



AUCKLAND CITY

**Meola Reef and Associated Reserves**  
Draft management plan

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Prepared for the Community Planning Group of Auckland City Council by City Design.  
Approved for public notification by the Western Bays Community Board on 15 November 2000.

Please direct all enquiries to the Community Planning Group, Auckland City Council, Private Bag  
92 516, Wellesley Street, Auckland 1.

ISBN ...

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1.0 Introduction

This Management Plan encompasses 11 reserves that cover some 29 hectares of land located along Meola Creek and Motions Creek in the vicinity of Point Chevalier and Westmere. These reserves have been grouped together because of their close proximity and strong linear relationship with the creeks and estuarine areas around Meola reef.

The location of each reserve is shown on the plan overleaf and they are as follows:

Reserve Name	Location
Meola Reef Reserve	171 Meola Road, Point Chevalier
Sir Keith Park Memorial Airfield (Part)	200-208 Meola Road, Point Chevalier
Moa Reserve/De Luen Reserve	73-75 Moa Road, Point Chevalier
Walmer Reserve North	65-69 Walmer Road, Point Chevalier
Walmer Reserve South	60-66 Walmer Road, Point Chevalier
Pasadena Reserve	65A Premier Avenue, Point Chevalier
Motions Road Reserve	985 Great North Road, Point Chevalier
Jaggers Bush	147 Old Mill Road – 22 Meola Road, Westmere
Lemington Reserve	40A Lemington Road, Westmere
Weona Reserve	9 Weona Place, Westmere
Westmere Park	36 Westmere Park Avenue, Westmere

The above reserves have been combined in this reserve management plan as they collectively share similar environments and issues, and have a strong visual or physical association with Meola Reef Reserve.

Meola Reef Reserve is the largest of the reserves, forming a dominant focus and conclusion to the stream catchment areas. This reserve has been formed over a lava flow that extends into the harbour, created from a former landfill site.

An important natural heritage site for Maori, the management plan provides for rehabilitation of the land – to heal the wound caused by the landfill and restore the mauri of the land so that it will be able to sustain future needs.

This and the other reserves that form the subject of this management plan, accommodate a range of passive uses with varying accessibility and landscape character. All the reserves support riparian areas to the stream and estuary that vary in quality and opportunities for access and appreciation of the ecology and wildlife habitat.

Issues generally centre on achieving a balance between protecting or restoring the natural environment, and providing recreation. While varying in their suitability for some activities, incorporating the reserves into a single management plan enables the development of an overall strategy that provides greater consistency and cohesiveness to their management.

Other reserves adjacent to these areas are not included in this management plan as they do not have the same environment or management issues. However they are referred to in relevant sections of the plan.

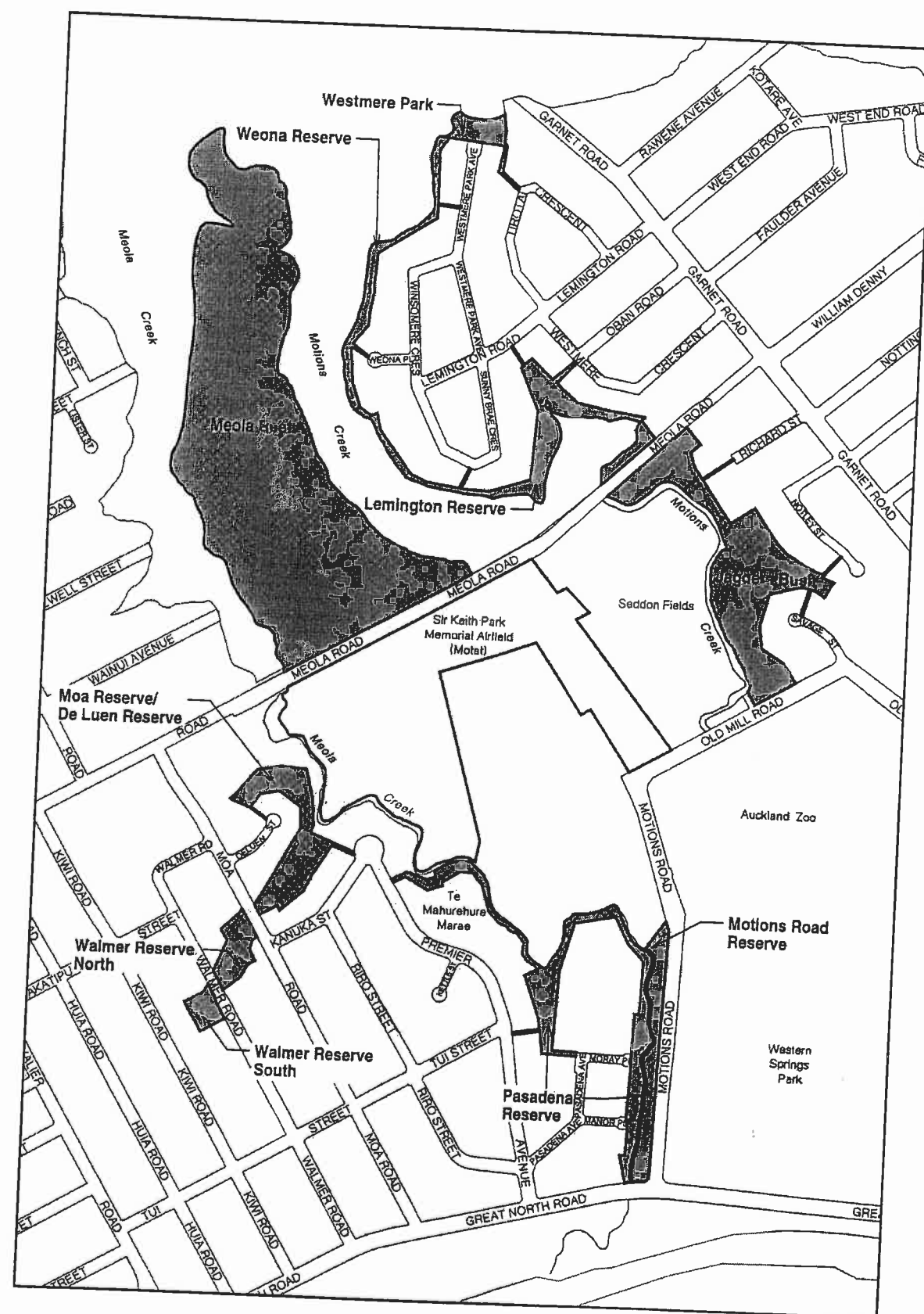


Figure 1: Meola Reef and environs location plan

No management plans have been previously prepared for these reserves, although a number of management studies have been undertaken that contained Meola Reef Reserve. All are out of date, however, and do not deal with the dual issues of former landfill management and preservation / enhancement of the natural environment.

This management plan is essentially in three parts. The first part deals with the statutory framework for the management plan. The function and process of management plans is described, and the relevant Council documents identified that influence the management of the reserves.

The second part forms the basis for the plan and covers Maori and European history, as well as outlining the existing situation in terms of the physical attributes, the processes and issues that affect each reserve, and the potential enhancement and development opportunities.

The third part sets out the objectives and policies for the overall management of the reserves. These address the significant management issues, and convey the general use and development philosophy for the reserves. This part also defines how the objectives are to be implemented.

The Appendices contain ecological information on the reserves.

## 2.0 Statutory and administrative framework

### 2.1 Legal description

The following information provides legal descriptions for each reserve. The total area is approximately 29.5 hectares.

#### *Meola Reef Reserve*

- 1 2.6456 hectares more or less being Part Allotment 20. Quarry Reserve by NZ Gazette 1941 page 249. In the Department of Conservation ownership and forms the central part of the Reef.
- 2 5.8982 hectares more or less being Allotments 36, 37, 38, 39, 40 and 41, Section 9 Suburbs of Auckland. All CT 2B/827.
- 3 1.7477 hectares more or less being Allotment 42 Section 9 Suburbs of Auckland. All CT 2B/826.
- 4 4.3005 hectares more or less being Allotments 43, 44, 45, 46 and 47, Section 9 Suburbs of Auckland. All CT24D/420. Recreation Reserve (refer Gazette 1963 page 993).

#### *Moa Reserve/De Luen Reserve*

- 1 1.0395 hectares more or less being Allotment 311 Parish of Titirangi. All CT 24D/422. Recreation Reserve (refer NZ Gazette 1968 page 2118).
- 2 0.3257 hectares more or less being Allotment 50 and part Allotment 35 Section 9 Suburbs of Auckland. Being balance CT 26B/286 Recreation Reserve.

*Note:* The remaining area in CT26B/286 being lands below MHWs has re-vested in HMQ pursuant to Section 5 of Foreshore & Seabed Endowment Revesting Act 1991.

#### *Walmer Reserve North*

- 1 0.5286 hectares more or less being Lot 152 DP 38520, Lots 3 and 4 DP38521 and Lot 144 DP38270. All CT268/1152. Recreation Reserve.

#### *Walmer Reserve South*

- 1 0.1259 hectares more or less being Lot 145 DP 38270. All CT 26B/384. Recreation Reserve.
- 2 0.1343 hectares more or less being Pt Allot 26, Parish of Titirangi. Balance CT620/167. Reserve (not yet classified).

### *Pasadena Reserve*

- 1 1.7075 hectares more or less being Lot 78 and 91 DP 20219, Lot 43 DP 20785, and Part Lots 155, 116, 117 and 118 DP 21696. Balance of the lands in CT646/100.

### *Motions Road Reserve*

- 1 0.9084 hectares more or less being Lot 1 DP 168863. All CT 102C/992. Local Purpose Esplanade Reserve.

### *Jaggers Bush*

- 1 0.2700 hectares more or less being Section 2 SO Plan 67528. Recreation Reserve by NZ Gazette 1995, page 84.
- 2 0.1072 hectares more or less being Lot 3 DP 42704. CT 1188/33. Recreation Reserve by NZ Gazette 1958, page 4752.
- 3 3.9330 hectares more or less SO Plan 35971. Part Harbour Bed. Auckland City Council and Auckland Harbour Board Empowering Act 1950. All CT 1520/97. Fee simple owned by ACC.
- 4 0.1416 hectares more or less being Lot 25 DP 20562. Recreation Reserve vested on DP 20562.
- 5 0.0682 hectares more or less being Lot 11 DP 39566. All CT 24D/585. Recreation Reserve.
- 6 2.7758 hectares more or less being Allotments 33 and 34 Section 9 Suburbs of Auckland. All CT 23C/688. Recreation Reserve.

### *Lemington Reserve*

- 1 0.4299 hectares more or less being Pt Allotments 9 and 10 Section 9 Suburbs of Auckland. Deeds Whau 17. All CT 440/228. Public Reserve vested on DP 19276.
- 2 0.8999 hectares more or less being Lot 103 DP 20641. Part CT 466/25. Public Reserve vested on DP 20641.
- 3 0.2500 hectares more or less being Section 1 SO Plan 67528. Recreation Reserve by NZ Gazette 1995, page 84.
- 4 0.1234 hectares more or less being Part Lot 6 DP 42704. Scout Hall Site Reserve by NZ Gazette 1958, page 1752. 0.0033 m2 part Lot 6 immediately adjacent.
- 5 0.0739 hectares more or less being Allotment 56 Section 9 Suburbs of Auckland. SO Plan 50407. Scout Hall Reserve by NZ Gazette 1975, page 2542.
- 6 0.0162 hectares more or less being Lot 4 DP 48055. Reserve for Public Purposes vested on Plan 48055.

### *Westmere Park and Weona Reserve (not legally a separate reserve - forms part of Westmere Park)*

- 1 1.0117 hectares more or less being Lot 1 DP 20641. Part CT 446/25. Public Reserve.
- 2 0.0018 hectares more or less being Lot 4 DP 167960. All CT 101D/792. Recreation Reserve vested on Plan 167960.
- 3 0.0040 hectares more or less being Lot 3 DP 167960. All CT 101D/791. Recreation Reserve.
- 4 0.0636 hectares more or less being Part Lot 9 DP 26993. CT 686/247 & 697/363. Reserve (not classified).

## **2.2 Reserves Act 1977**

### **2.2.1 Definition and purpose of a management plan**

Reserve Management Plans are required under the Reserves Act to outline the Council's general intentions for use, development, maintenance, protection and preservation of its reserves. The aim of this legislation is to ensure that reserve management and development are based on sound principles and that, through consultation, the needs of the public are clearly identified.

Management plans are documents that outline a series of management objectives and policies for the management and, where relevant, the development and operation of reserve land. Each plan seeks to balance the protection of natural resources with the provision of recreational opportunities that are relevant to the needs of the local and wider community.

The process of writing management plans allows the public opportunities to have input and therefore to take part in the decision making which will affect the future of the reserve(s). The management plan process is shown below. The plan, once adopted by the Council, is kept under continuous review so that it may be adapted to changing circumstances, or in accordance with increased knowledge.

The purpose of this plan, therefore, is to provide for the use, enjoyment, maintenance, protection and sensitive development of the Meola Reef Reserve and environs in keeping with the existing character of the area and within the limits of the Council's resources.

To achieve this purpose, the plan:

- Speeds up subsequent Council decision making by providing a common understanding in the community of how the reserves will be managed
- Simplifies administration by providing clear policy statements with regard to the reserves, which are designed to encourage consistency in decision making
- Ensures that these decisions will take into account the broad public interest, rather than being made on an ad hoc basis
- Contains management policies which can readily be understood and implemented
- Is clear about general intentions and attitudes while retaining the flexibility to deal with matters of detail on their individual merits within the general framework
- Provides a procedure for public involvement during its preparation and review.



### 2.2.2 Classification

Under the Reserves Act the reserve classification determines the principal or primary purpose of the reserve. The majority of the reserves are classified as recreation reserves under Section 17 of the Act.

The primary purpose of a recreation reserve is to provide areas for the recreation and sporting activities and physical welfare and benefit of the public and for the protection of the natural environment and beauty of the countryside. Emphasis is on the retention of open spaces and on outdoor recreational activities, including recreational tracks in the countryside. Emphasis is also given to freedom of access and covers active recreation. However, where scenic, historic, archaeological, geological, or other scientific features, or native flora and fauna, or wildlife are present, those values are to be managed and protected to the extent compatible with the principal purpose of the reserve.

### 2.2.3 Management plan preparation process

The process for preparing management plans, as prescribed in Section 41 of the Reserves Act, is as follows:

- 1 Council decision to prepare/review the management plan for the reserve(s)
- 2 Public notification of intention to prepare draft management plan and request for submissions (minimum one month)
- 3 Issues identified from research and consultation
- 4 Draft management plan prepared
- 5 Draft management plan endorsed by Council and advertised for public comment (minimum two months)
- 6 Council hearing of submissions
- 7 Revisions to draft management plan resulting from submissions and hearing
- 8 Council adopts final management plan and advertises its availability to the public
- 9 Management plan kept under continual review by Council

### 2.3 Auckland City District Plan (Isthmus), 1999

The District Plan zoning for the reserves is mainly Open Space 1 (Conservation) or Open Space 2 (Informal Recreation). There is a small area of Open Space 4 (Community) at the end of Lemington Reserve, and part of the Meola Creek riparian edge is zoned Open Space 5 (Leisure Complexes).

Meola Reef Reserve and Weona Reserve are zoned Open Space 1. This zoning provides for the *conservation and protection of areas of particular scenic, heritage, natural or habitat value*. Use and recreation opportunities are limited and restricted to those that will have the least modification to and least impact on the natural environment.

Moa/de Luen Reserve, Walmer Reserve North, Walmer Reserve South, Jagers Bush, Lemington Reserve, Pasadena Reserve, Motions Road Reserve and Westmere Park are zoned Open Space 2. This has the objective of protecting *appropriate areas of open space for the enhancement of the environment and the enjoyment of informal recreation*. Activities are limited to those suitable to the informal recreation use

of the zone and enhancement of the surrounding, particularly regeneration and retention of native plants and trees, is encouraged.

A small area on Meola Road is zoned Open Space 4 to accommodate the Scout Headquarters. The primary objective of this zone is *to provide for community buildings and activities*.

Open Space 5 *provides for recreation and leisure activities within planned integrated complexes*. This zone covers the esplanade strip proposed in from Sir Keith Park Memorial Airfield (MOTAT) to provide access along the eastern side of Meola Creek.

Local, regional and national government share responsibility for the management of the coastal area. Auckland City's responsibility extends from the mean high water spring tide mark to the inland limit of the coastal environment as defined by the Coastal Management Area. Activities within this area are controlled by policies that protect the natural character of the coastal environment and by management policies that set out the framework for environmental protection and enhancement.

The seaward margin of the coastal environment is the subject of the Regional Coastal Plan and this, in conjunction with the New Zealand Coastal Policy Statement, guides the contents of the District Plan. These documents, and the policies within them, reflect the dynamic and complex interrelated physical processes and provide a coordinated and complementary approach to the management of the coastal area.

The sensitivity of coastal margins to vegetation removal and development is recognised in the District Plan (Part 5B – Coastal) through Coastal Protection Yards and Coastal Amenity Areas. Coastal Protection Yards apply for the whole of Meola Reserve, Lemington Reserve and Weona Reserve, Westmere Park and parts of Moa/ De Luen Reserve and Jagers Bush. Coastal Amenity Areas apply to Lemington Reserve, Weona Reserve and Westmere Park.

A Cliffline Tree Amenity Area also applies for a width of 30m from Cox's Bay to Pt Chevalier including Westmere Park, Weona Reserve and Lemington Reserve.

An esplanade reserve or strip is also proposed along the edges of Meola Creek to promote pedestrian access from Pasadena Intermediate School to Meola Road and Great North Road.

While there are no scheduled archaeological or geological features within the reserves, or scheduled protected trees, Te Tokoroa Reef (Meola Reef) is considered to be a regionally important geological feature. The reef is also part of the Upper Waitemata Harbour area, which is a nationally important wildlife habitat (see below).

### 2.4 Auckland Regional Plan: Coastal

Auckland Regional Council shares responsibility with the Department of Conservation for management of the coastal marine area that extends from the mean high water spring tide mark to the outer limits of the territorial sea. The Auckland Regional Plan: Coastal provides objectives, policies and rules for the management of the foreshore and territorial sea. Although the Plan is yet to be finalised, this management plan is consistent with its general policy direction.

In the Plan the Point Chevalier Peninsula coastal edge is rated as a regionally significant landscape (Rating 5) while the Meola Reef Reserve coastal edge has a Rating 6 (with 1 being low and 7 being high). The extension of Meola reef under the water is included in this rating and is a Coastal Protection Area (CPA2) while the tip of the reserve is CPA1.

Those areas identified as being regionally significant are valued because their character and appearance is dominated by specific elements or features (or perhaps only one), and patterns that recur within them. In such areas the 'parts' tend to assume more importance.

The Coastal Protection Areas are identified for their ecological and landform values as Areas of Significant Conservation Value. They are also potentially vulnerable to "adverse effects of subdivision, use and development".

In particular, the Upper Waitemata Harbour area which contains Te Tokoroa Reef has been selected by the Department of Conservation as an Area of Significant Conservation value for its value as a nationally important wildlife habitat.

Any proposed works along the coastline and Meola Reef Reserve will need to be undertaken in consultation with the Regional Council and Department of Conservation.

### 2.5 New Zealand Coastal Policy Statement, 1994

The New Zealand Coastal Policy Statement (NZCPS) provides national policies for the sustainable management of the coastal environment. The Minister of Conservation has responsibility for preparing this document and approving all regional coastal plans, which must be consistent with the NZCPS. The Minister shares responsibility for the coastal marine area with Regional Councils and acts as a consent authority for all restricted coastal activities.

### 2.6 Other

The objectives and policies in this management plan are also consistent with the following documents:

- Hauraki Gulf Marine Park Parliamentary Bill
- Bio Security Act 1993

## 3.0 Council framework

### 3.1 Strategic Plan – First City of the Pacific, 2000

The Council's community vision and strategic plan for Auckland sets out the Council's vision for the city over the next 20 years. In the plan, priority outcomes include enhancing public access to the coastline, providing a healthy habitat for urban wildlife, ensuring the taonga of Tamaki Makaurau are preserved and enhanced, and a green city that improves its sense of space as it grows.

Strategies include increasing and improving access to all Isthmus coastlines and the Hauraki Gulf through land acquisition and other measures, providing added protection for significant natural features and ecological sites, and providing public open space to meet future needs.

Environmental planning is seen as a way of acting in the present to secure the future, with integrated strategies and policies leading to clean and unpolluted water, land and air, and contributing to preserved and enhanced green spaces, and accessible and protected Gulf, harbours and waterfront.

### 3.2 Draft Future Open Spaces Strategy, 1999

The purpose of this document is to outline Council's role and niche as open space providers, how open space will be provided in the future, and at what level. It also identifies whether the existing open space resource has the capacity to meet the future needs of the community, based on current research on demand and supply of open space, and provides clear guidelines so that decisions on acquisition and divestment of open space can be made.

Meola Reef Reserve, and the other reserves that form this management plan, are significant open spaces that contribute to the outcomes and goals of the strategy, particularly with regard to their distinctive coastal edge and local ecology. The wide range of outdoor leisure opportunities available in Auckland are particularly focussed on the coast, and Council seeks to enhance the coastal attributes of Auckland City by:

- Securing public access to and along the coastal edge
- Enhancing existing coastal open spaces, including protection of sensitive coastal areas

### 3.3 Draft Liveable Communities 2050 Strategy, 1999

The draft Strategic Plan and Open Space Strategy both highlight the continued growth of Auckland City and the increasing population densities – creating benefits such as cultural diversity on the one hand, and resulting in added pressures on infrastructure and open space on the other. Changing land use patterns and urban intensification are also influencing the availability of, and need for, open space.

Thus, as urban densities increase and private open space decreases, public open space will become more important, yet the land available for open space use will decrease. Growth issues are currently being addressed at a Regional and City level.

The Liveable Communities Strategy has been developed by the Council to guide growth to the year 2050. This advocates residential intensification within defined Strategic Growth Management Areas within the Isthmus. Central policies embodied in the strategy include principles to protect natural and physical resources.

The role of Meola Reef Reserve and associated reserves may become more important in providing open space for communities in and around Point Chevalier and Westmere in the future, as populations increase in Avondale and other areas within the Western Strategic Growth Management Area. Notwithstanding this, coastal areas throughout Auckland will experience pressure for increased residential development.

#### 3.4 Other

The following documents are also considered in the management plan:

- Leisure Policy for Auckland City, 1999
- Private use of Public Space Policy, 1999
- Auckland Regional Plant Pest Management Strategy, 1998
- Point Chevalier Peninsula Coastal Edge Strategy, 1999
- Parks and Open Spaces Asset Management Plan, 1999
- City Tree Policy (Draft), 1999
- Weed Management Policy, 1999

## 4.0 History

The area covered by the reserves has a mixed history linked with the nature of the urban development of Auckland and its geography.

Meola Reef and the surrounding area around Point Chevalier Peninsula has an extensive history of use by Iwi for a range of activities including gardens, trapping birds, fishing, flax gathering and shellfish collecting. The spiritual, environmental and social significance of the area for iwi remains strong with a number of waahi tapu and other culturally significant sites located throughout the wider area.

<sup>1</sup> Legend tells us that the earliest settlers in Ao-tea-roa were the Patu-paiarehe so called "Fairies" from whom many of the leading chiefs of today proudly claim descent. Concerning these people we are told of their industry in the arts of fishing, hunting, weaving, etc; nor were they deficient in the art of war, for they were involved in much inter-tribal strife. One of these struggles resulted in the weaker faction deciding to emigrate across the Waitemata. In order to do so they began to erect a stone causeway. However, the sun rose on their uncompleted toil and dried them all up. The ruin of this ancient attempt to bridge the Waitemata remains to this day in the form of that long reef "Te Toko-roa" off Pt Chevalier.

In 1793 a quarrel arose between Ngati-Whatua and Ngati-paoa tribes as a result of a marriage between a Ngati-hoa chief and a Waikato chieftainess. Land on the Tamaki River had been given to cement tribal peace and in honour of the marriage. Shortly thereafter at a fishing expedition the two chiefs quarrelled. The Ngati-paoa tribe attacked and killed one of the chief's sons. The invaders were defeated by Ngati-Whatua at Pu-ponga on the Manukau and again at Rangi-mata-rau (Pt Chevalier Beach). The translation of Rangi-mata-rau is "the day of one hundred spears". This name is still on maps of Pt Chevalier in relation to the beach.

When Governor Hobson arrived in New Zealand he established his first headquarters in the Bay of Islands where there were already many white settlers, established in trading and whaling operation. Many of them had already traded with the Maoris and on the barter system had acquired large tracts of land for which they made legal claims when it appeared Hobson would establish the Government there.

The Governor then decided to look further afield for a site for the Capital and in 1840 decided on Auckland as the most suitable place. Many of the traders from the north then made application for land near the town. Felton Mathew, the surveyor with the party, mapped on paper some of the land adjacent to the town boundaries, and cut it into blocks comprising 25 to 70 acres. Gilbert Mair, Cassidy, McLachlan, Russell, Clendon, Ross and Sullivan were given land scrip, and applied it to buying land now known as Pt Chevalier. Figure 2 shows the block numbers on the various lots with their areas in acres.

None of the grantees ever settled on their land which was eventually sold. In 1840 there would have been nothing but a vast area of tall white tea-tree or manuka and dense scrub. Near the Point on the eastern side between Johnstone and Oliver Roads, facing Meola or Waititipo Creek (as the Maoris named it) was a small native settlement. Another was situated at the mouth of Oakley Creek, or Te Aunga, on the flat land on the foreshore of Walker's Beach. Maori tracks led from

<sup>1</sup> History taken from Rangi-Mata-Rau, Pt Chevalier Centennial 1861-1961 by A H Walker

one settlement to the other, and past the present site of Chamberlain Park out to the Manukau Harbour.

Both of these settlements had splendidly cultivated gardens and through constant tilling of the soil became exceedingly fertile, so that for many years after, no other parts of the district could rival their productivity.

By 1860 no settlement had been made in the district except one of two "squatters" whose stay was very short. Occasionally wandering "pakehas" passed through on their way north.

New Year's Day 1861 saw the arrival of the first pioneers who actually settled on the land between Meola and Oakley Creeks (the Walkers). They lived on the small headland to the right of Meola Road on the bank of the creek where it crosses to Westmere.

Shortly after they settled, activity greatly increased with troops encamped on the site of the former Mental Hospital (see map on next page). A target was erected on a mound with a trench six feet wide round it on the west point of the main beach, in a direct line about a mile distant from the camp. A marker was stationed at the target to signal to the gunners when the target was hit. A butt was formed at the end of what is now Target Street just to the left of Selwyn Village, another of stone was built on the "reef" between Meola and Motions Creeks.

1861 also saw the proposal to build a barracks town in addition to the Albert Barracks, and the land speculators began to operate. Just at this time, the beginning of the Waikato War, two strange Maoris appeared at the settlements and almost overnight the local Maoris disappeared, leaving their canoes on the beach, and several on Pollen's Island. They never returned to the Point and canoes were there many years later. One Maori known as Te Whare Bob, who had a deformed leg, was seen at the Gate Pa, Tauranga some years later. It is believed that they joined forces with the Waikato rebels.

Although Pt Chevalier itself was very sparsely populated the waters surrounding it were quite a busy thoroughfare. During the period between the middle 1860s and 1890s the upper harbour must have been a very busy sea lane, and the many brickyards and lime kilns on the Whau and Henderson Creeks were all operated by sea transport.

Most of the increase in housing in the area did not occur until well after 1900. Chinese market gardeners also established themselves in the area with large areas worked over a substantial area. The last of these gardens were only discontinued when Selwyn Village was constructed.

In 1920 a quarry was operated on the flat at Oakley creek and this operated for many years supplying blue stone metal for roads. Across on the other side of the creek there was said to be the largest duck farm in New Zealand.

As soon as the City Council took over the area in April 1921 the district started to make rapid progress with building, roads and water supply. As a result of this development, a landfill site was established on the reef extending into Waitemata Harbour. Landfill operations were carried out from the 1960s to 1976 covering an area of 11 hectares. It was operated as a municipal landfill accepting all types of domestic and commercial refuse. Once the site was closed it was covered with some limited restoration to allow grazing and passive recreational use.



Figure 2: Pt Chevalier in 1891, showing the original subdivisions



## 5.0 Natural and physical environment

### 5.1 Natural values

Meola reef lies between the Pt Chevalier and Westmere Peninsulas, and its character is dominated by its coastal aspect. Geological processes led to its physical separation from the areas subsequently occupied by residential development, and these, together with its former use as a landfill site, have combined to protect the area from development. There has been speculation on its value as the isthmus side of a second harbour crossing, however the ecological values of the reef have been considerably degraded by current and past uses.

The hard surface of the lava flow within the harbour supports diverse marine biota, and the value of the reef is enhanced by the saline vegetation it supports. Accumulation of soft sediments in sheltered parts of the reef towards the land, has allowed colonisation by mangrove and saltmarsh plants which offer some haven for wild life, notably marine birds. Shellfish are harvested from the reef areas.

The reef potentially has strong ecological, visual and physical links with the wider landscape including the coastal vegetated margins and Motions and Meola Creek catchments.

The natural values of the other reserves are similarly dominated by their aspect and links to water – either the harbour, estuaries or Meola and Motions Creeks. They extend as thin bands along the coastline and estuarine stretches of the creeks, varying in character from lowland forest (Jaggers Bush) 200m from the estuarine stream, to coastal cliffs and a character more highly influenced by their proximity to the sea.

Their natural values also vary in relation to the degree of modification and development each has received. Motions Creek and Jaggers Bush have been extensively modified while the reserves along Meola Creek are of variable quality. The most ecologically significant natural areas are the pohutukawa fringe forest of Weona and Westmere Parks, and the saltmarsh areas at Moa and Lemington Reserves.

### 5.2 Geology and topography

The geology of the Waitemata Harbour is typical of a drowned river system with its irregular coastline of deep bays and broad sinuous estuaries. A particular geological feature is the volcanic activity that has occurred at random locations throughout Auckland over the last 60,000 years. Meola Reef (Te Tokoroa Reef) is a notable example of a lava flow from a land-based eruption.

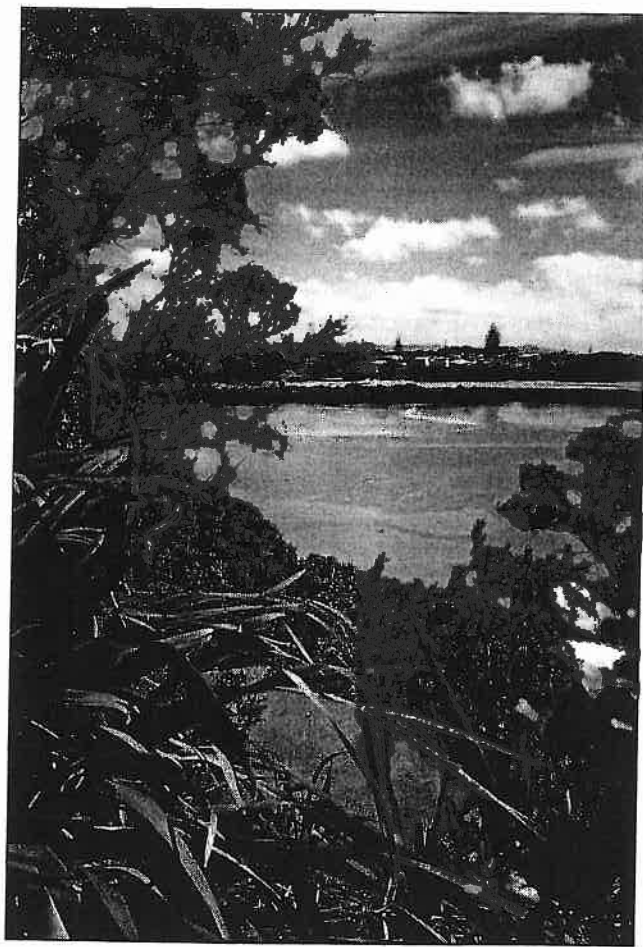
In one spasm three of the largest volcanoes, Owairaka, Maungawhau and Te Tatuā erupted simultaneously and streams of lava ran down each cone, spreading at the base and moving down the northwest slopes. The lava-streams from each volcano merged, dividing at the spine of Point Chevalier peninsula to send two streams into the Waitemata, one to the northwest at the Oakley Creek mouth and the other to the north east to form a long reef stretching towards Kauri Point on the opposite shore. As the molten lava cooled to solid basalt rock, it contracted forming sets of vertical, hexagonal joints on which Meola Reef Reserve is founded. This volcanic extrusion extends out into Waitemata Harbour as sea level was lower than at present and it was then a forested river valley.

The existing topography of Meola Reef Reserve is the result of the former landfill operation which has resulted in a generally flat grassed plateau some 10-15m above the natural reef with steeply sloping banks to the tidal inlets of Motions and Meola Creeks.

Moa/De Luen Reserve, Walmer Reserve North and Walmer Reserve South, are situated on undifferentiated alluvium of mud sand and gravel over Miocene sedimentary rocks of the Waitemata Group. They are located inland from Te Tokoroa Reef and are part of the Meola Creek catchment area. Collectively they form a gently sloping gully to Moa Reserve and the creek.

Pasadena Reserve and Motions Road Reserve lie further inland on the edge of an extensive area of grey, dense, fine-grained lava that is characteristic of the Western Springs area. They comprise moderate to gently sloping banks to stream terraces of varying width.

Jaggers Bush, Lemington Reserve, Weona Reserve and Westmere Park are on alternating muddy sandstone and mudstone with occasional interbedded lenses of grit also with Waitemata bedrock. Jaggers Bush is moderately to steeply rolling ground to Motions Creek. Westmere, Weona and Lemington Reserves form a variable coastal edge with steep cliffs to the north and west, and a more gently rolling valley and estuarine environment to the south.



View from Westmere Park to Meola Reef and the Pt Chevalier Peninsula

### 5.3 Flora and fauna

Meola Reef and its associated reserves are contained within the Tamaki Ecological District that lies within the Auckland Ecological Region.

Large areas of the coastal environment around the reef are characterised by mangrove habitats and native coastal fauna. Other areas along the Westmere coastline are occupied by esplanade reserves and steep coastal cliffs, with associated native vegetation including significant pohutukawa trees. Reserves more remote from the coastline are more highly modified with less natural environments and habitats. Motions and Meola Creeks have stream sides of variable character with some quite established trees, mostly exotic.

The natural vegetation of Meola Reef Reserve is generally confined to the marine environment (with the exception of one area of saltmarsh flat vegetation), and falls into three separate types according to the substrate on which they grow and the dominant species on the substrate. These are mangroves on sediment, mangroves on lava flows, and saltmarsh on lava flows.

Other vegetation within the reserve comprises indigenous revegetation plantings and riparian planted edges carried out mainly by community groups, and some exotic plantings of Queensland Box.

Vegetation within the other reserves falls into a number of major types. Indigenous species include pohutukawa fringe forest, saltmarsh, mangroves and mixed coastal edge vegetation. Exotic species include bracken, tree privet riparian forest, willow, oak, kikuyu, pampas and managed grass areas.

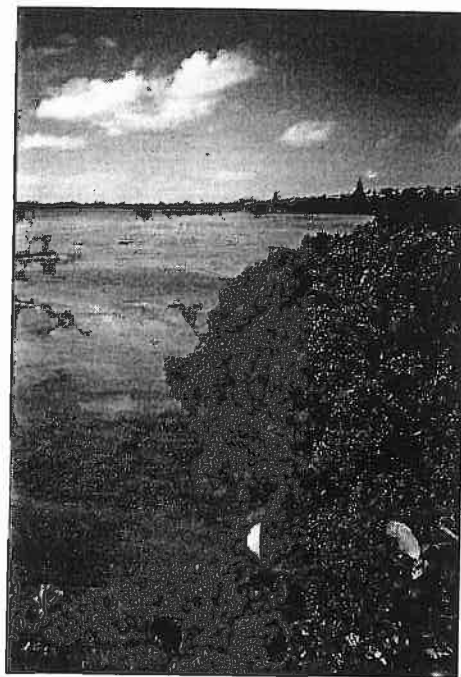
The most ecologically significant natural areas are the pohutukawa fringe forests of Lemington, Weona and Westmere Parks and the saltmarsh areas at Moa and Lemington Reserves. The well-managed tree privet forest of Jaggers Bush has natural value because of the establishment of indigenous understorey that will eventually replace the tree privet canopy.

Weed species that could become a problem in these reserves include agapanthus, bushy asparagus, phoenix palm, purple pampas, three-cornered garlic and kikuyu.

A number of important habitats are found in the area, especially within the estuaries and coastal wetland areas. The reef used to have a dense growth of the shelly tube worm Pomatoceros, but since its arrival in New Zealand in the 1960s the pacific oyster has largely displaced the tube worms. There is diverse marine biota including unusual sponges and bryozoans.

Bird species of note include a threatened coastal fringe species, the banded rail, in the saline vegetation on both sides of Meola Reef Reserve. Other species observed in the saline vegetation and along the reef are white-faced heron, welcome swallow, South Island pied oystercatcher and pied stilt, with the Australasian harrier hawk, and starling observed above the grassland. Blackbird are present in the larger planted areas, and sparrows in the mangroves.

Bird species in the other reserves include welcome swallow, white faced heron and white-fronted shag in the stream area of Jaggers Bush, and sparrow, fantail, blackbird, chaffinch, a pigeon and cockatiel species in the bush area. In the coastal area at Weona reserve, South Island pied oystercatcher, black-backed gull and red-billed gull were seen.



Pohutukawa fringe on sandstone cliffs at Westmere Park



Community planting at Meola Reef Reserve

#### 5.4 Drainage and water quality

The residential areas in Pt Chevalier/Westmere currently have combined sewage and stormwater systems except for a small separated area around Boscawen and Johnstone Streets. This system is often unable to cope with large volumes of stormwater after periods of heavy rainfall. As a result the overflow pipes discharge diluted foulwater onto foreshore areas during periods of peak rainfall.

Stormwater is also discharged onto the foreshore by private and public stormwater outlets. These discharges contain runoff from roads and house roofs. Sediment traps in roadside drains seek to collect large materials and heavy metals, and contaminants in sediments. However some contaminants in solution are able to enter drains, filter through and be discharged.

In 1998 an Environmental Impact Assessment was prepared to investigate the potential adverse effects associated with the closed landfills at Motions and Meola Roads. This involved a review of previous work undertaken in the area as well as the collection of new information on water quality, sediment quality and leachate discharges. It also addressed potential ecological and human impacts in the creeks and estuarine environment.

The assessment identified a number of sources of pollution: leachate seepages, stormwater and CSO outfalls, road runoff, Western Springs base flow and Auckland City Zoo.

The water quality survey results showed localised effects with oxygen deficiency and elevated levels of ammonia in the creeks immediately downstream of some discharges. Sediments were found to be contaminated with heavy metals, in particular copper and zinc. Some levels were sufficiently elevated to suggest that ecological impact is probable. An ecological survey found an impoverished species diversity, dominated by worms, snails and midges, which is typical of degraded streams.

Aesthetic impacts are primarily associated with unsightly leachate discharges and bank erosion along the creeks and edge of the reef.

Bank instability and associated leachate discharges on Motions Creek just south of Meola Road, and leachate ponding on the perimeter of Meola Reef Reserve were recently upgraded. Other works prioritised in the EIA are currently being designed/investigated. These involve a geotechnical investigation, preparing concept remedial options for consultation, and a finalised remedial option that includes:

- Capping
- Landscaping (planting)
- Landfill gas collection options
- Biofiltration investigations



Jaggers Bush

#### 5.5 Access and linkages

The maintenance and enhancement of public access to and along the coast is a matter of national importance under the Resource Management Act, and a strategic priority for the Council. Public access is currently provided by way of reserves and paths through some reserves, with a number of accessway links in the form of steps from adjacent roads down the cliff to the foreshore.

The provision of paths varies, as does the standard and state of repair. A general lack of signage limits the public's ability to maximise their opportunities for access to the reserves, esplanades and the foreshore.



There is considerable potential for creating new paths and linkages, and improving those already existing. Securing esplanade reserves and strips along the creeks would be an effective way to protect ecological corridors and provide access.

When determining the appropriateness of these areas for public access, consideration needs to be given to the physical topography, public safety, compatibility with conservation values, amenity and potential for connections to other esplanade areas or open spaces.

There is no vehicular access or parking on any of the reserves currently. Parking is restricted to on street parking or dedicated parking areas on the road reserve at the entrances to reserves. An exception is the metalled carpark for the West End Scout headquarters.

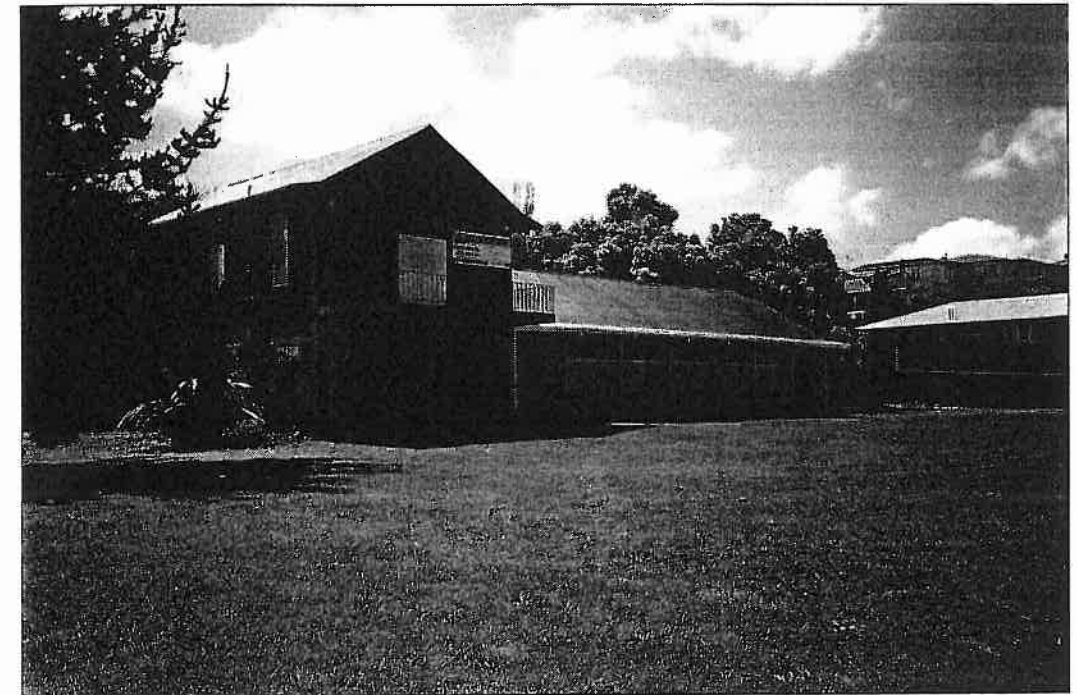


Pasadena School access

#### 5.6 Buildings and structures

The only building that occupies reserve land is the Scout Headquarters at the Meola Rd entrance to Lemington Reserve. There is one playground at Moa Reserve. There are no public toilets or other significant structures on any of the reserves.

Park furniture and signage is currently limited to those reserves with a "neighbourhood park" function. There is potential to provide additional furniture and signs such as entrance signs, information signs, interpretative signs and directional signs. This would need to be balanced against requirements to protect environmental features that may include controlling visitor numbers. The uncluttered and natural character of the reserves is an attribute that is currently valued. A co-ordinated approach and consistent design are required.



West End Scout Club- Lemington Reserve

#### 5.7 Recreation and use

Recreation activities provided for on the reserves are passive and informal. They include boat jetties for small docking craft (Weona Reserve), walking and viewing areas (except parts of Weona and Lemington Reserve), playground (Moa/De Luen Reserve). Informal activities include walking, dog exercising, ball games, bike riding and bird watching. The coastline of this area is a visitor and scenic attraction, while residents use the esplanades as an extension to their home.

The reserves are also important for providing open space and areas of natural, heritage and scenic value for residents and visitors. They have an important role in the sustainable management of resources, and allow ecosystems to function in their natural state. This is particularly true where there is no public access.

#### 5.8 Community values

Community values and perceptions are an important consideration in the management of the coastal edge and associated reserves. The physical nature of the Peninsulas as being separated from other areas by water, green spaces and major roads has significant implications for the community perception of the area.

Perceptions of isolation and uniqueness are created and a sense of defined community or communities is formed. The separation also provides residents with a sense of distance and therefore security from "disturbances" in the surrounding areas.

Key values for residents are proximity to water, views out across the water, sense of space, low key development, green spaces, ease of access to significant ecological systems, and family oriented public spaces.



There are a number of adjoining land uses that contribute to the natural values and recreation experience of the reserves. These include Seddon fields, Western Springs College, Pasadena School, Te Mahurehure Marae and Sir Keith Park Memorial Airfield (Motat II).

Residential properties also have the opportunity to enhance the boundary and interface with the reserves by improving fencelines, planting, adopting areas for weed removal, and providing passive surveillance.

Adjoining landowners should be encouraged to appreciate and enhance the resource that reserves provide, and work with Council to the benefit of the land owner and general public.

### 5.9 Mana Whenua

Te Tokoroa Reef has special issues relating to its former use and development as a landfill site.

Te Hao o Ngati Whatua has provided a mana whenua perspective to this management plan and proposed an approach to work in partnership with Auckland City Council. This would address the environmental issues, and put in place a process for managing the rehabilitation of Meola Reef Reserve.

The principles of the process involve recognising that the land has been neglected and wounded, and that there is an obligation to rehabilitate the site and restore the mauri to the whole of the area. This needs to be undertaken with due regard to the administrative frameworks, but before consideration is given to future recreation needs.

A partnership between Te Hao o Ngati Whatua and Auckland City is proposed to:

- Address the environmental issues associated with the landfill sites
- Adopt a collective commitment to rehabilitate the whenua (land)
- Determine appropriate timeframes for rehabilitation
- Design an appropriate, user friendly remedial action plan for the landfill site
- Develop a robust strategy to achieve all of the above

## 6.0 Management issues and opportunities

### 6.1 General

Much of Meola Reef Reserve and associated reserves fall within the Western Springs precinct, which has been the subject of various forward planning reports. This envisages combining a number of the facilities in the area to maximise economic and social benefits, and protect and enhance ecological values. Facilities would include Western Springs Park, MOTAT and Sir Keith Park Memorial Airfield, Western Springs Stadium, Seddon Fields, Auckland Zoo, Pasadena School and Western Springs College, and the reserves contained in this management plan.

One of the key objectives within the precinct would be "to link Western Springs facilities by road, foot and/or other transport for the local community and tourists". Other aims are aligned to Council's strategic direction on developing recreational precincts, and include objectives such as:

- Promotion of facilities (MOTAT, Auckland Zoo, Western Springs Park, Meola Reef Reserve, Seddon Fields and Jagers Bush) and strengthening relationships between activities
- Practical and safe traffic management and pedestrian access within the precinct
- Promotion of the use of public transport, including the tram system
- Rationalisation of land resources for improved provision of outdoor recreation facilities, and in particular organised sporting activities
- Protection of heritage features including historical buildings, natural features and landscape eg significant trees
- Recognition of the strong landscape features present in the precinct and the potential to link these features and form a recreational resource of city-wide importance.

### 6.2 Individual reserves

The following section provides information on the individual reserves, and outlines the issues and opportunities specific to each reserve. These issues need to be considered with the general issues already discussed.

### 6.2.1 Meola Reef Reserve

Land Status – Mix of recreation reserve and freehold

District Plan Zone - Open Space 1

#### Reserve description

Meola Reef Reserve comprises mainly flat to rolling pasture over a closed landfill that was formed over a lava reef. The central area is grazed and surrounded by open mown grass areas. Formed and unformed tracks are located around the edges and through the centre of the reserve. A mix of informal and semi-formal carparking is provided at the path entrances to the reserve off Meola Road.

Natural vegetation is all within the marine environment and includes mangroves and saltmarsh. Native plantings have been undertaken towards Meola Road and along the edges of the estuaries, generally by the local community led by Project Meola. Plantings include ngaio, cabbage tree, flax, manuka, pohutukawa, karaka, karo and karamu. These are of variable age and character with spraying of some grass areas beneath the trees and weed infestation in other areas.

Remedial works are currently being developed for the landfill, to reduce leachate and improve safety for reserve users (exposed rubbish and gas). This involves capping the central area to facilitate stormwater runoff and recontouring. The majority of the capped areas will be planted with native vegetation, with an open grassed area retained to the north to allow elevated views and passive recreation. The cattle will be removed.

#### Issues and opportunities

The undeveloped nature of the reserve is highly valued, with opportunities for enhancement of natural and historic values together with improved landfill management.

Capping and recontouring of the surface will result in a reduction of grassed areas which will be mown, rather than grazed. The capped planted areas will be fenced off with no public access in accordance with Te Hao's recommendations. Existing paths will be retained or reinstated following capping.

Other access into and adjacent to the reserve needs to address safety with reference to traffic movement from Meola Road, pedestrian/traffic conflict and landfill hazards. A number of potential routes have also been identified that could provide linkages with other surrounding reserves. These include potential boardwalks/ bridges to Point Chevalier Peninsula and Weona/ Lemington Reserve, and improved access across Meola Road to Sir Keith Park Memorial Airfield, Seddon Fields and Jagers Bush. There is also an opportunity to extend the tramline from Motions Road to Meola Road and the reserve.

Activities and development should be limited to those with least impact on natural values and incorporating passive recreation.

New planting will balance recreation opportunities, landfill management requirements, a desire for attractive planting, and the natural ecology. It is envisaged that the planting will be carried out in two parts – as part of the landfill remedial works contract and by the community. Auckland City Recreation and Community Services will manage the location and choice of species. There are opportunities to educate visitors regarding the former landfill and its rehabilitation. Suitable locations for seats and lookout structures could be considered.



Meola Reef Reserve

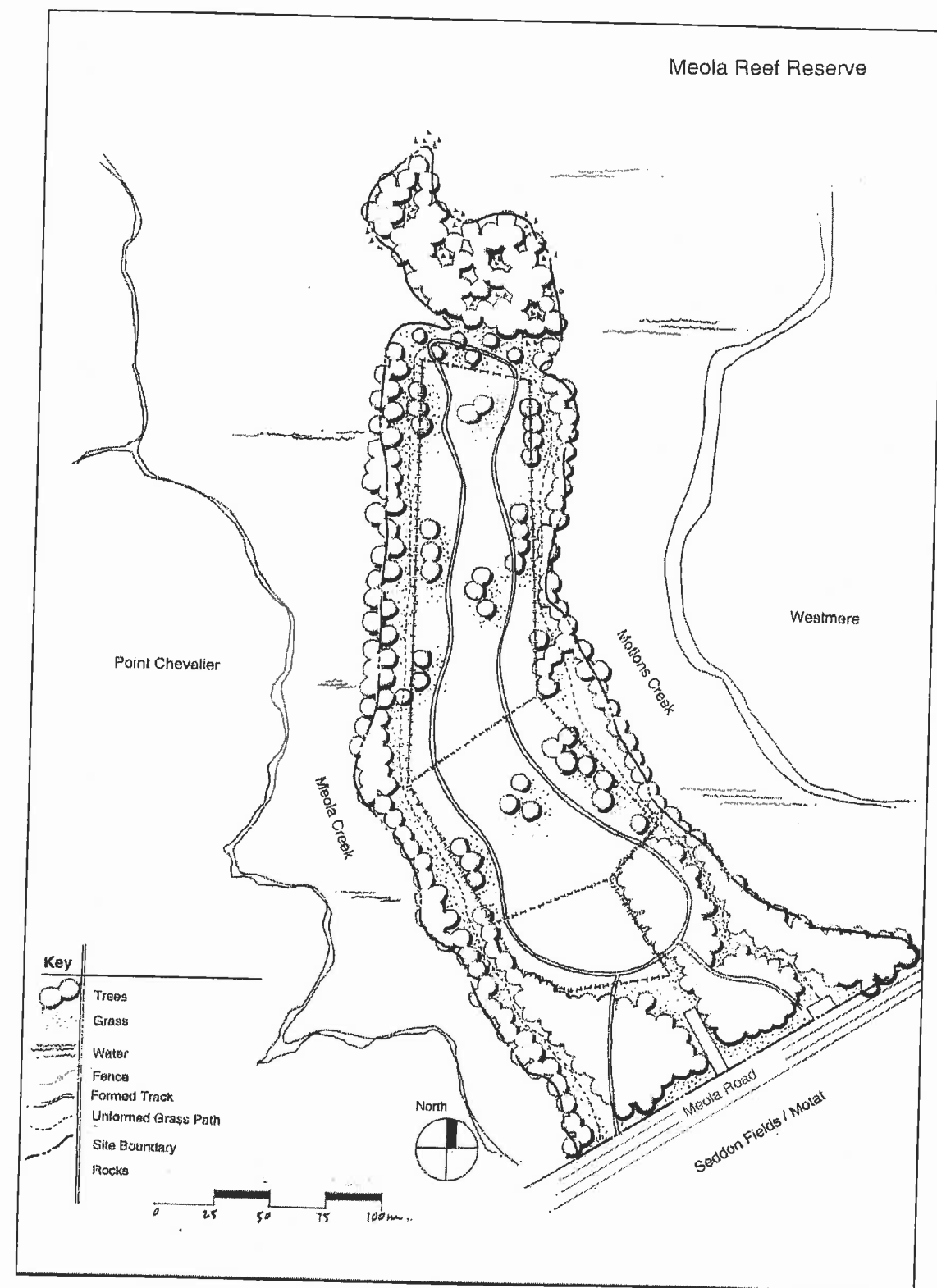


Figure 3: Layout of Meola Reef Reserve

### 6.2.2 Sir Keith Park Memorial Airfield (Part)

#### District Plan Zone - Open Space 5

##### Reserve description

Sir Keith Park Memorial Airfield is leased by MOTAT and contains transport museum exhibits. A large area of the park is not utilised and it is proposed that an esplanade area be taken from the reserve in order to facilitate a walkway along Meola Creek.

The esplanade area is currently inaccessible except through the reserve, and comprises steep to moderate to gently rolling landform down to stream terraces.

Vegetation is a mix of weed species, grass and exotic trees such as willow and poplar. There is no management of this area currently.

##### Issues and opportunities

The esplanade area could contribute to ecological, recreation and access values of the area and should be separated from Sir Keith Park Memorial Airfield and given a more appropriate zoning of Open Space 2.

Sir Keith Park Memorial Airfield generally offers pedestrian access and linkage opportunities to several streets and reserves in the area, and a walkway strategy should be negotiated with MOTAT.

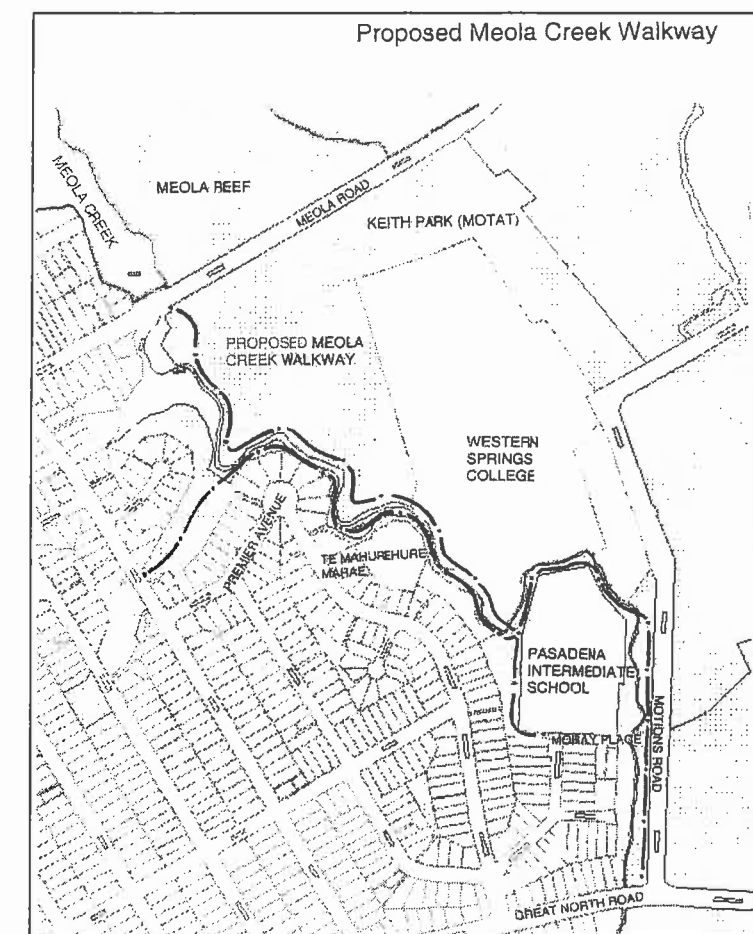


Figure 4: Proposed Meola Creek Walkway

### 6.2.3 Moa Reserve/De Luen Reserve

Land Status- Recreation Reserve

District Plan Zone - Open Space 2

#### Reserve description

This reserve forms a connection between Walmer Reserves (North and South) and the Meola Creek esplanade. Values centre on the water asset and recreation/amenity values such as:

- Flat useable grass area and playground
- Potential access to water and corridor for walkway connections (to Seddon Fields and Great North Road)
- Potential water recreation activities including canoeing/kayaking, remote control boats, and the formation of a lagoon

This reserve provides the only open flat grassed land in the area and is consequently valued as a neighbourhood reserve. It is also more developed than any of the other areas, with signs, a formal path, playground and furniture. The path connects Moa Street and Kanuka Street/Premier Avenue. A partially disguised pipeline forms a threshold to the reserve.

Existing vegetation contains natural coastal and estuarine vegetation, and exotic planting and weeds. There is a weedy plateau at the end of De Luen Street and grass weeds are taking over the natural saltmarsh areas. Native plant species include kahikatea (planted), saltmarsh spp., mahoe, mamaku, mapou, karamu, hangehange and mangroves. Some revegetation has recently been undertaken to restore natural vegetation and creek values.

#### Issues and opportunities

Opportunities exist to enhance the esplanade area both with regard to linking the open area of Moa Reserve with the stream, and also to restore the natural vegetation and creek values. Weeds are wide-spread and include species not found elsewhere in the reserve e.g. ivy, kahili ginger, chinese privet, climbing asparagus.

Opportunities also exist to extend pedestrian access:

- Through the accessway on De Luen Street round to Moa Reserve
- Across Meola Creek to Sir Keith Park Memorial Airfield / MOTAT, Seddon fields and Meola Road either via a bridge(s) or boardwalk
- Along the esplanade to Pasadena Reserve and Motions Road.

The more developed open areas could be extended to incorporate more grassed areas, seating, picnic areas and access to the water.



Moa Reserve



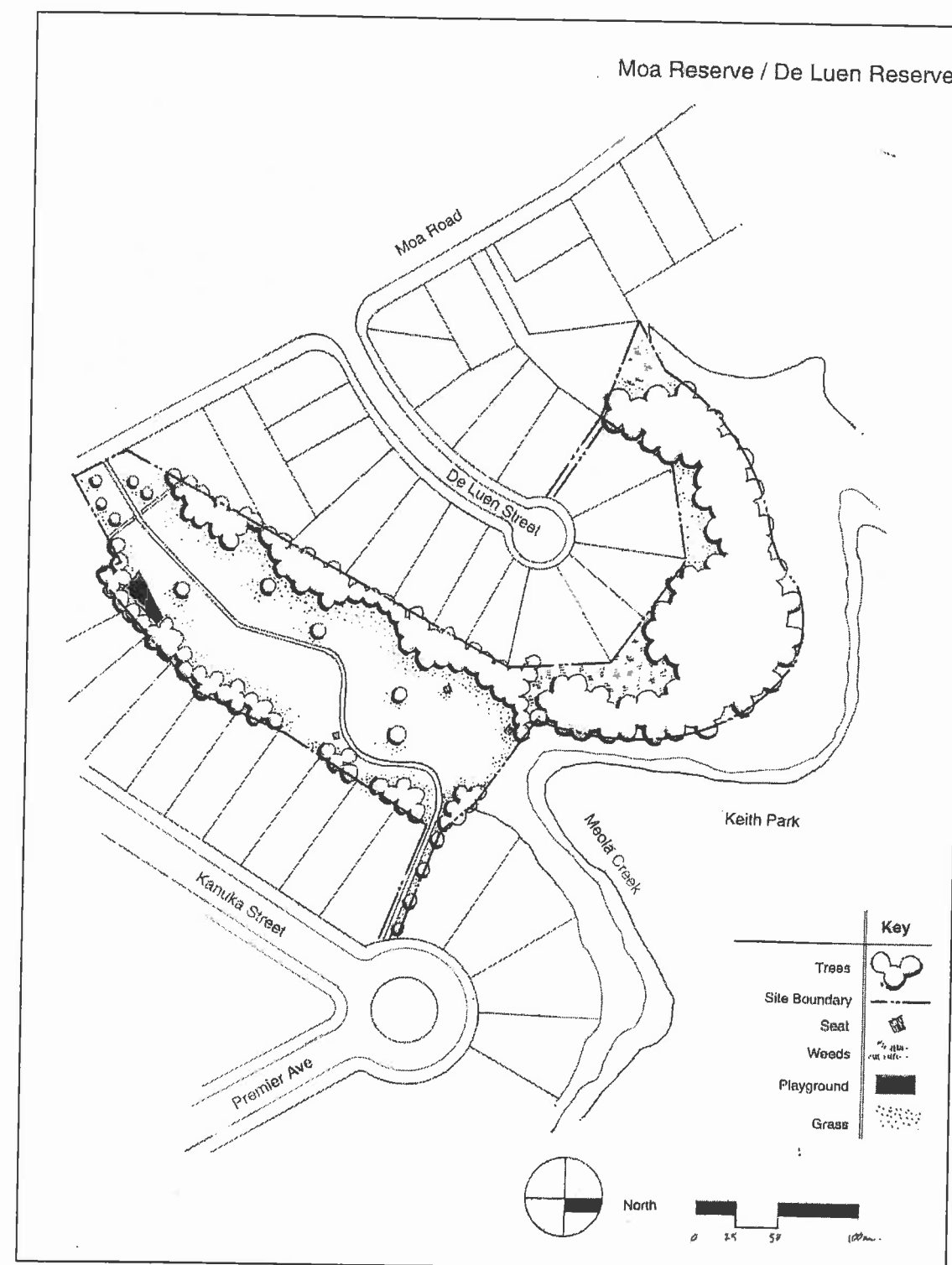


Figure 5: Plan of Moa Reserve/De Luen Reserve

#### 6.2.4 Walmer Reserve North

**Land status** – Mix of Recreation Reserve and Reserve (no classification)

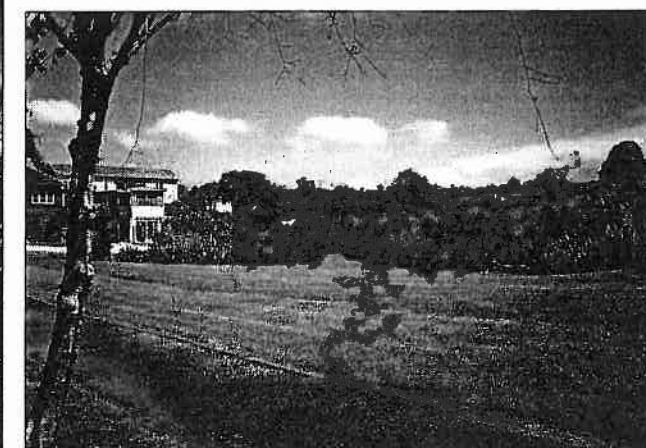
**District Plan Zone** – Open Space 2

##### Reserve description

This area lies on the other side of Moa Road from Moa Reserve and forms part of a walkway route through the former creek tributary area. The area is a gently sloping gully, low lying, part grassed and part planted with mass flax bushes and cabbage trees. There are mixed values attributed both to the flax and path. The walkway is popular but wet and muddy periodically, and the flax bushes have a tendency to overhang the grassed path.

##### Issues and opportunities

Issues relate to the form of the reserve, and planting. Opportunities exist for more diverse planting within the flax areas and to provide an all-weather route between Moa Road and Walmer Road. A seat would offer additional amenity between Moa Road and Walmer Road.



Walmer Reserve North

#### 6.2.5 Walmer Reserve South

**Land Status** - Recreation Reserve

**District Plan Zone** - Open Space 2

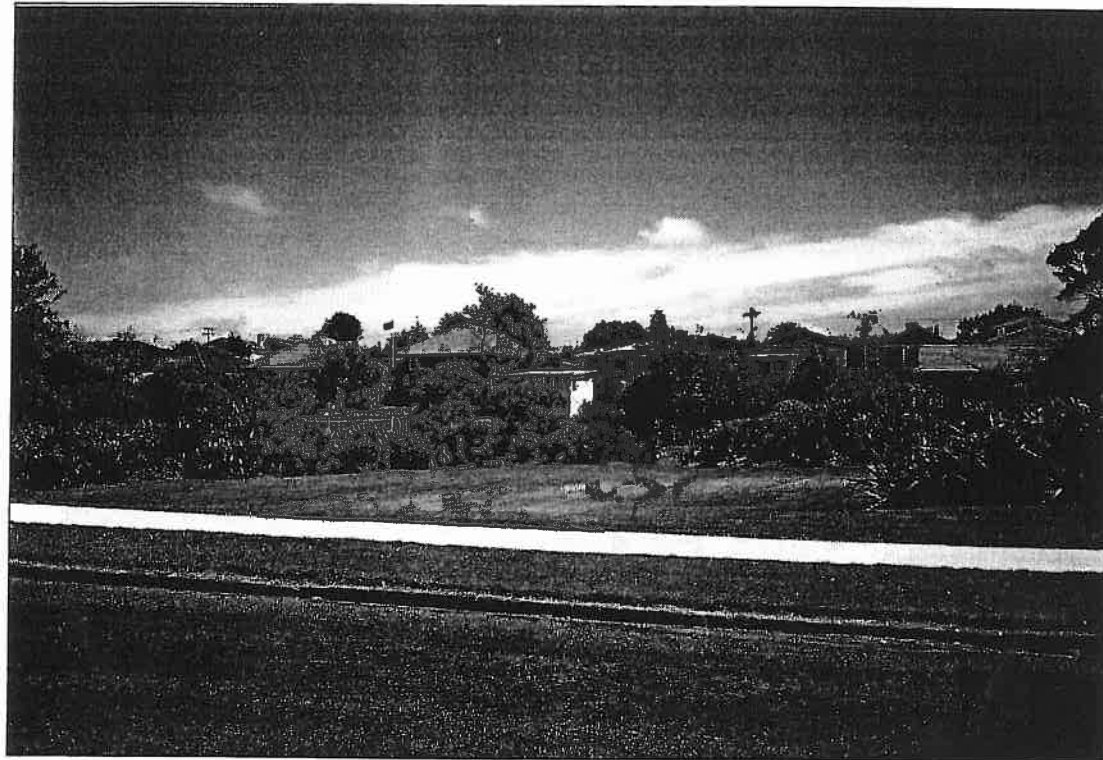
##### Reserve description

Walmer Reserve South forms a continuation of Walmer Reserve North and lies at the head of a former tributary valley. Flax bushes are planted around a grassed area that connects with Walmer Road. This area has limited recreation use due to its tendency to hold water and remain wet.

### Issues and opportunities

Similar opportunities are available as for Walmer Reserve North. The grassed area could be developed to provide increased amenity, with the creation of a pleasance area or garden for residents.

Other opportunities include tree planting to augment the flax planting and taking advantage of the aspect and orientation as the start of a wildlife/walkway corridor to Meola Creek.



Walmer Reserve South

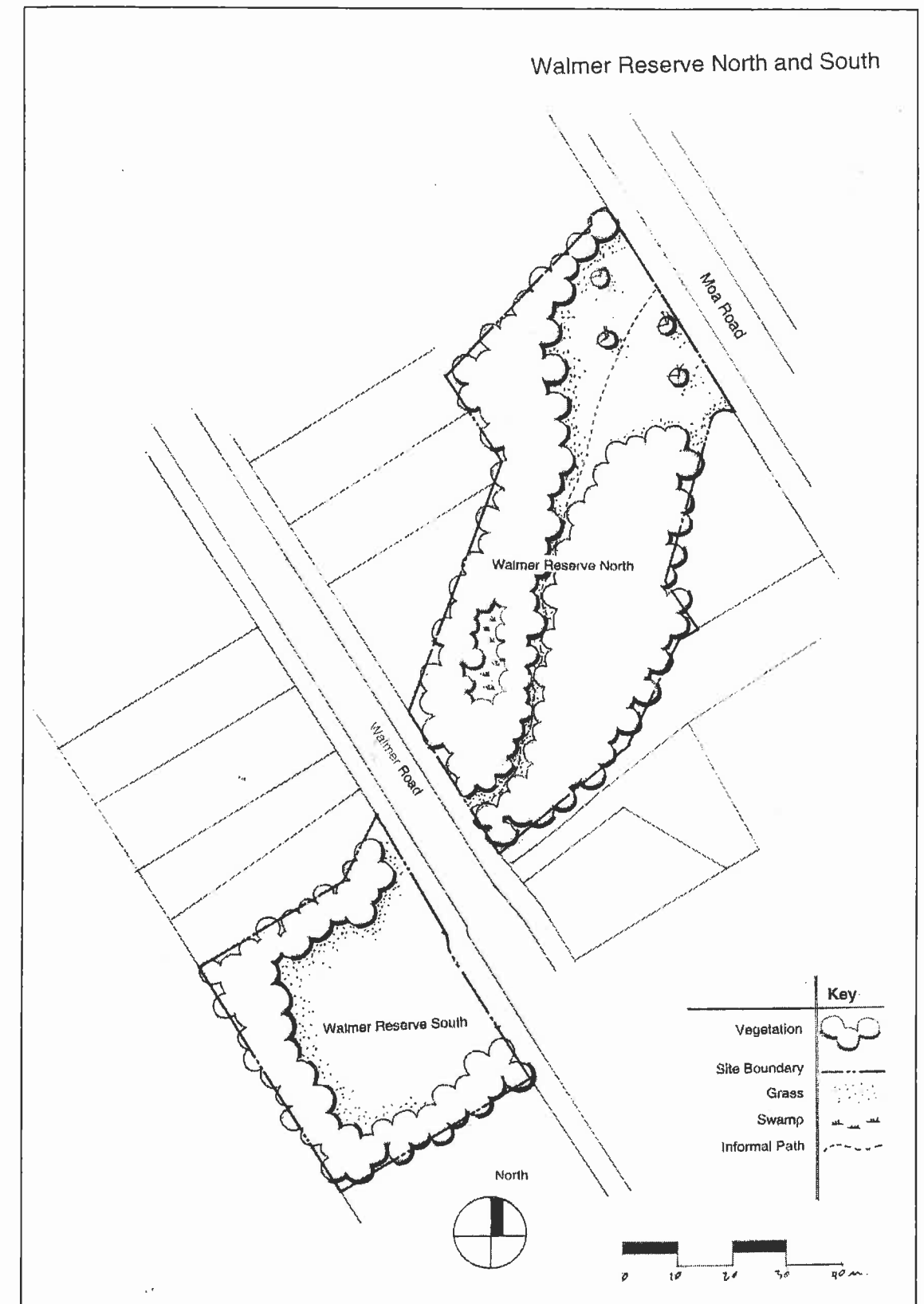


Figure 6: Walmer Reserve North and South

#### 6.2.6 Pasadena Reserve and related reserves

Land status - No classification

District Plan Zone - Open Space 2

##### Reserve description

This includes Pasadena Reserve and an unnamed reserve (Motions Road Reserve) to the east of Pasadena Reserve alongside Motions Road.

A formed path runs east from Premier Avenue to Motions Road providing access to Pasadena School via a bridge and steps. A second widely used pipeline crosses the Creek at the north eastern corner of the school. A path then joins the Motions Road footpath, and the Creek becomes more steeply sided, and overgrown with willows, wild ginger, gorse and wandering jew.

Vegetation in the reserve is currently a mix of weed species, grass, and exotic trees, such as willow and poplar. Some native planting and tree work is currently being carried out along the northern and western edges of Pasadena School grounds adjacent to the creek.

Weed species, such as wandering jew, onionweed, kikuyu and blue morning glory are extensive along both sides of the creek, and a second pipeline runs from the western boundary of Pasadena Intermediate onto private property.

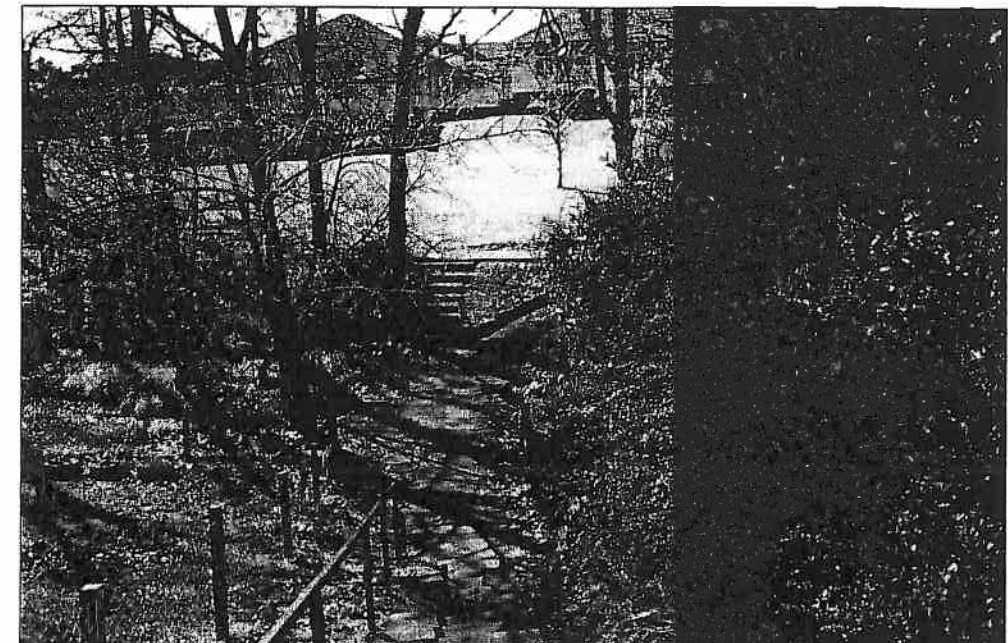
##### Issues and opportunities

The undeveloped nature of this reserve is of potential educational value to local children, and could provide an ecological, recreation and access corridor from Great North Road to Meola Reef.

In particular, there is potential for opening up access north, beside Meola Creek, to Moa Reserve and Meola Road. This would be widely used by schoolchildren and visitors. An opportunity also exists to extend the walkway along the creek to Great North Road. An existing accessway off Premier Avenue has not been formed and the adjacent undeveloped lot owned by Te Mahurehure Marae offers potential as a park or improved accessway to the creek.

Generally there are opportunities to:

- Investigate the potential for a walkway along Meola Creek
- Restore and enhance the creek and riparian areas
- Construct footpaths over the existing pipelines.



Pasadena Reserve



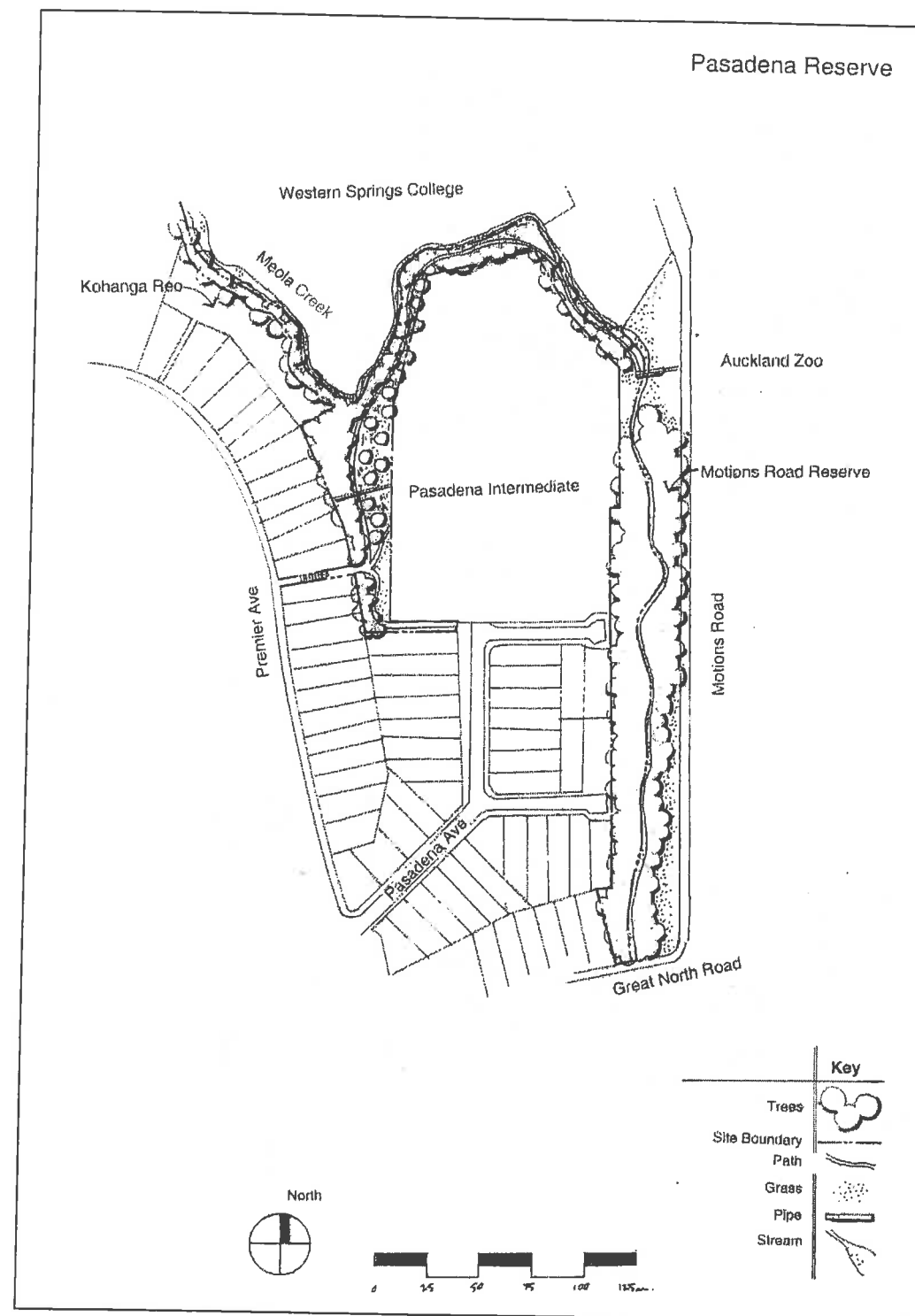


Figure 7: Plan of Pasadena Reserve and related reserves

### 6.2.7 Jagers Bush

Land Status - Recreation Reserve

District Plan Zone - Open Space 2

#### Reserve description

Jagers Bush is located along Motions Creek. This area was modified when the adjacent area (Seddon Fields) was used as a landfill area and contains a mature privet woodland underplanted with native trees and shrubs. On the eastern boundary the landform is moderately rolling to steep and the reserve merges into private backyards.

Seddon Fields lies to the west of Jagers Bush on the other side of Motions Creek. It provides for organised sporting activities such as soccer, island cricket, Australian football and touch tournaments. It forms an important central facility to the reserves in this management plan through the provision of different recreational opportunities, that might otherwise be in conflict with values and policies of reserves zoned for conservation and informal recreation. It also contributes to the wider ecological linkages, particularly in respect to Motions Creek. While it has an important access and recreation relationship with Jagers Bush and the other reserves, it has been excluded because of its primary use for active recreation.

A walkway winds through Jagers Bush, connecting to Meola Road, Old Mill Road, Savage Street and Notley Street. Away from the walkway weeds are a problem, notably wandering jew and climbing asparagus. Along the creek there is a mixture of exotic trees and weeds including oak trees and willows. A variety of trees are located along the eastern margins including pines, eucalypt and kowhai.



Jagers Bush

Some new wetland planting has been undertaken together with leachate and erosion control of the stream bank close to Meola Road. There are ongoing problems with water quality that are outside the scope of this management plan but which need to be considered in any future development plans for the reserve.



### Issues and opportunities

Key opportunities relate to potential stream restoration and planting combined with recreation and access enhancement, particularly in association with the waterfall. Particular opportunities identified are to increase the use of Motions Creek corridor as a recreation, ecological and wildlife asset.

Access opportunities include extending the existing walkway to have wider connections with the creek and across it via a bridge or bridges to Seddon Fields, as well as improved connections with Lemington/ Meola Reef Reserve and to the bush area within/behind the Zoo.

Continue to use the privet forest in the short term to promote regeneration of planting of native vegetation.

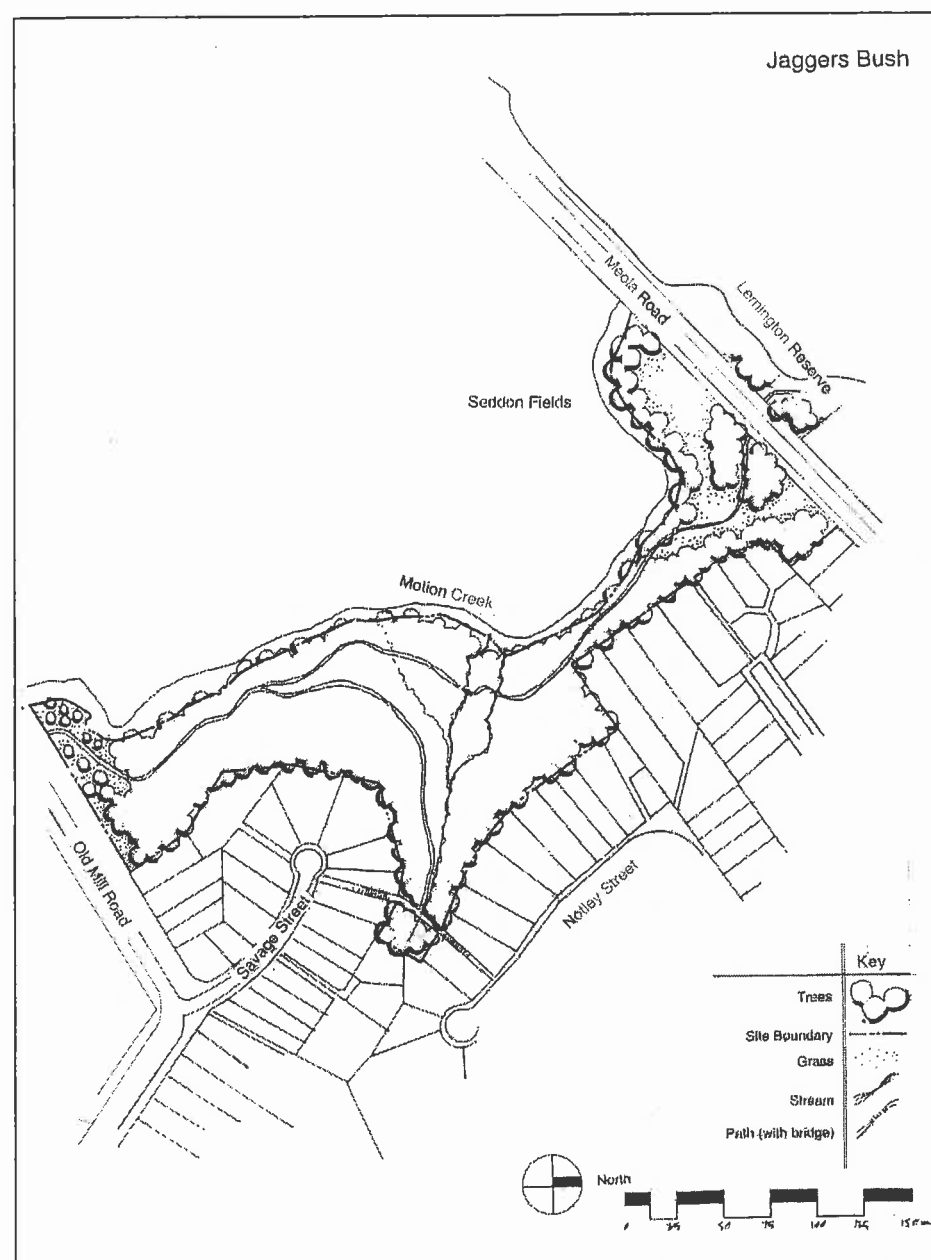


Figure 8: Plan of Jaggers Bush

### 6.2.8 Lemington Reserve

**Land Status** – Mix of recreation reserve and public reserve

**District Plan Zone** - Open Space 2 and Open Space 4

#### Reserve description

Lemington Reserve has moderate to rolling terrain with grassed open spaces and edge planting. The reserve extends east and west in mixed native and exotic coastal riparian vegetation strips.

The area to the west is mainly self-sown, and forms an inaccessible thickly vegetated coastal scarp that becomes quite steep. The vegetation is varied with indigenous plants, exotic weeds and some planted exotics. These include mapou, kowhai, manuka, ponga, cabbage tree, tree privet and hawthorn.

The area to the east is mainly planted with indigenous species such as mapou, kowhai, and coastal karamu, although tree privet and hawthorn are major species. Blue morning glory and wandering jew are both problems in this area.

There is a small brackish and saline wetland area extending south from the grassed area behind Westmere Crescent, which contains distinct areas of different vegetation including flax, kahikatea, wheki, kikuyu, marsh clubroot and jointed wirebrush, bachelors buttons. The mangroves immediately seaward of the saltmarsh are 2m tall with a dense carpet of seedlings underneath. Purple pampas and some giant reed are a problem on the eastern edge of the wetland.

A concrete path links Lemington Road with Meola Road, exiting at the Meola Road end on an open grassed area containing the West End Scout Club headquarters and informal parking area. An additional grassed accessway links Westmere Crescent with the reserve.

#### Issues and opportunities

This reserve contains a range of areas with varying landscape character and ecological quality. Consequently there are differing issues and opportunities. Opportunities exist for habitat and environmental enhancement, particularly the coastal fringes and saltmarsh. This will include weed removal. A balance of coastal forest and open space/walkways should be retained. This could involve more path development, including access to the foreshore and through the mangroves, provided existing values are maintained.

Other issues and opportunities include:

- Opportunity for shared parking at Scout headquarters
- Removal of rubbish and weeds in inter-tidal mangrove area and stream
- Improve pedestrian access to Meola Reef Reserve and Jaggers Bush



Lemington Reserve - Wetland

### 6.2.9 Weona Reserve

Land status - Recreation Reserve  
District Plan Zone - Open Space 1

#### Reserve description

Weona Reserve and Westmere Park are legally one reserve but have their own distinct character and different planning zones. The southern part of Weona Reserve is similar to the coastal edge vegetation of Lemington Reserve with the exception of an area of significant pohutukawa fringe forest to the south. This is the narrowest part of the coastline and it is difficult to tell whether some of the trees are in the reserve or on private property.

Other areas of pohutukawa fringe forest occur to the north of the mangroves and close to Westmere Park, along sandstone cliffs. Understorey plants are of varying quality including higher quality karo, mapou and coastal astelia, and numerous weeds such as bears breeches, tree privet, orache and bushy asparagus.

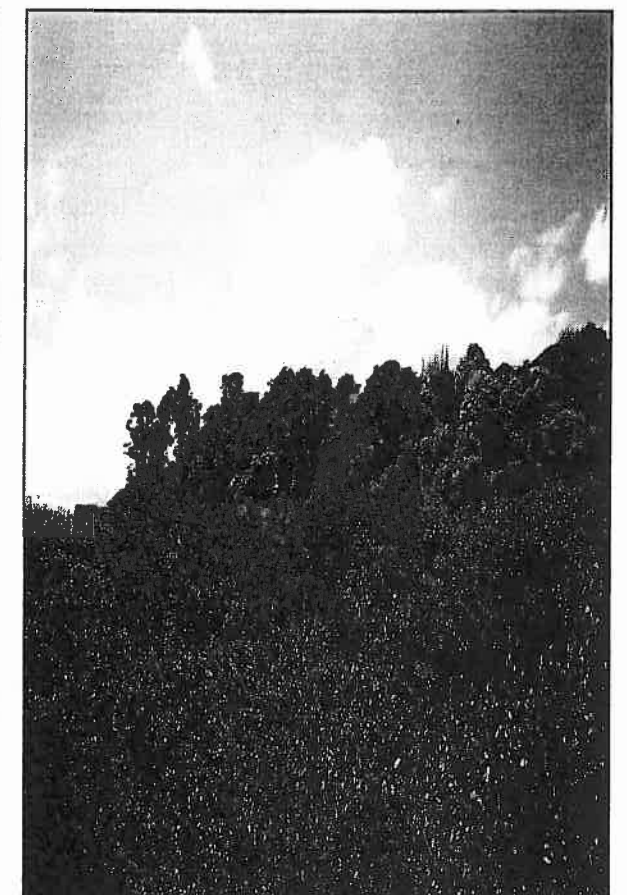
Along the open coast there is little vegetation except for weeds. There are numerous private structures associated with boat mooring, including boat ramps, walls and groynes. There is a public path along the top of the cliff with stepped/ramped access to the bottom but this is generally in poor repair, and flax bushes overhang it.

#### Issues and opportunities

Comprising a steep coastal edge with natural and regenerating vegetation, issues relate to promoting natural coastal values, controlling/removing weeds, and managing an appropriate level of access.

Particular issues include:

- There is potential for increased and better access, including a number of existing accessways that could be upgraded
- Privatisation and development by neighbours is compromising natural values including cliffs and the foreshore area
- Pohutukawa fringe forest and other vegetation needs protecting and weed control/eradication is required
- Safety issues include exposed rubbish in bank and unsafe access structures
- Pollution/visual issues relate to stormwater pipes from new houses discharging into estuary/stream and activities such as painting and working on boats
- Control of erosion, especially banks
- Appropriate management of boat activities and structures - groynes, boat ramps and mooring areas.



Weona Reserve

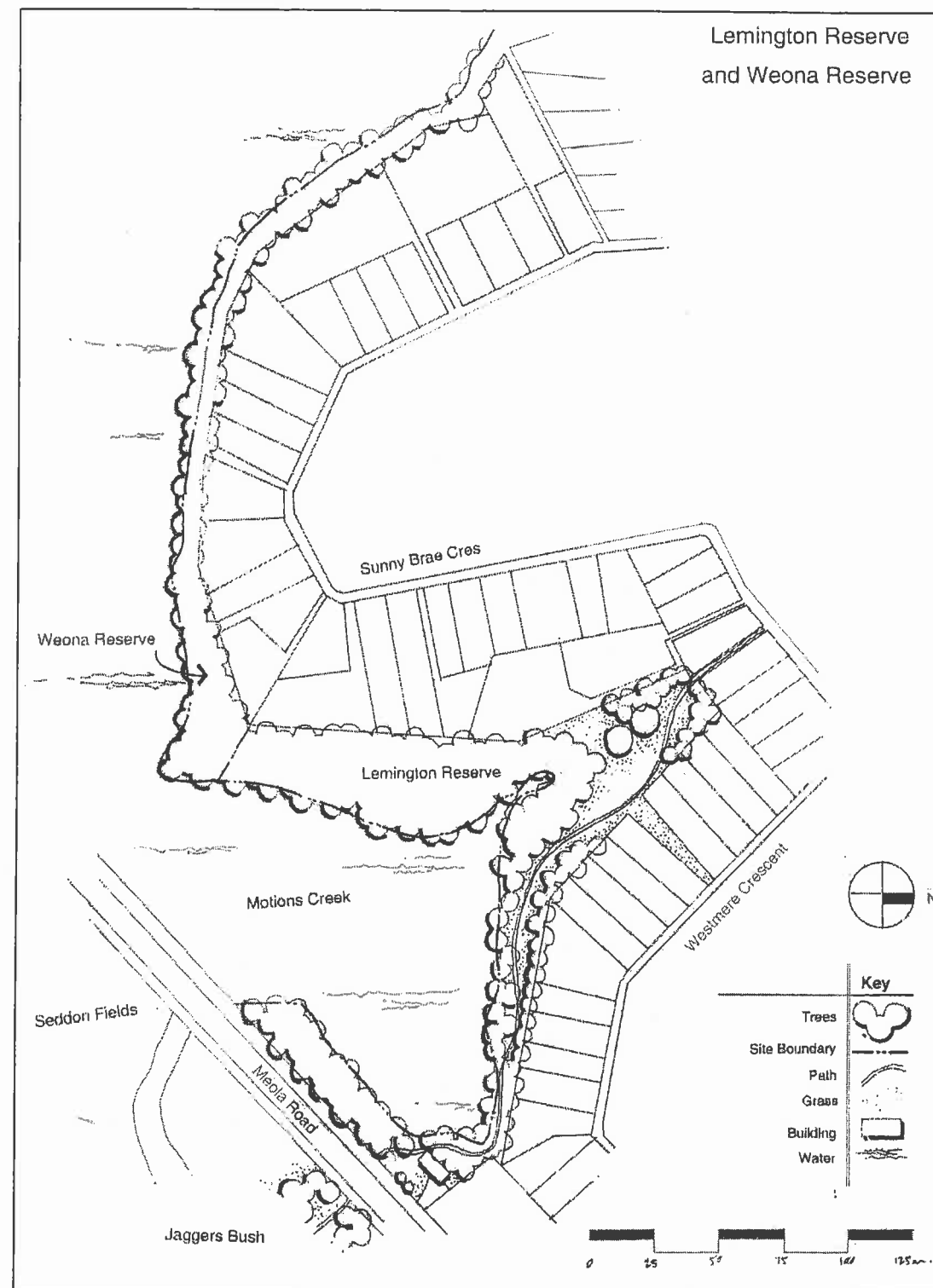


Figure 9: Plan of Lemington Reserve and Weona Reserve

#### 6.2.10 Westmere Park

Land status - Recreation Reserve  
District Plan Zone - Open Space 2

##### Reserve description

Westmere Park lies at the end of Weona Reserve off Westmere Park Avenue. It forms a flattish open grassed area at the top of tall sandstone cliffs fronted by a basalt wall and provides excellent views over the harbour.

Existing vegetation comprises pohutukawa fringe forest and new planting. The pohutukawa canopy is fragmented in this area with one tree having fallen from the cliff. In addition, three big eucalypts are present in the vegetation, and beneath the pohutukawas above the mortared basalt block wall there is a concentration of agapanthus and ladder fern.

Pedestrian access is provided from Tirotai Crescent to the reserve via a driveway to the pumping station in the north eastern corner, and from Westmere Park Avenue.

##### Issues and opportunities

Opportunities and issues are similar to those for Weona Reserve and include:

- Promoting natural coastal values and removing weeds
- Managing access, including providing a path to link Westmere Park Road with the pumping station driveway
- Development of informal recreation facilities, e.g. picnic table, seats.



Westmere Park

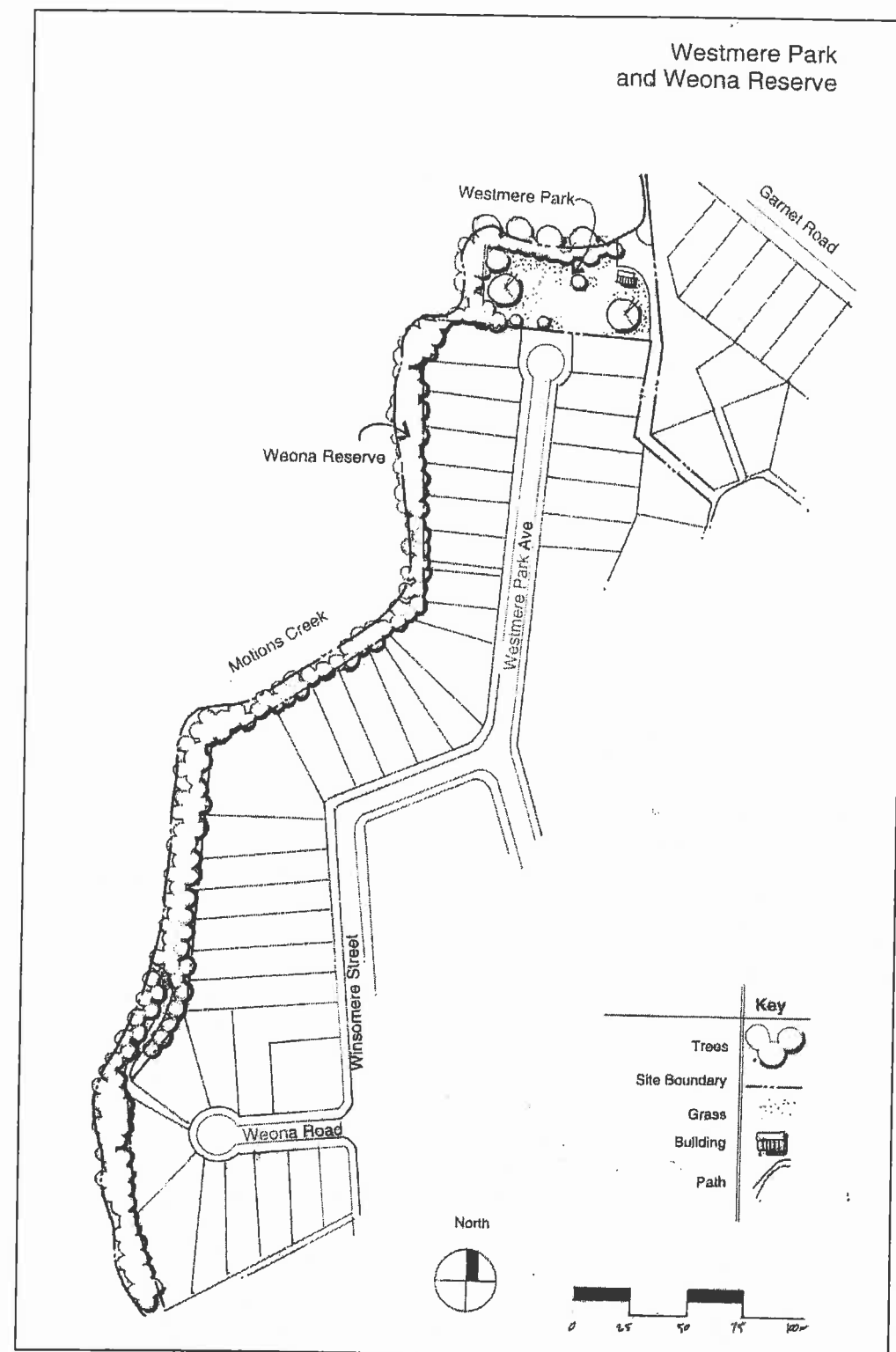


Figure 10: Plan of Westmere Park and Weona Reserve

## 7.0 Vision

The Meola Reef and Associated Reserves Management Plan will provide for enhancement of the environment and enjoyment of informal recreation in a manner that allows for the protection of areas of scenic, heritage, natural or habitat value.

## 8.0 Management objectives and policies

### 8.1 Role of the reserves

#### Objective 1

To manage, protect and enhance the natural attributes of the reserves while providing for informal recreation for use by the local and citywide community.

#### Explanation

The reserves in this management plan form an important landscape and natural resource associated with Te Tokoroa Reef, and Meola and Motions Creeks. The area is highly valued by local residents for informal recreation (walking, appreciating the natural environment), and is expected to become increasingly important for visitors and residents outside the local area as residential intensification occurs and the Western Springs precinct is developed.

The coastal reserves are identified as Regionally Significant Landscapes and require protection and enhancement. They also offer opportunities for raising awareness of the cultural and natural heritage of the area.

#### Policy 1.1

Establish and recognise the classification of each reserve in the allocation of activities and the use of open space.

#### Policy 1.2

Protect and enhance the natural values and character of the coastal environment, particularly those features that give the reserves their regional significance.

#### Policy 1.3

Reinforce the relationship between the reserves and the estuarine and coastal environment.

#### Policy 1.4

Manage the reserves in a way that provides for improved ecological and natural values while complementing the development of the Western Springs precinct area.

#### Policy 1.5

Ensure that activities and facilities provided for on the reserves do not result in adverse impacts on the adjacent creeks, estuary and coastal marine environment.

#### Policy 1.6

Manage the environment using sustainable practices and implementation including revegetation, weed reduction, appropriate maintenance regimes and establishment of sites that interpret their value, culture and history.



## 8.2 Heritage

### Objective 2

To preserve and protect sites and features of cultural heritage significance.

#### Explanation

Sites and features of historical and cultural significance need to be protected and enhanced with opportunities provided for education and interpretation.

#### Policy 2.1

Should archaeological evidence be uncovered on site, all work/activity shall cease and only recommence with approval of local iwi and The Historic Places Trust.

#### Policy 2.2

Provide interpretation material if archaeological sites are found in consultation with local iwi.

#### Policy 2.3

Ensure that public access, recreation activities and planting are managed in a way that enhances and protects sites and features of cultural heritage significance.

## 8.3 Recreation and use

### Objective 3

To provide for and promote opportunities for informal recreation while recognising the reserves' landscape values and sensitivity to change.

#### Explanation

The coastal and riparian environments are sensitive to development, and any introduced activities or elements must ensure a balance is achieved between protecting the natural environment and providing for the needs of the future users of the open spaces.

#### Policy 3.1

Encourage an appropriate level of use of the reserves and their facilities commensurate with their ability to support informal and passive activities.

#### Policy 3.2

Ensure that any development proposals are in keeping with the zoning and objectives of the district plan and management plan, and the natural landscape character.

#### Policy 3.3

Ensure that recreational activities do not adversely impact on the experience of other users.

#### Policy 3.4

Provide and maintain a minimum of facilities necessary for the health, safety and convenience of recreational users.

#### Policy 3.5

Assess all future recreation proposals in terms of their effect on the reserve and their ability to meet the objectives and policies of this plan.

## Policy 3.6

Ensure that any future use has a need to be located in the reserve, with reference to other opportunities provided elsewhere in the city.

## 8.4 Flora and fauna

### Objective 4

To restore, protect and enhance the flora, fauna and natural habitats of the streams and estuarine mudflats, to reflect the natural character of the environment and provide visual amenity.

#### Explanation

The reserves, including Meola Creek, Motions Creek, their estuaries and the reef on the bed of Waitemata, contain areas of functional and ecological significance. The presence of wildlife and their habitats contributes to users' enjoyment and experience of the reserves.

#### Policy 4.1

Prepare a vegetation plan that determines the future management for each reserve, including weed control, protecting existing vegetation and new plantings.

#### Policy 4.2

Ensure the vegetation plan includes weed clearance or control techniques that will not threaten indigenous vegetation and avoids chemical sprays where appropriate, in accordance with Council's weed management policy and the Auckland Regional Plant Pest Management Strategy and Weed Management Policy.

#### Policy 4.3

Undertake revegetation using naturally occurring, eco-sourced indigenous species consistent with the site conditions, planting plan and cultural heritage of the locality.

#### Policy 4.4

Promote restoration of stream terraces and riparian vegetation.

#### Policy 4.5

Promote the continued involvement of the local community in the future planting and vegetation management of the reserves as well as weed eradication programmes.

#### Policy 4.6

Ensure that planting is designed to encourage passive surveillance from residential areas and traffic routes, and permits access to water areas where appropriate.

#### Policy 4.7

Preserve, enhance and create wildlife habitats.

#### Policy 4.8

Ensure enhancement of indigenous wildlife is considered when selecting species for planting.

## 8.5 Access and linkages

### Objective 5

To ensure vehicle and pedestrian access to, within and between the reserves is safe and sufficient for public use, and at an appropriate level that allows for protection of the environment.

#### Explanation

The maintenance and enhancement of public access to and along the coast is a matter of national importance under the RMA. Vehicle and pedestrian access is currently limited as well as being intermittent and to a varied state of repair.

It is not desirable or appropriate for public access to be provided to all parts of the coastline, either because of the steep nature of the cliffs and problems of erosion, or because of conservation values of the area. On the other hand access and parking should be adequate so that residential streets are not adversely affected.

Public transport and cycle access should also be considered as alternative means of access to and within the reserves.

#### Policy 5.1

Undertake a walkway plan that is consistent with Council strategic documents and provides a network of linkages to an appropriate standard and level, while protecting the environment.

#### Policy 5.2

Pursue opportunities for new or improved access including parking where a need has been identified.

#### Policy 5.3

Ensure that pedestrian access does not detract from the informal natural character of the environment and that impermeable hard surfaces are limited to appropriate areas.

#### Policy 5.4

Ensure that where surfaces and structures are provided they are maintained to an adequate and safe level.

#### Policy 5.5

Continue to provide for the exercising of dogs in designated areas while respecting the needs and values of all users.

## 8.6 Buildings and structures

### Objective 6

To limit the number of buildings and structures on the reserves to those essential for the comfort and safety of users, and those that complement the values and character of the area.

#### Explanation

Structures erected in coastal reserves have the potential to cause adverse effects and impacts on the natural character of the coastal environment. For example walls, jetties, boat ramps, pontoons and slipways can all affect beach processes and the structural integrity of banks. Structures also have visual impacts. The land/sea interface adjacent to urbanised areas are under increasing and continual development pressures that need to be managed.

#### Policy 6.1

No buildings are to be erected on any of the reserves unless there is a demonstrated need for them within the reserve. Any new buildings and structures proposed are to meet the following criteria:

- They are directly related to the informal, passive focus of the reserve and cannot be accommodated more appropriately elsewhere
- The impact on the visual integrity of the reserve and its cultural and landscape values is minimal and the use of the reserve is not compromised
- The particular design of the structure is appropriate to the site and consistent with the character of the reserve.

#### Policy 6.2

Ensure that all structures and facilities within the coastal management area comply with all relevant statutory documents including the District Plan and New Zealand Coastal Policy Statement, and that impacts on neighbours and the coastal environment are minimised.

## 8.7 Site furniture and signage

### Objective 7

To adopt a coordinated approach to the design, selection and placement of all site furniture and signage to meet Council standards and ensure they are integrated into the natural setting.

#### Explanation

Park furniture and signage can contribute to the quality of experience through consistent design, and functional and aesthetic attributes. Poorly located furniture can degrade the quality of the natural environment.

#### Policy 7.1

Adopt and implement a coordinated range of site furniture and signage that integrates well into the natural surroundings and is in keeping with the informal character of the reserves.

#### Policy 7.2

Ensure the number of signs and items of furniture are appropriate for the role of the open spaces and located/clustered sensitively.

#### Policy 7.3

Implement on-site interpretation material and signage at appropriate locations of archaeological, historic or natural features within and immediately adjacent to the reserves.

#### Policy 7.4

Improve directional signage within and to reserves and walkways.

### **Policy 7.5**

Ensure that all signage provided on the reserves is consistent with the Council's Living Parks signage manual.

## **8.8 Leases, licences and special events**

### **Objective 8**

To manage leases, licenses and special events over parts of reserves or buildings in accordance with Council standards and policies, and in terms of the provisions of the Reserves Act, 1977.

### **Explanation**

While the West End Scout Club provides an important facility for the youth of the area, exclusive use or activities that restrict public access or impact on the natural, informal character of the reserves is inappropriate. Special events may be held from time to time. These need to be approved by Council and meet the established criteria.

### **Policy 8.1**

Allow the existing use of Lemington Reserve for the Scout headquarters building to continue at Council's discretion and subject to regular monitoring to ensure that the objectives and policies of this management plan are met.

### **Policy 8.2**

Ensure that no lease is entered into that significantly limits the public use of the reserves for informal recreation or has potential to impact on the values of the reserves.

### **Policy 8.3**

Ensure that any future lease/licence is directly related to the use of the reserve.

### **Policy 8.4**

Ensure that special events are approved by Council and meet the following assessment criteria:

- The need to protect the informal recreation qualities of the reserve, and the natural, cultural, archaeological and landscape values and functioning of the coastal environment
- The contribution of the event to the local and wider community and to the enhancement of public appreciation of the reserve
- The need for the proposed activity to be held within the reserve when evaluated against opportunities provided at other city reserves, on private land, or within the commercial sector
- Compatibility of the proposed activity with other activities in the reserve and surrounding area in terms of the scale and nature of the proposal, the numbers of people involved, traffic generation, timing of the activities and support facilities required
- The requirement for events and licences to comply with conditions set by Council, outside of this management plan and the requirements of external agencies.

## **8.9 Adjoining landuse**

### **Objective 9**

To encourage and foster good relationships with adjoining landowners and the community to the mutual benefit of all parties.

### **Explanation**

Surrounding land use can impact on the values of the reserves land. Complementary activities include weed eradication and tree and shrub planting. Other activities such as development and structures are more detrimental. Similarly activities on the reserves can complement or impact on the surrounding area.

Cooperation from neighbouring property owners, particularly those with properties that back onto stream and coastal margins, would be advantageous to ensure overall benefit for the whole community.

### **Policy 9.1**

Adopt a coordinated approach to the management of the coastal area by working with Auckland Regional Council and Department of Conservation on matters that extend across management boundaries.

### **Policy 9.2**

Provide information for adjoining residents on the effects of plant and weed encroachment into the reserves and waterways.

### **Policy 9.3**

Monitor and eliminate encroachment of land use, development, weeds, rubbish and non-complying stormwater drainage, boat ramps and structures from neighbouring land into the reserves, esplanades and waterways.

### **Policy 9.4**

Encourage and participate in appropriate boundary treatment – low planting where appropriate to allow passive surveillance and taller screen planting where adjoining structures dominate the reserve boundary.

### **Policy 9.5**

Discourage all utilities and services unless there is an explicit need for them to be in the reserve.

## **9.0 Implementation**

### **9.1 General**

Implementation of this management plan will generally be achieved through the following means:

- 1 Reference when applications for development and use are considered under the Resource Management Act 1991
- 2 Reference when leases and licences are requested for use and occupation
- 3 Reference when considering the purchase or requirement of additional reserve land in the Meola Reef Reserve and environs area
- 4 Reference in developing maintenance specifications for the reserves

Methods 1 to 3 will be instigated through actions other than by the Council. However, method 4 is instigated by the Council usually on an as needed or annual basis through the Council's Annual Plan and works programme.

The sections below guide implementation of policies and development of the individual reserves. They are not listed in priority order.

### **9.2 Meola Reef Reserve**

- 1 Provide a long term planting vegetation plan for the reserve incorporating ecological integrity
- 2 Work in partnership with the community and local residents to implement planting and weed management programmes
- 3 Implement rehabilitation of the landfill and sustainable long term use
- 4 Review the existing development plan in conjunction with ARC and DOC incorporating the landfill rehabilitation works. Interim development to include capping, fencing and planting the central portion of the reserve and retaining an open grassed area over approx. one third at the seaward end
- 5 Provide access and structures in accordance with the development plan
- 6 Investigate alternative access and linkages that do not rely on the car e.g. tram, bus, pedestrian, cycles
- 7 Investigate safe pedestrian crossing(s) of Meola Road and connections with linear walkways along Motions Creek (at Jagers Reserve entrance) and Meola Creek (Moa Reserve/Seddon Fields/Sir Keith Park Memorial Airfield)
- 8 Implement current bylaws and policies relating to dog control
- 9 Provide street furniture and signage in accordance Council standards.

### **9.3 Sir Keith Park Memorial Airfield**

- 1 Investigate securing an esplanade reserve along Meola Creek and facilitating access through it.



#### 9.4 Moa/De Luen Reserve

- 1 Provide limited access to the creek, e.g. for kayaks, small boats, incorporating furniture and signage
- 2 Undertake weed removal and restoration of riparian native planting
- 3 Investigate opportunities for a path/cycleway along Meola Creek or adjacent reserves to connect the reserve with Meola Road, Sir Keith Park Memorial Airfield/Seddon Fields and Pasadena Reserve
- 4 Develop the existing accessway between De Luen Street and Moa Reserve

#### 9.5 Walmer Reserve North and Walmer Reserve South

- 1 Provide an all-weather path between Moa Street and Walmer Road
- 2 Implement mixed wetland planting within the reserves and maintain flax bushes
- 3 Incorporate facilities for informal recreation e.g. seats, paving, play features, sculptures/artwork.

#### 9.6 Pasadena Reserve

- 1 Investigate the potential of a corridor along Meola Creek that links the reserve with other open spaces, from Meola Road to Great North Road, and potentially providing access to Pasadena School, Western Springs College and Te Mahurere Marae
- 2 Promote development for informal recreation in selected locations including open grassed areas, providing limited access to the creek e.g. for kayaks, and incorporating furniture and signage
- 3 Promote weed removal, protection of existing native flora and fauna, and restoration of riparian native planting.

#### 9.7 Jagers Bush

- 1 Promote regeneration and planting of native vegetation as under-storey to privet (to be removed as long term plan)
- 2 Promote stream restoration and enhancement of the waterfall
- 3 Promote protection and restoration of the stream edges in conjunction with a streamside path/track
- 4 Investigate opportunities for extending paths, to Seddon Fields by bridge(s) and close to the stream
- 5 Investigate developing a picnic area or amenity area in association with the waterfall.

#### 9.8 Lemington Reserve

- 1 Promote regeneration of native planting and weed removal
- 2 Limit grassed areas to a linear corridor associated with the path network and entrances
- 3 Provide shared parking at the West End Scout Club headquarters

- 4 Extend formed path to Westmere Crescent and provide safe linkages to Meola Reef Reserve and Jagers Bush

- 5 Investigate linkages through the mangroves to Meola Reef Reserve.

#### 9.9 Weona Reserve

- 1 Prepare a development/landscape plan for the reserve that provides a balance between access and protecting natural features, and reflects the reserve's zoning for conservation.
- 2 Protect areas of significant vegetation and promote regeneration of native planting. Implement a plan for weed removal
- 3 Prepare guidelines for private structures and use of moorings in conjunction with ARC
- 4 Carry out safety audit and promote enhancement of accessways and structures to be retained.

#### 9.10 Westmere Park

- 1 Promote development for informal recreation including retaining open grassed areas, providing access to Tirotai Crescent, and furniture/signage
- 2 Investigate potential access connections to Weona Reserve, while protecting significant vegetation.

## **Appendix 1**

### **Vegetation species**

# MEOLA REEF RESERVE

	Common & Maori names	Botanical name	Lifeform
Native	akeake	<i>Dodonaea viscosa</i>	DTS
Exotic	bindweed	<i>Calystegia sepium</i>	DHO
Exotic	black wattle	<i>Acacia meamsii</i>	DTS
Native	broadleaf, kapuka, papauma	<i>Griselinia littoralis</i>	DTS
Exotic	brush wattle	<i>Paraserianthes lophantha</i>	DTS
Exotic	buck's horn plantain	<i>Plantago coronopus</i>	DHO
Native	cabbage tree, ti kouka	<i>Cordyline australis</i>	MTS
Exotic	Chinese privet	<i>Ligustrum sinense</i>	DTS
Exotic	climbing dock	<i>Rumex sagittatus</i>	DLT
Exotic	dimorphotheca	<i>Osteospermum fruticosum</i>	DHC
Native	five finger, whauwhaupaku	<i>Pseudopanax arboreus</i>	DTS
Native	flax, harakeke	<i>Phormium tenax</i>	MHO
Exotic	giant reed	<i>Arundo donax</i>	GRA
Native	glasswort	<i>Sarcocornia quinqueflora</i>	DHO
Exotic	gorse	<i>Ulex europaeus</i>	DTS
Exotic	ivy	<i>Hedera helix</i> subsp. <i>helix</i>	DLT
Native	jointed wirerush, oioi	<i>Leptocarpus similis</i>	RUA
Native	karaka	<i>Corynocarpus laevigatus</i>	DTS
Native	karamu	<i>Coprosma robusta</i>	DTS
Native	karo	<i>Pittosporum crassifolium</i>	DTS
Native	kawakawa	<i>Macropiper excelsum</i>	DTS
Exotic	kikuyu	<i>Pennisetum clandestinum</i>	GRA
Native	kohuhu	<i>Pittosporum tenuifolium</i>	DTS
Native	koromiko	<i>Hebe stricta</i> var. <i>stricta</i>	DTS
Native	kowhai	<i>Sophora microphylla</i>	DTS
Native	mangrove, manawa	<i>Avicennia resinifera</i>	DTS
Native	manuka	<i>Leptospermum scoparium</i>	DTS
Native	mapou	<i>Myrsine australis</i>	DTS
Exotic	moth plant, milk weed, kapok	<i>Araujia sericifera</i>	DLT
Native	ngaio	<i>Myoporum laetum</i>	DTS
Native	NZ wind grass	<i>Stipa stipoides</i>	GRA
Exotic	orache	<i>Atriplex prostrata</i>	DHO
Native	pohuehue, wire vine	<i>Muehlenbeckia complexa</i>	DLT
Native	pohutukawa	<i>Metrosideros excelsa</i>	DTS
Native	puka	<i>Griselinia lucida</i>	DTS
Native	puriri	<i>Vitex lucens</i>	DTS
Exotic	purple pampas	<i>Cortaderia jubata</i>	GRA
Exotic	Queensland box	<i>Lophostemon confertus</i>	DTS
Native	remuremu	<i>Selliera radicans</i>	DHO
Native	rewarewa	<i>Knightia excelsa</i>	DTS
Native	salt meadow primula, maakoako	<i>Samolus repens</i>	DHO
Native	saltmarsh ribbonwood, maakaka	<i>Plagianthus divaricatus</i>	DTS
Native	sea rush, wiwi	<i>Juncus maritimus</i> var. <i>australiensis</i>	RUA
Exotic	tall fescue	<i>Festuca arundinacea</i>	GRA
Native	taupata	<i>Coprosma repens</i>	DTS
Native	tītiki	<i>Alectryon excelsus</i>	DTS
Exotic	tree privet	<i>Ligustrum lucida</i>	DTS
Native	wharangi	<i>Melicope temata</i>	DTS
Exotic	woolly nightshade	<i>Solanum mauritianum</i>	DTS
Exotic		<i>Cyperus eragrostis</i>	SED

## Code

- DTS Dicotyledonous trees and shrubs
- DHC Dicotyledonous herbs : composites (daisy)
- DHO Dicotyledonous herbs other than composites
- DLT Dicotyledonous lianes and trailing plants
- GRA Grasses
- MHO Monocotyledonous herbs other than orchids, grasses, sedges, rushes and allied plants
- MTS Monocotyledonous trees and shrubs
- RUA Rushes and allied plants
- SED Sedges

# MEOLA ENVIRONS RESERVES

**Table 2 - Species names** - The botanical names for the species names given in text. The species are grouped into lists according to whether they are exotic or native. In each list, the species are organised alphabetically according to the name used in text.

	Common & Maori names	Botanical name	Lifeform
Exotic	agapanthus	<i>Agapanthus praecox</i>	MHO
Exotic	bears breeches	<i>Acanthus mollis</i>	DHO
Exotic	blackberry	<i>Rubus fruticosus</i> agg.	DLT
Exotic	blue morning glory	<i>Ipomoea indica</i>	DLT
Exotic	boneseed	<i>Chrysanthemoides monilifera</i>	DTS
Exotic	brush wattle	<i>Paraserianthes lophantha</i>	DTS
Exotic	bushy asparagus	<i>Asparagus densiflorus</i>	MCL
Exotic	Cape ivy	<i>Senecio angulatus</i>	DLT
Exotic	cherry	<i>Prunus</i> spp.	DTS
Exotic	Chinese privet	<i>Ligustrum sinense</i>	DTS
Exotic	climbing asparagus	<i>Asparagus scandens</i>	MCL
Exotic	crack willow	<i>Salix fragilis</i>	DTS
Exotic	fig	<i>Ficus carica</i>	DTS
Exotic	fruit salad plant	<i>Monstera deliciosa</i>	DHO
Exotic	German ivy	<i>Senecio mikanoides</i>	DLT
Exotic	giant reed	<i>Arundo donax</i>	GRA
Exotic	gorse	<i>Ulex europaeus</i>	DTS
Exotic	hawthorn	<i>Crataegus monogyna</i>	DTS
Exotic	honeysuckle	<i>Lonicera japonica</i>	DLT
Exotic	ivy	<i>Hedera helix</i> subsp. <i>helix</i>	DLT
Exotic	kikuyu	<i>Pennisetum clandestinum</i>	GRA
Exotic	loquat	<i>Eriobotrya japonica</i>	DTS
Exotic	Mercer grass	<i>Paspalum distichum</i>	GRA
Exotic	mistflower	<i>Ageratina riparia</i>	DHO
Exotic	nasturtium	<i>Tropaeolum majus</i>	DLT
Exotic	oak	<i>Quercus robur</i>	DTS
Exotic	onion weed	<i>Allium triquetrum</i>	MHO
Exotic	orache	<i>Atriplex prostrata</i>	DHO
Exotic	pampas	<i>Cortaderia</i> spp.	GRA
Exotic	periwinkle	<i>Vinca major</i>	DLT
Exotic	phoenix palm	<i>Phoenix canariensis</i>	MTS
Exotic	purple pampas	<i>Cortaderia jubata</i>	GRA
Exotic	radiata pine	<i>Pinus radiata</i>	GTS
Exotic	Sydney golden wattle	<i>Acacia longifolia</i>	DTS
Exotic	tree privet	<i>Ligustrum lucidum</i>	DTS
Exotic	wandering jew	<i>Tradescantia fluminensis</i>	MCL
Exotic	weeping willow	<i>Salix babylonica</i>	DTS
Exotic	woolly nightshade	<i>Solanum mauritianum</i>	DTS
Native	akeake	<i>Dodonaea viscosa</i>	DTS
Native	batchelors buttons	<i>Cotula coronopifolia</i>	DHC
Native	cabbage tree, ti kouka	<i>Cordyline australis</i>	MTS
Native	coastal astelia	<i>Astelia banksii</i>	MHO
Native	coastal karamu	<i>Coprosma lucida</i>	DTS
Native	cutty grass	<i>Gahnia</i> spp.	SED
Native	eelgrass	<i>Zostera novaezelandica</i>	GRA
Native	flax, harakeke	<i>Phormium tenax</i>	MHO
Native	hangehange	<i>Geniostoma rupestre</i>	DTS
Native	hook sedge	<i>Uncinia</i> spp.	SED
Native	hound's tongue fern	<i>Phymatosorus diversifolius</i>	FER
Native	houpara	<i>Pseudopanax lessonii</i>	DTS
Native	jointed wirerush, oioi	<i>Leptocarpus similis</i>	RUA

Native	kahikatea	<i>Dacrycarpus dacrydioides</i>	GTS
Native	karaka	<i>Corynocarpus laevigatus</i>	DTS
Native	karamu	<i>Coprosma robusta</i>	DTS
Native	karo	<i>Pittosporum crassifolium</i>	DTS
Native	kawakawa	<i>Macropiper excelsum</i>	DTS
Native	kohekohe	<i>Dysoxylum spectabile</i>	DTS
Native	kohuhu	<i>Pittosporum tenuifolium</i>	DTS
Native	kowhai	<i>Sophora microphylla</i>	DTS
Native	mahoe	<i>Meliccytus ramiflorus</i>	DTS
Native	mamaku	<i>Cyathea medullaris</i>	FER
Native	mangrove, manawa	<i>Avicennia resinifera</i>	DTS
Native	manuka	<i>Leptospermum scoparium</i>	DTS
Native	mapou	<i>Myrsine australis</i>	DTS
Native	marsh clubrush, kukuraho	<i>Bolboschoenus fluviatilis</i>	SED
Native	mingimingi	<i>Cyathodes juniperina</i>	DTS
Native	mingimingi	<i>Leucopogon fasciculatus</i>	DTS
Native	mountain flax	<i>Phormium cookianum</i>	MHO
Native	ngaio	<i>Myoporum laetum</i>	DTS
Native	nikau	<i>Rhopalostylis sapida</i>	MTS
Native	pohuehue, wire vine	<i>Muehlenbeckia complexa</i>	DLT
Native	pohutukawa	<i>Metrosideros excelsa</i>	DTS
Native	ponga	<i>Cyathea dealbata</i>	FER
Native	rimu	<i>Dacrydium cupressinum</i>	GTS
Native	saltmarsh ribbonwood, maakaka	<i>Plagianthus divaricatus</i>	DTS
Native	sea rush, wiwi	<i>Juncus maritimus</i> var. <i>australiensis</i>	RUA
Native	shining spleenwort	<i>Asplenium oblongifolium</i>	FER
Native	tarata	<i>Pittosporum eugenioides</i>	DTS
Native	titoki	<i>Alectryon excelsus</i>	DTS
Native	totara	<i>Podocarpus totara</i>	GTS
Native	tuturu	<i>Dianella nigra</i>	MHO
Native	wheki	<i>Dicksonia squarrosa</i>	FER

#### Code

DHC Dicotyledonous herbs : composites (daisy)

DHO Dicotyledonous herbs other than composites

DLT Dicotyledonous lianes and trailing plants

DTS Dicotyledonous trees and shrubs

FER Ferns

GRA Grasses

GTS Gymnosperm trees and shrubs

MCL Monocotyledonous lianes

MHO Monocotyledonous herbs other than orchids, grasses, sedges, rushes and allied plants

MTS Monocotyledonous trees and shrubs

RUA Rushes and allied plants

SED Sedges

## Appendix 2 References



## References

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