natural habitat on the property are discussed in detail above. These reasons include:

- Conservation of a substantial reservoir of local genetic diversity.
- Conservation of local seed sources for natural regeneration of species-rich forest communities.
- Conservation of natural habitat to attract and sustain native bird and other wildlife and facilitate natural dispersal and movements.
- Conservation of important wildlife corridors and links that provide one of the few habitat links or natural corridors between the native forest communities on the eastern and western parts of Waiheke Island.
- Conservation of visual quality and natural character in the landscape. The extensive areas of natural habitat on the property are an elevated and visually prominent natural feature in the landscape.
- Restoration of native forest cover on slopes that are prone to erosion and local instability.
- Stabilising the steep slopes, protecting the soil mantle and conserving water quality entering the protected downstream coastal habitat.

50. Livestock grazing, which has been the predominant use of the land for many decades, is not a suitable or sustainable land use on the steep and potentially erodable terrain. Browsing by livestock severely disrupts natural forest regeneration. Stock browsing in the past has depleted species in the understorey and degraded habitat quality in the forest and shrubland communities on the site. Many of the forest species survive on the site in only small and isolated populations. The property has been retired from stock grazing to begin the change to a land use incorporating restoration of native forest on the steep slopes and protection of natural areas.

51. The ongoing exclusion of livestock and adequate or optimal provision for conservation of environmental quality is likely to happen in the longer term only if the land is subdivided into smaller, more easily managed lots, in association with a prescribed land management plan which includes natural areas covenanted for protection (see 40-42, above).

52. A subdivision proposal, incorporating protection provisions and a programme of environmental enhancement, would cause no adverse effects on the natural environment and would provide an important opportunity to:
- protect and conserve important natural habitat,
- facilitate natural regeneration,
- reduce the potential for weed problems and control future opportunities for weed infestation;
- retain and protect the native communities and plants already established on the site;
- expand the strategically important native communities on the property,
- restore and enhance species diversity, and,
- ensure the survival of the natural habitat as an enduring natural feature in the local landscape.

53. The outcome would be highly beneficial for conservation of natural values on a prominent landform with natural features that are important to the ecology and natural character of the south-eastern area of Waiheke Island. It would provide more adequately for long term sustainability of the important natural habitat and biodiversity on the site.

54. I believe that a subdivision and use of the property for rural activities and closely associated residential purposes, in association with formal protection of significant natural habitat on the site, would represent an appropriate and sustainable use of the natural resources of the site.

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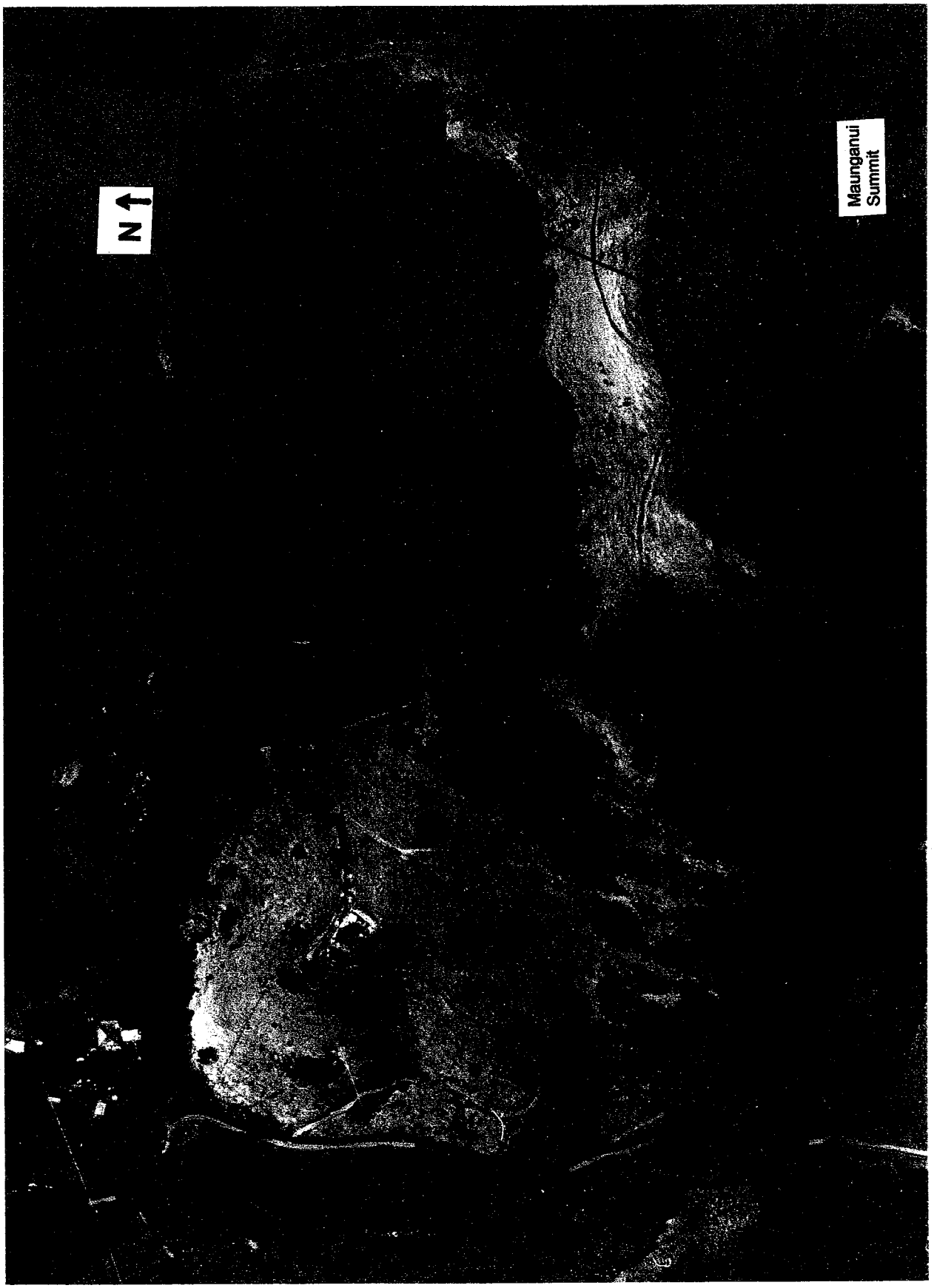
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