

**PARKS AND GARDENS**

**HAMILTON CITY  
ROAD RESERVE PLANTING  
STRATEGY**

January 2007

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## TABLE OF CONTENTS

	<b>Page</b>
<b>INTRODUCTION</b>	
1.0 The City Beautification Policy	1
2.0 Road Reserves Planting Strategy Overview	5
<b>PART 1 DESIGN STATEMENT</b>	<b>6</b>
1.0 Introduction	8
2.0 Definitions	9
3.0 Objectives	11
4.0 Introduction to Design and Installation of Road Reserve Planting	15
5.0 Conceptualisation	16
6.0 References	17
<b>PART 2 PLANTING GUIDELINES</b>	<b>18</b>
1.0 Road Reserve Planting Concept	21
2.0 Design Requirements for Planting	25
3.0 Public Participation Guidelines	34
4.0 Management Protection	36
<b>PART 3 PLANT PALETTE</b>	<b>40</b>
1.0 Introduction	42
2.0 Major Arterial and Other Major Road Reserve Environment Plant Palette	43
3.0 Intersection Plant Palette	54
4.0 Entrances to the City Plant Palette	61
5.0 Minor Arterial, Collector and Local Road Plant Palette	64
6.0 References	72
<b>APPENDICES</b>	
A Hamilton Road & Street Hierarchy Layout For Road Reserve Planting	
B Hamilton Soil Map For Road Reserve Planting	
C Hamilton Street Theme Species For Minor Arterial, Collector And Local Road Reserves	

## INTRODUCTION

### 1.0 THE CITY BEAUTIFICATION POLICY

The Road Reserve Planting Strategy is a revision of the Planting Guidelines for City Beautification (2001) whereby the application of the City Beautification Policy has become more ecologically focussed and promotes stronger landscape themes within Hamilton's road network. The Strategy aligns with and is governed by the Policy's purpose, scope and objectives as detailed in Section 1.1.

#### 1.1 Hamilton City Council City Beautification Policy 44/53

**Sponsor:** General Manager Community Services  
**Date Approved:** 22 February 1994  
**Date Reviewed:** 13 May 2005  
**File Reference:** 44/53

#### OBJECTIVE

To promote quality beautification planting within the city street/open space network as per Council's Planting Guidelines for City Street Beautification.

#### POLICY

##### Purpose

To promote quality street beautification that:

- Builds on Hamilton's traditional green city image and current environmental concerns.
- Integrates enhancement of city streets with while recognising essential utility services.
- Conserves Hamilton's resource of historical and natural vegetation.
- Encourages public participation in street beautification programmes.

##### Scope

This policy covers all beautification planting within the city street / open space network.

##### Objective 1:

- To develop a Street Beautification Concept with bold and simple themes for a city-wide framework of planting which integrates human development and natural features.
- To ensure unified and consistent design the Street Beautification Concept will be developed and maintained by Council staff.
- To create appropriate human scale for streets and to link public and private open spaces, a framework of large trees and other plants will be developed throughout the city.

- Beautification will use species themes which relate to the existing natural and historical species, neighbourhood identity, open space character and variations in topography, soil types, and other natural features of the landscape.
- For simplicity theme species and plant forms will be selected from a limited range an approved list of species. Themes will be developed for traffic routes and neighbourhoods, and will relate to planting in parks and other public and private lands which form part of the open space network. The local patterns of character and identity will come largely from local variations within the themes.
- There should be a preference for native shrubs and trees wherever possible.

**Objective 2:**

To balance the priorities for planting between Hamilton's city image, environmental goals and public requests by the community.

- Generally, planting priorities will be in descending order from:
  - the major routes (city approach) to minor routes
  - high profile inner city areas to low profile neighbourhoods
  - poorly planted neighbourhoods with a harsh landscape to well planted ones
  - unplanted streets to streets where planting needs upgrading
  - from high to low maintenance traffic islands.
- Developers will meet the cost of approved tree and traffic island planting in new subdivisions in order to service the public demand for planting.
- Other public requests for street trees or other types of planting will be addressed according to the priorities defined in 2.1 above.
- Some streets will not be planted because of utility and traffic management requirements (see 3.1 below).
- Planting on verges and reserves will not be permitted without the prior approval of Council .

**Objective 3:**

To develop Street Beautification Guidelines to implement the concept and to integrate planting requirements with utility requirements.

- Guidelines for Street Planting will include:
  - the planting request process
  - species selection
  - utility clearance

- visibility requirements
  - planting layout options, and
  - management and maintenance regimes
  - consideration of risk of catch pit blockage.
- The Guidelines will be available for use by staff, developers and the public in the process of implementing the planting concept.
  - Council and utility agencies will be consulted prior to planting to integrate their requirements and co-ordinate the programme with other street works.
  - Council staff will remove all non-complying will have the authority to remove non-complying plants from streets and reserves in consultation with the affected private property owners.

**Objective 4:**

To conserve and sustain Hamilton's tree and vegetation framework.

- Planting will be designed for low maintenance and amended to reduce maintenance when appropriate.
- To conserve the tree framework, rotational planting schemes will be developed according to the following replacement priorities from:
  - over-mature trees to immature ones
  - high maintenance planting (e.g. trees and over under utility lines, shrubs)  
to low maintenance planting.
- Planting will be maintained in a manner consistent with the overall concept and the original design intentions, especially with trees of historic significance.
- Significant trees and tree groups will be conserved by appropriate means to conserve neighbourhood character. In some cases it will be appropriate to protect such trees via the District Plan. The highest priority for conservation of trees will be older trees and those more critical to the framework, e.g. those on major routes.

**Objective 5:**

To encourage public participation and education to promote the Beautification concept and this policy.

- Community Groups will be encouraged to be involved in planting and other related activities.
- A range of possible areas or schemes for public participation will be publicised to promote community pride, education in tree care and planting. These will cover initiation, planting, maintenance and conservation.

- Commercial, industrial and non-Council public bodies will also be encouraged to participate in planting projects.

**Objective 6:**

To secure the necessary resources to implement and maintain Street Beautification as a valuable resource.

- An annual programme of Street Beautification will be prepared for the Budgetary Planning Cycle. It will clearly identify costs for establishment, maintenance, replacement, remedial or preventative works.
- Developers will be encouraged to carry out street planting at their own cost in subdivisions to the approval of the Council, using only species on the approved species list.

## 2.0 ROAD RESERVE PLANTING STRATEGY OVERVIEW

The Strategy is composed of three Parts, namely:

- (a) **The Hamilton City Road Reserve Planting Part 1 - Design Statement**  
This provides the background premise for the development of the Strategy and defines the road reserve planting vision and framework. Essentially, the Statement specifies that all future road reserve planting shall align with the City's road network hierarchies and corresponding defined landscape themes.
- (b) **The Hamilton City Road Reserve Planting Part 2 – Road Reserve Planting Guidelines**  
These Guidelines integrate the Council City Beautification Policy and Hamilton City Council (HCC) Road Reserve Planting Part 1 - Design Statement into a Road Reserve Planting Concept and detail how the Concept is implemented.
- (c) **The Hamilton City Road Reserve Planting Part 3 - Plant Palette**  
The Plant Palette provides a limited selection of thematic tree, shrub and groundcover species specific to the road network hierarchy, neighbourhood precincts, and the City's natural topology and soil conditions. These are used in conjunction with the Part 2 – Road Reserve Planting Guidelines.

The Road Reserve Planting Strategy shall be adhered to by both Council staff and city developers, and as such shall be implemented in conjunction with the following Council documents, standards and policies:

- 1) HCC City Beautification – Hamilton (Planting Guidelines) Policy 44/53 (1999);
- 2) HCC Riverside Reserves Management Plan 1997;
- 3) HCC Gully Reserves Management Plan 2001;
- 4) Hamilton City Proposed District Plan 2001 and all updates thereafter;
- 5) HCC Development Manual: Volume 2 Part 3 – Road Works;
- 6) HCC Development Manual: Volume 2 Part 7 – Street Landscaping; and,
- 7) HCC Development Manual: Volume 3 Part 7 – Landscape Works.

**PARKS AND GARDENS**

**HAMILTON CITY  
ROAD RESERVE PLANTING**

**PART 1  
DESIGN STATEMENT**

## PART 1 TABLE OF CONTENTS

	<b>Page</b>
<b>1.0 INTRODUCTION</b>	<b>8</b>
1.1 Design Statement Philosophy	8
<b>2.0 DEFINITIONS</b>	<b>9</b>
2.1 Major Arterial and other Major Road Reserve Environments	9
2.2 Intersections	9
2.3 Entrances to the City	10
2.4 Minor Arterial, Collector and Local Road Reserve Environments	10
<b>3.0 OBJECTIVES</b>	<b>11</b>
3.1 Major Arterial and other Major Road Reserve Environments	11
3.2 Intersections	12
3.3 Entrances to the City	12
3.4 Minor Arterial, Collector and Local Road Reserve Environments	13
<b>4.0 INTRODUCTION TO DESIGN AND INSTALLATION OF ROAD RESERVE PLANTING</b>	<b>15</b>
<b>5.0 CONCEPTUALISATION</b>	<b>16</b>
<b>6.0 REFERENCES</b>	<b>17</b>

## 1.0 INTRODUCTION

### 1.1 DESIGN STATEMENT PHILOSOPHY

Urban Design principles, objectives and practices play a vital role in the planning, design, implementation and maintenance of the soft landscape structure within the road reserve environment for Hamilton City. Incorporating these principles, objectives and practices into the overall vision can help to achieve quality streetscapes for now and in the future. These are:

- To develop a unique sense of place and character for the city
- To promote and reflect characteristics that are distinctively Hamilton
- To provide connectivity, distinction and hierarchy for successful road network legibility
- To be environmentally sustainable
- To enhance safety for the users of the space and for those adjacent to the legal road boundary
- To mitigate the adverse effects of carriageway environments and adjacent properties
- To provide quality planted areas where plant species successfully establish and thrive in the road reserve environment
- To minimise maintenance requirements

The vision is to **“provide a strong landscape hierarchy of quality and successful tree, shrub and groundcover plantings that express neighbourhoods, precincts and/or centres through minor arterial, collector and local road reserves, and are linked to a well-defined Major Arterial and Major road reserve network, with distinct gateways to Hamilton City”**.

The strong landscape hierarchy being:

1. **Major Arterial and other Major Road Reserve Environments:** This roading network provides predominantly “moving spaces” that are utilised for “travel” to destinations. The key aim is to accentuate these “travel” environments with a cohesive corridor framework of linked local indigenous ecosystems.
2. **Intersections:** This is where the same and differing levels of roading networks meet. The key aim is to initiate the change of road hierarchy level and local identity expression at the intersections by emphasising these transition zones through the creative use of indigenous and approved native and exotic soft landscape.
3. **Entrances to the City:** To create points of entry to the city that are distinct, inviting and express the context of Hamilton City through innovative design of an approved tree and plant palette selection.
4. **Minor Arterial, Collector and Local Road Berm Environments:** To promote individual character, distinction and a sense of place for Hamilton’s neighbourhoods and centres through a selected mix of indigenous plant species, cultivars and exotic species that provide a vibrant and expressive palette which draws from the identity of Hamilton and of that precinct.

## 2.0 DEFINITIONS

The definition of “Road Reserve” for the Road Reserve Planting Strategy refers to all environments within the legal road boundary and adjacent local purpose reserve and easements (defined below) that can sustain vegetation.

The following outlines what road reserve environment is associated with which level and its planting application. Refer also to Appendix A, Hamilton’s Street Hierarchy Layout Plan.

### 2.1 MAJOR ARTERIAL AND OTHER MAJOR ROAD RESERVE ENVIRONMENTS

These sites include:

- a) All road berm areas on each side of the carriageway
- b) Local purpose reserve amenity
- c) Easements for landscaping purposes
- d) Any type of island within the carriageway of all Major Arterials and other Major roads that are not part of an intersection environment

Any area that is affected by sightlines and visibility requirements come under Intersections.

The Major Arterial and other Major Road routes throughout the city are currently:

- a) State Highway routes including Te Rapa Road, Cobham Drive, Avalon Drive, Lincoln Street, Greenwood Street, Kahikatea Drive, Lorne Street, Normandy Ave, Ohaupo Road, Whatawhata Road, Massey Street, Cambridge Road (West), Morrinsville Road
- b) Access Hamilton Ring Road structure being Cobham Drive, Lorne Street, Kahikatea Drive, Greenwood Street, Lincoln Street, Avalon Drive, Wairere Drive, Proposed E1 and Tramway Road
- c) Resolution Drive

### 2.2 INTERSECTIONS

Where a road intersects with another and the associated visibility splays and sightlines are required approaching and exiting the roundabout. These sites include:

- a) Any type of island within the carriageway including roundabouts, pedestrian refuges and throat islands at an intersection.
- b) Any road berm areas, local purpose reserve amenity or easements for landscaping purposes at an intersection.
- c) Where height restrictions for visibility are required in any part of the road reserve approaching intersections and for adjacent pedestrian and cycleway visibility and surveillance safety issues.

These Intersections are categorised into the following hierarchy for the corresponding scale and design palette for the soft landscape application:

Intersections between Major Arterial and other Major Road reserves

- a) Intersections leading to CBD and periphery Precinct Centres
- b) Intersections between Minor Arterial and Collector Roads
- c) Intersections between Local Roads and Neighbourhood areas

Where roads of different hierarchies intersect, the palette of the “lesser” road is to lead into the palette for the “greater” road to initiate the change of road hierarchy. Where roads of differing hierarchies cross, the “greater” road palette is to dominate through the intersection including the roundabouts and on the adjacent corner sites between the roads.

### **2.3 ENTRANCES TO THE CITY**

These sites are all main Entrances to Hamilton City with the site at the city boundary.

These are on Ohaupo Road, Cambridge Road, Te Rapa Road, Whatawhata Road, the future entrance off the Eastern Bypass and any future main Entrances to the city.

### **2.4 MINOR ARTERIAL, COLLECTOR AND LOCAL ROAD RESERVES**

These sites are all Minor Arterial, Collector and Local Road reserve environments within the Hamilton City boundary in relation with the surrounding neighbourhood, precincts and centres including the CBD.

These sites include:

- a) All road berm areas on each side of the carriageway
- b) Local purpose reserve amenity
- c) Easements for landscaping purposes
- d) Any type of island within the carriageway of a minor arterial, collector or local road.

Any area that is affected by sightlines and visibility requirements come under Intersections.

These road networks are categorised into the following hierarchy for the corresponding scale and design palette for the soft landscape policy application:

- a) CBD and periphery Precinct Centres
- b) Minor Arterial and Collector Roads
- c) Local Roads and Neighbourhood areas

## **3.0 OBJECTIVES**

### **3.1 OBJECTIVE: MAJOR ARTERIAL AND OTHER MAJOR ROAD RESERVE ENVIRONMENTS**

#### **3.1.1 Policies**

To develop strong cohesive links of successful local indigenous forest ecosystems within the road reserve of Hamilton's Major Arterials and other Major Roads throughout the city.

To develop a unique sense of place and identity of the Major Road and Major Arterial routes that is of an appropriate scale and hierarchy with local indigenous forest.

To provide an environmentally sustainable approach that is beneficial to Hamilton City for now and the future.

To minimise long term maintenance.

#### **3.1.2 Reasons and Discussion**

Hamilton has a significant network of Major Arterials and other Major Roads that link to and through the city. The regeneration and continued development of Hamilton's pre-human indigenous forests ecosystems (refer to Design Statement Part 3 Plant Palette, for species selection) within these road reserves are to provide the following for Hamilton City:

To achieve visual mitigation and amenity of sites that are adjacent to major traffic routes throughout Hamilton City. The vegetation will also provide visual, perceived noise, and pollution mitigation and amenity screening for sites adjacent to the roads.

To create ecological corridors for native fauna that link existing native ecosystems, especially gully systems and sites of original and recreated native natural forest habitats.

To create a distinct identity for this level of Hamilton's road network with indigenous forest ecosystems of unique and interesting forms and textures that have survived successfully on the endemic soil types. These soil types were created from a history of geological activity including differential uplift, erosion, volcanos, alluvium and the various courses of the Waikato River, which has shaped the present landscape.

To support Government policy and therefore the requirements of the Kyoto Protocol in the management of greenhouse gases by providing carbon sinks. Transport contributes to a significant percentage of New Zealand's CO<sub>2</sub> emissions that are believed to be one of the six main gases that in their excess contribute to the "Green House" effect. The development of native indigenous forests with a strong canopy framework provides additional carbon sinks for Hamilton City to progress towards achieving environmental sustainability by counteracting New Zealand's CO<sub>2</sub> emissions.

To minimise maintenance with naturalised plantings that will not require pruning or any other works to keep their desired form. Self-regeneration of the ecosystems is to be encouraged instead of manual replanting. Maintenance is only for weed control, emergency removal or where vegetation growth impedes vehicle and pedestrian safety for sightlines and safety from crime.

Suppression of weeds is to be enhanced with the correct implementation of quality bark mulch and biodegradable fabric.

To help increase safety. The indigenous forests include species that are frangible and therefore absorb impact and help to prevent vehicles entering adjacent properties. Enclosed environments as opposed to wide-open spaces have also been associated with reduced speed.

## **3.2 OBJECTIVE: INTERSECTIONS**

### **3.2.1 Policies**

To develop distinct “Transition Zones” between different levels of road networks.

To provide legibility and initiate the sense of place to the local precincts and different areas of Hamilton.

To provide sightlines for visual requirements and safety from crime for pedestrians and vehicles.

To establish quality plantings from design through to long-term maintenance.

To reduce the frequency of maintenance where safety regulations and other restrictions inhibit access to the site.

### **3.2.2 Reasons and Discussion**

Hamilton has a matrix of intersections, roundabouts and nodes within its roading network. A design criterion based on a plant selection of native plant species with approved cultivars and exotic species (refer to Design Statement Part 3 - Plant Palette, for species selection) that relate to Hamilton City, align with the type and level of road reserve networks intersecting them are to provide the following:

Transition areas that create opportunities to express the context of Hamilton in conjunction with the character of the different areas within Hamilton.

Strong cues to denote entering and exiting different levels of roads and to initiate distinct areas for legibility and navigation.

Promotion and enhancement of Hamilton’s amenity and overall green scape environments.

Vehicle and pedestrian safety including adhering to pedestrian and Traffic sightlines and visibility requirements.

Minimise maintenance requirements through the selection of species that are “island tolerant”, do not require regular pruning, are tidy, disease resistant and survive well in the local environment.

## **3.3 OBJECTIVE: ENTRANCES TO THE CITY**

### **3.3.1 Policies**

To create distinct points of entry and a sense of arrival to the city where a major road intersects the city boundary.

To initiate the expression of the context and character of Hamilton City.

To establish quality plantings from design through to long-term maintenance.

To reduce the frequency of maintenance where safety regulations and other restrictions inhibit access to the site.

### **3.3.2 Reasons and Discussion**

Hamilton is a landlocked city where major road routes pass, and in the future bypass from the north, south, east and west. The entrances at the boundary of the City are the “First Impressions” of Hamilton and are therefore important sites to utilise for promotion and expression. The soft landscape (refer to Design Statement Part 3 - Plant Palette, for species selection) of these sites are to provide for the following:

To initiate the corridors of indigenous forest ecosystems for the Major Arterial and other Major Road networks. This is to include utilising tree species that have an association with the area the entrance is located.

To be incorporated into gateway artistic expression.

To provide impressive entrances to the city.

## **3.4 OBJECTIVES: MINOR ARTERIALS, COLLECTOR AND LOCAL ROAD RESERVES**

### **3.4.1 Policies**

To express the neighbourhood, precinct and CBD centre character and sense of place through the Minor Arterial, Collector and Local Road Reserve environments within an overall city wide context.

To continue to provide a cohesive city-wide tree framework with supportive planting of shrubs and groundcovers.

To provide for pedestrian and vehicle safety.

To establish quality and vibrant plantings from design through to long-term maintenance.

To reduce the frequency of maintenance where safety regulations and other restrictions inhibit access to the site.

### **3.4.2 Reasons and Discussion**

Hamilton has generations of Minor Arterial, Collector and Local Road streetscape from established streets through to new developments with recent urban growth. A design palette (refer to Design Statement Part 3 - Plant Palette for species selection) based on a continued Street Tree selection framework to reflect the type of road hierarchy and an approved shrub and groundcover plant species selection of native species, native cultivars and exotics are to provide the following:

Vibrant, interesting road reserve landscapes that enhance Hamilton's streetscape.

Reflect the local neighbourhood, precinct and centre character through species selection based on natural topography, soil types, and cultural and historic association.

To link to a distinct city-wide landscape character defined by a selected soft landscape palette for Hamilton.

To link to parks and the public spaces within the city and to encompass private landscapes.

To help emphasise street hierarchy through tree framework scale, and plant form and colour. Predominantly larger tree species are utilised for minor arterial and collector roads and smaller tree species for local streets.

Reduced maintenance through utilising tree, shrub and groundcover species within the palette selection that have been chosen for their resistance to damage and disease, leaf and other litter drop, form, longevity and tolerance of urban environments.

## 4.0 INTRODUCTION TO DESIGN AND INSTALLATION OF ROAD RESERVE PLANTING

For all of the road reserve environs, the aim is to establish and retain quality planted landscapes and provide the best growing environment possible. To achieve this, the following shall apply from design to implementation of landscape plans for Hamilton's road reserves:

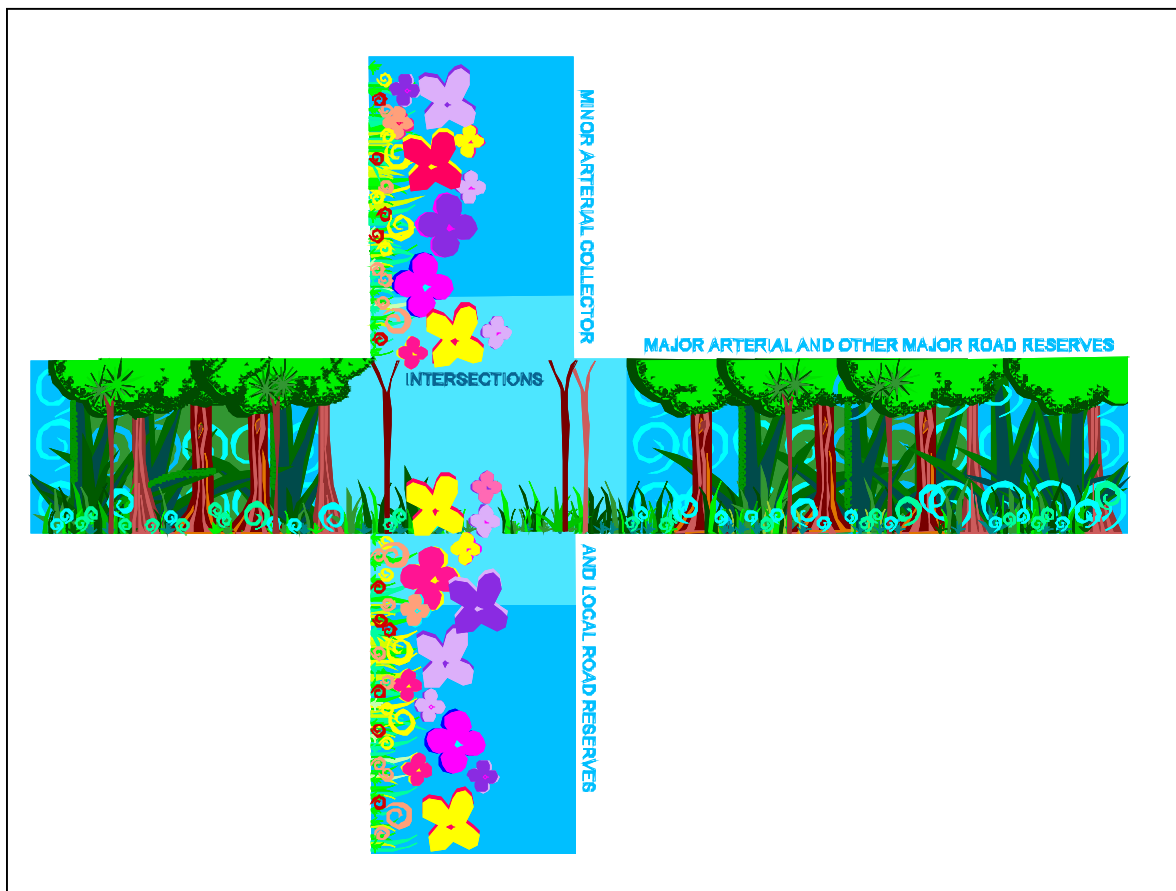
- a) To define the best application to achieve the desired result for implementation and maintenance
- b) Implementation of planting and materials to be consistent with the required level of presentation
- c) To draw from the allocated plant selection palettes under Part 3. These lists will be regularly reviewed and updated for existing and new plant suitability to the road reserve environments and to avoid planting species today that have the potential to become tomorrow's problem weeds
- d) To comply with Part 2 – Road Reserve Planting Guidelines and the Hamilton City Council Development Manual: Volume 2 Design Guide - Part 7 Street Landscaping and Volume 3 Standard Technical Specifications - Part 7 Landscape Works - Section 1 Planting, with emphasis on:
  - i. Excavation of planting areas
  - ii. Topsoil and subsoil requirements
  - iii. Herbicide application
  - iv. Plant material standards
  - v. Installation of plants and plant placement at the appropriate spacing from each other and the adjacent back of kerb
  - vi. Mulch
  - vii. Maintenance requirements

## 5.0 CONCEPTUALISATION

The following diagram (refer Figure 1) provides a conceptual representation of the Road Reserve Planting Strategy whereby:

- The Major Arterial and Major Road reserves are planted up in indigenous vegetation;
- The Minor Arterial, Collector and Local Road reserves are planted up in amenity-based landscape themes; and,
- The Intersections are a blend of both planting themes with the Major Arterial and Major Road planting theme dominant.

Figure 1.



## 6.0 REFERENCES

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**PARKS AND GARDENS**

**HAMILTON CITY  
ROAD RESERVE PLANTING**

**PART 2  
ROAD RESERVE  
PLANTING GUIDELINES**

## **PART 2 TABLE OF CONTENTS**

	<b>Page</b>
<b>ROAD RESERVE PLANTING GUIDELINES</b>	<b>20</b>
<b>1.0 ROAD RESERVE CONCEPT</b>	<b>21</b>
1.1 Concept Implementation	21
<b>2.0 DESIGN REQUIREMENTS FOR PLANTING</b>	<b>25</b>
2.1 Street Hierarchies	25
2.2 Planting Styles for Major Arterial and Major Roads	26
2.3 Planting Style for Minor Arterial, Collector and Local Road Reserves and Intersections	27
2.4 Traffic Safety and Utility Protection Requirement	30
2.5 Protection of Trees at Planting	32
<b>3.0 PUBLIC PARTICIPATION GUIDELINES</b>	<b>34</b>
3.1 Community Consultation on Species Selection	34
3.2 The Participation Process for Planting Projects	34
3.3 Tree Planting Priorities and Programme	35
<b>4.0 MANAGEMENT AND PROTECTION</b>	<b>36</b>
4.1 Management and Replacement Guidelines	36

## THE ROAD RESERVE PLANTING GUIDELINES

The Road Reserve Planting Guidelines are designed to provide enough flexibility to allow specific and appropriate design for particular sites while still ensuring compliance with the Council Policy on City Beautification by both Council staff and city developers.

They are based on the 2001 City Street Beautification Guidelines but have been revised and expanded to provide a framework consistent with the 2007 Road Reserve Planting Strategy Part 1 - Design Statement and recent developments in Council standards and policies.

The management plans for parks, as required by the Reserves Act 1977, will provide for the extension of the range of vegetation to complement street plantings. In particular parks will site larger trees and stands of trees. Similarly, planting on parks will often be able to reflect natural topography and undisturbed soils.

The Operations Manager, Parks & Gardens Unit, Hamilton City Council, manages the road reserve planting asset and is responsible for the approval of any work affecting plantings in the City streets, including Major Arterials, Major Roads, Minor Arterials, Collectors and Local neighbourhood streets (refer to the HCC Road Reserve Planting Part 1 - Design Statement for road type definitions).

The Operations Manager will oversee the design of road reserve plantings, the production of suitable plants in the Municipal Nursery, and the inclusion of any new or amended works in the asset management system.

## 1.0 THE ROAD RESERVE PLANTING CONCEPT

The Road Reserve Planting Concept aims to help develop the unique sense of place or character of Hamilton City in terms of the street landscape, and is based on two frameworks:

Firstly, the Council Policy for City Beautification objectives are to promote quality street beautification that:

- (a) Builds on Hamilton's traditional green image and current environmental concerns,
- (b) Integrates enhancement of City streets with essential utility services,
- (c) Conserves Hamilton's resource of historical and natural vegetation, and
- (d) Encourages public participation in street beautification programmes.

Secondly, the HCC Road Reserve Design Statement determines how the Policy is to be implemented according to the vision to "provide a strong landscape hierarchy of quality and successful tree, shrub and groundcover plantings that express neighbourhoods, precincts and/or centres through minor arterial, collector and local road reserves, and are linked to a well-defined major and arterial road reserve network, with distinct gateways to Hamilton City." (Refer to the HCC Road Reserve Planting Part 1 - Design Statement for full details.)

### 1.1 CONCEPT IMPLEMENTATION

The implementation of this Concept is through the application of Theme species selected to create local identity for neighbourhoods and individual streets (refer to HCC Road Reserve Planting: Part 3 - Plant Palette) within an overall City scheme that promotes connectivity and reflects characteristics that are distinctively Hamilton. The following clarifies this further:

#### 1.1.1 Road Reserve Design

The Road Reserve Design Statement calls for two distinct planting schemes within the City. The Major Arterial and Major Road reserves are to be planted with native plant species that are indigenous or endemic to the Waikato region. These will create strong cohesive visual and ecological corridors that contrast distinctly with the visually vibrant and interesting native and exotic species of the Minor Arterial, Collector and Local neighbourhood roads that define local character and link the city elements. Intersections and roundabouts will provide transitional landscapes between different levels of road networks and create nodal legibility to assist with navigation through the city road system.

Those points where major roads intersect the city boundary will likewise create distinct points of entry that promote an artistic gateway expression.

#### 1.1.2 Citywide Tree Framework

Underpinning this concept is a strong framework of native and exotic trees that unifies the city skyline. The level of road determines the species and frequency of trees to be planted within the road reserve. Major Arterial and Major Road environments are to be planted in native tree corridors whereas Minor Arterial, Collector and Local Roads are to be planted in both native and exotic tree species that promote and enhance the distinct individual character and sense of place for each neighbourhood precinct. Trees appropriate to the site with supportive shrub and groundcovers will be planted.

Generally, whole streets will be planted or replanted to achieve this framework and an effective maintenance programme recognising the need to work with the community.

### 1.1.3 Open Space and Landscape Character

The Concept aims to create a street landscape that reflects both the wider city landscape character and the specific local urban character by:

- a) Reflecting the natural topography, soil types, vegetation, and hydrology; and
- b) Integrating both natural and man-made features into the suburban landscape.

It aims to achieve these objectives by aligning the Major Arterial, Major Road and State Highway corridors with the Hamilton City gully systems and the Minor Arterial, Collector and Local roads with amenity parks and other areas of public and private land, including residential gardens.

### 1.1.4 Natural Features

#### (a) The Waikato River and Gullies

These natural features create a framework of open space. Planting on routes adjacent to these enhances the experiences for pedestrians, cyclists and river traffic users, as well as motorists using the route. It also enhances these areas as an ecological corridor for wildlife. Planting on streets adjacent to the river and similarly the gullies will be consistent with the Riverside Reserves Management Plan 1997, and the Gully Reserves Management Plan 2001 respectively.

#### (b) The Distinctive Natural Hamilton Soils

Hamilton soils (excepting the hill soils) owe their origin to the Waikato River. The soils also reflect the major topographic features. They include dry sands by the river, gullies and plains; dry to moist silts and clays on the hills; wet clays at the base of hills and on the plains; and wet sands on the plains bordering the wet peats associated with hollows and shallow lakes. Hills Clays comprise about 15-20%, Sands about 30%, Floodplain Clays about 30-35% and Peats about 20% of Hamilton's soils.

The soils create possibilities for variety in the local landscape character. Species planted will be selected for compatibility with local soils (refer to Hamilton City Road Reserve Planting: Part 3 Plant Palette).

Planting on the City edge should provide visual continuity between the City and open rural landscape in an attempt to harmonise the suburban and rural landscapes while mitigating the visual effects of urbanisation. Any planting will therefore take into account the soils of adjacent rural areas.

#### (c) The Remnants of Native Flora

These remnants of original flora are visually and ecologically important to the City landscape. They may provide a focus for future planting and a local theme to follow. In areas close to native remnants, the street tree plantings will be based on certain species variously significant in the bush. These species are identified in the HCC Road Reserve Planting, Part 3: Plant Palette. Where possible eco-sourced propagation material will be used.

#### (d) Street Ridgelines

In conjunction with the gully systems the Hamilton topography includes ridgelines that have been used for street routes and park reserves. These ridgelines have historically been planted with strong planting forms that reinforce the ridgeline characteristic. Subject to views, visibility, shade and site limitations these ridgelines will continue to be enhanced.

### 1.1.5 Cultural Features

#### (a) Early City Reserves

The East and West Town Belts are historic reserves significant in the open space network as they are linked to the riverside, lake and gully systems. These and other newer reserves provide an opportunity to create well-planted routes to complement the street system. Historic reserves such as Steele Park by virtue of their simple and bold design (using rows of spaced large deciduous species) provide other opportunities to carry their strong planting style into the street landscape, particularly where parks share significant street frontages.

#### (b) Street Hierarchies

The landscape intent for each road type as detailed in HCC Road Reserve Planting Part 1 - Design Statement is as follows:

**Arterial and Major Road Reserve Environments:** This roading network provides predominantly “moving spaces” that are utilised for “travel to” destinations. The key aim is to accentuate these “travelling” environments with a cohesive corridor framework of linked local indigenous ecosystems.

**Intersections:** This is where the same and differing levels of roading networks meet. The key aim is to initiate the change of road hierarchy level and local identity expression at the intersections by emphasising these transition zones through the creative use of indigenous and approved native and exotic soft landscape.

**Entrances to the City:** To create points of entry to the city that are distinct, inviting and express the context of Hamilton City through innovative design of an approved tree and plant palette selection.

**Minor Arterial, Collector and Local Road Berm Environments:** To promote individual character, distinction and a sense of place for Hamilton’s neighbourhoods and centres through a selected mix of indigenous plant species, cultivars and exotic species that provide a vibrant and expressive palette which draws from the identity of Hamilton and of that precinct.

Street traffic islands will reinforce local identity, following specific themes, as with trees. Traffic islands in the inner city and high profile areas will be developed, including colourful bedding schemes, to promote City image.

### 1.1.6 Early Use of Certain Species

Earliest planting in streets and reserves prominent in the inner city landscape include *Oaks, Planes, Elms, Tulip Trees, Ashes, Birches, Maples, Chestnuts* and *Limes*. The Beautifying Society up till 1940 used many of these species as well as *Liquidambar, Prunus, Sorbus* and some native species. The successful remnants of these early plantings will be maintained where possible, such as Grey Street’s Plane trees. Exotic species will continue to be used as an integral component of the traditional urban landscape.

However, new selected varieties of these traditional species that have been developed for urban use will be introduced as they become available only at the discretion of

Council. They will be selected for their visual affinity with existing species in older streets and for their reduced problem features and lower maintenance requirements (see 'Species Selection' under Design Requirements below and HCC Road Reserve Planting Part 3 - Plant Palette).

#### **1.1.7 Zoning Patterns and Subdivision Style**

Thematic planting will be used to reinforce zones and neighbourhoods as distinct entities wherever possible allowing them to develop their own identity and appropriate scale of planting. Local community participation will be promoted to encourage greater 'ownership' and better establishment of planting.

In Industrial areas opportunities for mass planting of large trees will be sought to set buildings in scale with the surroundings. Where possible larger trees will be reintroduced into commercial areas for the same reason.

Where local residential neighbourhood planting patterns are well established they will be enhanced to distinguish neighbourhood character using local Theme species and patterns of planting.

#### **1.1.8 Distinctive Identity and Unity – Thematic Planting**

The Concept aims to create landscape unity and continuity throughout the city by using a limited range of species in a thematic way and by a simple, strong planting scheme. The form and scale of planting will be closely linked across the city. Longer-lived, low maintenance species that are generally accepted by the community will be used.

The Concept also aims to create identity, character, diversity, distinctive scale and form in the landscape. This is achieved by basing the form and type of planting and the range of species on local vegetation characteristics, local topography, soils and open spaces in conjunction with the road reserve hierarchy planting scheme.

Only those approved plant species detailed in the HCC Road Reserve Planting Part 3 - Plant Palette are to be planted in HCC road reserves. These species mixes create local detail and patterns within the thematic range.

## 2.0 DESIGN REQUIREMENTS FOR PLANTING

These guidelines aim to implement the Road Reserve Planting Concept while minimising the conflicts between utility and environmental considerations in open space and streets. However, the scope is not restricted to new developments or subdivisions.

The guidelines identify appropriate species characteristics and requirements to be met when planting. The HCC Development Manual: Volume 2 Part 7 – Street Landscaping identifies the location standards for trees and other planting relative to underground and overhead services.

All road reserve plant species selections are to use the HCC Road Reserve Planting Part 3 - Plant Palette, with the only exception being when Council periodically trials new cultivars for future inclusion into Plant Palette updates.

### 2.1 STREET HIERARCHIES

As detailed previously, the level of street determines the Concept application. The planting styles for each level shall be as follows:

#### 2.1.1 Major Arterials and Major Roads

These will be planted with tree species, shrubs and groundcovers that are reflective of Hamilton's pre-human indigenous forest ecosystems and in accordance with natural and cultural environmental parameters such as soil, topography, visibility and sightlines, focal points, amenity screening, pedestrian and vehicular safety. Often there is an opportunity to plant larger trees in the wider road reserves associated with these streets, although where overhead wires are present either lower growing species shall be used or these areas will not be planted depending on site requirements and conditions.

#### 2.1.2 Minor Arterial, Collector, Local Roads

These roads are to be planted with HCC approved native species, including native cultivars, and exotic species that add visual interest and vibrancy to neighbourhood precincts through the use of bold colours, textures and forms. Larger tree species are to be utilised predominantly for Minor Arterial and Collector roads and smaller tree species for Local streets. Species selected have been chosen for their resistance to damage and disease, leaf and other litter drop, form, longevity and tolerance of urban environments.

Planting should reflect and promote the local neighbourhood's precinct and centre character while maintaining a human scale to planting selections. Likewise, planting in the road reserve should integrate with adjacent parks and open spaces.

Planting in these streets helps to distinguish pedestrian footpaths from vehicular carriageways through emphasising their visual separation. They can create pedestrian-oriented environments in local neighbourhood residential streets.

#### 2.1.3 Intersections, Roundabouts and Traffic Islands

Intersections provide opportunities to balance and integrate the City's landscape characters and can act as gateways to different neighbourhood precincts. Emphasis on strong planting schemes that identify transitions between different streets will be given whereby native species and approved native cultivars and exotic species will identify entry/exit points.

Planting designs should harmonise where differing street hierarchies intersect. This can be accomplished through a combination of sharing plant species on the different routes, signifying transition changes through plant layout and forms. Where a Major Arterial intersects with a lesser hierarchical road, the Major Arterial's planting design and species selection shall be dominant at and leading into the intersection.

Austroroad visibility splays and HCC Development Manual specifications must be adhered to in all planting designs, ensuring that vehicular, pedestrian and cycle safety remains uncompromised.

#### **2.1.4 City Entrances**

Entrances to the city via the main roads will promote Hamilton's rich diversity and character through an artistic interpretation of soft and hard landscape features. Emphasis will be placed on indigenous dominating tree canopy species associated with the city entrance area (for example, Kauri to the north and Kahikatea to the west) and supported by forest plant species typical of the site topology and soil types. Scope is provided for land art to be incorporated into the road reserve planting area.

## **2.2 PLANTING STYLE FOR MAJOR ARTERIALS AND MAJOR ROADS**

This section provides the design requirements for landscaping within Major Arterial and Major Road reserves.

### **2.2.1 Trees, Shrubs and Groundcover Roles**

Trees planted will need to enhance and strengthen the existing character and intended future character of neighbourhood areas and unify these into an integrated citywide landscape.

It is important that street planting does not obstruct safe visibility for traffic and pedestrians and views into or from private properties and driveways. In these instances, the Austroroad visibility standards are to be applied. Careful selection of species results in reduced maintenance costs associated with maintaining visibility for safety and also helps minimise potential damage to underground services through root infiltration. Any landscaping shall not compromise the safe use of the legal road reserve or affect its structural integrity.

### **2.2.2 Road Form and Function**

Native tree and shrub planting along Major Arterial and Major Road reserves shall be naturalistic and at irregular centres characteristic of Hamilton's indigenous forest ecosystems.

### **2.2.3 Industrial and Commercial Streets**

These areas will follow the street hierarchy planting scheme. The Major Arterial and Major Roads are to support linked indigenous tree ecosystems that emphasize this main road network. Planting style will tend to be in informal clusters with natural patterns of trees, shrubs and groundcovers.

Planting designs should relate the to the scale of the built environment to the surrounding landscape and buffer commercial/industrial uses from residential and recreational uses. Planting should thus help balance the large areas of paving often necessary in commercial areas. Finally it should create shelter and an intimate scale in selected areas.

#### **2.2.4 Design for Low Maintenance Planting**

The planting design will provide forage shrubs and trees at regular intervals within the naturalistic planting scheme to encourage flora and fauna to use the Major Arterial and Major Roads as a food source. Maintenance will be at a minimum whereby weed prevention shall be through regular applications of quality mulch and weed removal either through spraying or by hand.

Natural native tree and shrub seed germination through flora and fauna dispersal is to be encouraged as long as these plants do not compromise the pedestrian or vehicular safety of those in the road reserve at maturity. It is anticipated that the areas planted will eventually self-regulate themselves in conjunction with a judicious weed management regime.

Designs incorporating greater detail in planting or higher maintenance can be justified in Major Arterial and Major Road intersections and other traffic islands on major routes where focal planting may achieve maximum public interest.

Where battered slopes are adjacent to Transit roads within the city boundaries, these shall be planted instead of grass to reduce high maintenance costs generated by regular lawn mowing and stringent traffic management practices. Plants shall be at centres and grades that will form a rapid dense low-maintenance cover.

#### **2.2.5 Species Selection**

Planting in Major Arterial and Major Roads is to follow the ecological topology and soil type planting themes detailed in the HCC Road Reserve Planting Part 3 - Plant Palette. The limited range of theme species is based on local requirements for species and an attempt to avoid conflict between human activity, utility services and vegetation requirements, while using plants that reflect the local natural and cultural heritage. The Plant Palette also ensures a consistent planting scheme throughout the City's public road system.

### **2.3 PLANTING STYLE FOR MINOR ARTERIAL, COLLECTOR AND LOCAL ROAD RESERVES AND INTERSECTIONS**

This section provides the design requirements for landscape planting in Minor Arterial, Collector and Local Road Reserve Environments and Intersections.

#### **2.3.1 Trees, Shrubs and Groundcover Roles**

Trees in streets create the domestic scale and visual unity most suitable to urban and suburban streets. They can define and unify the street spaces, and separate vehicular and pedestrian areas while maintaining visibility within both areas. Planting the complete street in one operation enhances the role of trees. It achieves a coherent tree framework, with consistent visual form and scale and thus more effectively unifies the streetscape. Trees planted will need to enhance and strengthen the existing character and intended future character of neighbourhood areas and unify these into an integrated citywide landscape.

It is important that street planting does not obstruct safe visibility for traffic and pedestrians and views into or from private properties and driveways. In these instances, the Austroad visibility standards are to be applied. Careful selection of species results in reduced maintenance costs associated with maintaining visibility for safety and also helps minimise potential damage to underground services through root infiltration.

Shrubs and small trees are suitable for mass planting to screen, shelter or enclose open spaces. Shrubs and groundcover may be used to reduce maintenance and provide interest in the streetscape. Their form and texture can be used to relieve hard street landscape. They can indicate changes in functions of space from, for example, vehicular to pedestrian or Arterial to Local routes. Generally traffic islands, banks and other similar areas are the most appropriate places to use these plants to good effect. Any landscaping shall not compromise the safe use of the legal road reserve or affect its structural integrity.

Seasonal bedding plants can provide interest in focal locations, such as traffic roundabouts. Bedding plants provide high impact changing displays at City Entrances and major street intersections to contribute to a distinctive City image.

### **2.3.2 Street Form and Function**

In Minor Arterial, Collector and Local roads, street beautification should create and/or enhance a dominant landscape form or character for the street. This can be achieved either through a formal approach or by strategic placement of individual trees or groups of trees to define street spaces.

In practice, each street will be planted in one operation. By planting complete streets a coherent local tree framework can be established. The visual form and size of trees is consistent, which unifies the street landscape more than a partially or erratically treed landscape. More effective maintenance and replacement programmes are possible with even aged and full streets.

Shrubs and groundcover will have a supportive role in the street hierarchy providing visual interest and enhancement.

### **2.3.3 Industrial and Commercial Streets**

Planting in these areas is becoming more important as the city develops and landuse intensity increases. These areas will follow the street hierarchy planting scheme.

Within the Minor Arterial, Collector and Local roads, the planting style will tend to be formal with simple patterns of trees located to frame buildings and views. Larger canopy trees will be limbed up above pedestrian level while shrubs and groundcover will be used to support the tree framework and create semi-private, quieter spaces and courtyards in non-circulation areas. Planting designs should relate the built environment to the surrounding landscape and buffer commercial/industrial uses from residential and recreational uses as well as provide a human scale to plazas, malls and other open pedestrian spaces adjacent to buildings. Planting should thus help balance the large areas of paving often necessary in commercial areas. Finally it should create shelter and an intimate scale in selected areas.

### **2.3.4 Design for Low Maintenance Planting**

Planting design should be determined by its function, the maintenance resources available and the need to reduce existing maintenance in some areas. This is possible while still creating a planting framework and enhancing the environment.

Designs incorporating greater detail in planting or higher maintenance can be justified in central city areas, Major Arterial intersections and other traffic islands on major routes where focal planting may achieve maximum public interest.

Areas requiring high maintenance inputs may be converted to permanent planting from grass or poorer performing groundcover species. When choosing deciduous plant

species, trees and shrubs, consideration should be given to the effects of leaf fall on the maintenance requirements of channels and catchpits.

### 2.3.5 Species Selection

Planting in Minor Arterials, Collectors and Local roads is to follow the planting themes identified in the HCC Road Reserve Planting Part 3 - Plant Palette that has been established by a species selection process. The limited range of theme species is based on local requirements for species and an attempt to avoid conflict between human activity, utility services and vegetation requirements, while using plants that may reflect the local natural and cultural heritage. The Plant Palette also ensures a consistent planting scheme throughout the City's public road system.

### 2.3.6 Street Tree Species Selection Characteristics

#### (a) Shade

The use of evergreen species will generally be limited to situations where their shading is not a problem, typically on wide berms and on north-south routes. Dense and evergreen species will be used less frequently for this reason.

#### (b) Form

Tree species that can be trained on a single stem and limbed to 1.5m minimum height will be used. Shrubby species including divaricating forms of native species are not suitable. Frangible tree species on Major Arterial routes that require minimal pruning and maintenance are preferred.

#### (c) Litter

Generally street trees will be species having small leaves and dry small fruit, which are dropped infrequently. However, on major routes especially where there are wide berms, or adjacent parks, larger leafed trees or larger growing species can be more appropriate. Generally, tree species that create a litter problem, from larger leaves or fruit, will not be used as street trees such as *Platanus*, *Ginkgo* (female), Karaka and fruiting trees, except for designer urban trees.

#### (d) Modified Site Tolerance

Where soils have been modified including compaction and/or are poorly drained, only those plants that will thrive in these site conditions will be selected. Where utility services are not located within the plantable area, compacted soils are to be loosened prior to planting to improve soil drainage and aeration.

#### (e) Longevity

Street tree species should be long lived, i.e. 50 - 70 years to avoid frequent replacement. Often this implies a resistance to pests and diseases. Typically, suitable species are from the genera *Acer*, *Alectryon*, *Betula*, *Fraxinus*, *Malus*, *Ginkgo* (male), *Liriodendron*, *Magnolia*, *Prunus*, *Quercus*, *Robinia*, *Sophora*, *Tilia* and *Ulmus*. Only *Ulmus* species and cultivars resistant to Dutch Elm Disease will be used.

#### (f) Scale

Small tree species to be used as street trees include *Acer palmatum*, *Betula* species, *Prunus* varieties and *Sophora* species. Smaller trees have a role in

Minor Arterial, Collector and Local streets or where there are 11kV and 33kV electricity or other overhead lines. Larger tree species with strong central leader growth may be used in streets with wide berms to suit the larger street or building scale.

Species that may cause problems with underground services and footpaths or kerbs will not normally be used in confined situations unless root restraints are installed at the time of planting. These species can include *Eucalyptus*, *Salix*, *Liriodendron*, *Platanus*, *Podocarpus*, and *Melia* depending on site characteristics.

**(g) Diversity**

The International Society of Arborists has set criteria for ensuring diversity and avoiding over-reliance on a few species. This involves having no genus representing more than 10% and no species representing more than 5% of a city's trees. The Theme species identified in the HCC Road Reserve Planting Part 3 - Plant Palette shall follow these criteria for the city as a whole. In any particular neighbourhood the supplementary species will comprise at least 15% of the total.

### **2.3.7 Street Shrub and Groundcover Species Selection**

Shrubs and groundcover will have the following criteria (refer to HCC Road Reserve Planting Part 3 - Plant Palette for further detail):

- (a) They will be long-lived, vigorous disease resistant evergreen species able to provide total cover throughout the year. On Minor Arterial, Collector and Local traffic islands, annual bedding plants may be used to present a strong seasonal highlight through flower or foliage colours.
- (b) Species selected from the appropriate list in the HCC Road Reserve Planting Part 3 - Plant Palette need to be able to thrive according to the demands of the specific site environment, such as heat, drought, poor drainage, pollution and vandal abuse.
- (c) They will provide seasonal or year round interest through appropriate foliage or flower colour and texture.
- (d) They will be cost effective to propagate, establish and maintain. They should not need frequent or major trimming, deflowering and clearing of dead leaves. (Bedding plants for high profile situations are the exception).
- (e) Their height will vary as appropriate to their location and function. Shrubs will be used in mass planting where medium height planting is required.

## **2.4 TRAFFIC SAFETY AND UTILITY PROTECTION REQUIREMENTS**

### **2.4.1 Street Tree Planting Plans**

All planting plans will be submitted by the HCC Arborist to the HCC Transportation Unit for checking and to avoid any traffic and service issues that may arise with street tree locations. Once plans have been approved they will be returned to the HCC Arborist in the Parks and Gardens Unit for implementation by the City Parks arboricultural team.

### **2.4.2 Street Tree Planting Location**

The location for new suburban street trees is specified in HCC Development Manual: Volume 2 Part 7 – Street Landscaping.

In the line of the street, trees should normally be a minimum of 6.0m apart, and 6.0m from adjacent bus stops or pedestrian crossings and 3.0m from driveway crossings. Generally one tree will be planted per property frontage in residential areas. Trees should be located a minimum of 15m from intersection kerblines on minor roads or roads with intersection controls. For major roads or roads without intersection controls trees should be located clear of the SSD (SISD) visibility splays (see Hamilton City – Development Manual, July 2000). At roundabouts trees should be located outside the Criterion 2 and Criterion 3 sight triangle (refer HCC Development Manual: Volume 2 Part 3 – Road Works, 3.6.2 Austroads standards).

Exceptions to the above guidelines may occur in specifically designed situations where approval has been obtained from Roads & Traffic Manager, such as for traffic speed control islands.

Exceptions may also occur where informal plant groups are appropriate. Groups of plants will meet the minimum clearances in relation to services, driveways, sightlines, etc. The design basis will be defined in the design brief prepared or approved by the Operations Manager and on the plans in these situations.

### **2.4.3 Shrub and Groundcover Height and Location Criteria**

#### **(a) Intersections**

For intersection visibility splays and other critical visibility situations, plants will comply, without trimming, to Austroads, MOT, TNZ and HCC visibility standards as specified in the HCC Development Manual: Volume 2 Part 3 – Road Works. Planting shall be designed to be no higher than 450mm. In front of low signboards at intersections, planting shall be designed to be no more than 100mm high or these areas are to be paved to ensure compliance with Section 3.14 Road Signs and Street Furniture of the HCC Development Manual.

#### **(b) Roundabouts**

At roundabouts visibility must be maintained from each intersection entry point to the adjacent right hand entry point and within a forward arc of the viewing point as detailed in Austroads “Part 6: Roundabouts” for Criterion 2 and preferably Criterion 3. Generally, groundcover or bedding not exceeding 300mm height should be used in Criterion 2 areas and 400mm height in the Criterion 3 areas although these may vary depending on road grades and levels. Outside the visibility arc or visibility splay areas at all intersections planting should be higher to encourage drivers to slow down when approaching the intersection and to aid in reducing oncoming vehicle light glare.

For roundabouts greater than 12m diameter, it is preferable that 65 percent of the internal area be planted up with approved intersection plant species while ensuring that visibility splays, frangibility requirements and utility services remain uncompromised. In alignment with the Concept tree framework, the centre of roundabouts greater than 12m diameter shall be planted with taller approved shrub and tree species to aid in slowing traffic and act as a visual nodal reference.

#### **(c) Traffic Islands**

When planting in traffic islands, ensure that mature plants are at the required heights and at centres that will not spread over the back of the kerb and channel into the road lanes, with a minimum setback of 200mm from the back of kerb (refer to HCC Road Reserve Planting Part 3 - Plant Palette for specific planting centre setbacks). This is especially pertinent in respect to flax species. Likewise, plants are to be located at centres so that at maturity they cover as much of the traffic island planter bed area as possible to reduce weed maintenance. Ensure that planting does not impair sightlines to roads signs.

Only traffic islands with more than 4m<sup>2</sup> area and median strips with plantable widths greater than 600mm shall be planted whereas traffic islands with lesser dimensions shall be hard-surfaced. Islands smaller than 4m<sup>2</sup> will be considered for planting where they are an integral part of a larger landscaping scheme or there are traffic engineering reasons for them.

On traffic islands at controlled intersections in 50kph areas low planting should not extend to within 4.5m back from the stopping point. In higher speed areas the low planting should not extend to within 10m back from the stopping point.

#### **2.4.4 Plant Species Selection**

In alignment with the HCC Road Reserve Planting Part 3 - Plant Palette, all planting within the Criterion 2 and 3 splays must be prunable without compromising the plant's natural form. For example, *Hebes* can be easily shaped according to site requirements whereas *Phormium* 'Green Dwarf' would lose its amenity value.

### **2.5 PROTECTION OF TREES AT PLANTING**

Trees should normally be protected by kerb and channel. However, in the central city or other commercial centres street trees in the carriageway may be justified where planting in footpaths is impossible or where wide carriageways occur. Trees should be clear of traffic flow, critical visibility areas and services.

Trees in these carriageway areas or uncurbed berms can be protected using raised beds with kerbs, bollards, stakes or tree guards. In carriageways ground level tree grates should be used to protect tree roots from damage and provide entry for water and air. In sealed berms (where no grassed berm exists), trees may be planted clear of services and kerbs.

Tree branches and foliage should be kept clear of carriageways and shop verandahs by a minimum distance of 1.0m.

Where 'in-ground' containers, root restraints or raised planters are used to surround 75% or more of the tree, they shall have a minimum 1.8m<sup>2</sup> (1.5m diameter) surface soakage area with a 450mm topsoil and mulch profile as specified under the HCC Development Manual Volume 3, Part 7. The substrate below this profile needs to be loosened to a depth of 500mm to ensure adequate root growth. This is especially pertinent in circumstances where the roots will be restricted by geotextile rootguard or concrete. Lesser soakage areas may be feasible with HCC approval depending on the type of tree species and site conditions. Where subsurface concrete root restraints are used, the internal surface of the planter must be either painted or lined with impervious plastic to prevent leachates from damaging the tree roots.

#### **2.5.1 Protecting Existing Trees**

In areas of redevelopment the redesigned street layout can include protection of existing trees by incorporating them in the design. This option needs consideration; for example, existing trees liable for removal with carriageway widening could be protected within parking areas and be located carefully in relation to car-parks.

Significant trees listed under the current HCC District Plan overlay are to be protected and maintained in accordance with the District Plan standards.

### **2.5.2 Protection of Groundcover Planting**

Generally, planting should be located in areas that do not interrupt pedestrian desire lines. Without barriers, pedestrian movement is difficult to modify by more than 1 or 2 metres. Barriers shall be installed where necessary to prevent damage to plantings by pedestrians such as in the Central Business District and Frankton Village. Barriers will be made to the standard designs for each locality. Street furniture such as bins and seats may be positioned to reduce the need for barriers.

### **3.0 PUBLIC PARTICIPATION GUIDELINES**

The HCC Road Reserve Planting Strategy defines the Theme species for individual neighbourhoods and will be adhered to to ensure the Concept remains consistent throughout the city.

There is scope however, for a local community to express their preference for a range of species on the condition that it aligns with the road network planting hierarchy for new neighbourhoods or in substantial tree replacement programmes. There is also opportunity for community participation in priority street planting projects ranging from requests for planting to assistance with tree planting.

The thematic neighbourhood planting zones are detailed in the following plans:

- The Hamilton Road and Street Hierarchy Layout for Road Reserve Planting (refer to Part 1: Design Statement), and the
- Hamilton Street Theme Species for Minor Arterial, Collector and Local Road Reserves (refer to Part 3: Plant Palette), which is based on,
- The Hamilton City Soil Map for Road Reserve Planting (refer to Part 3: Plant Palette).

These plans also help to set priorities for the tree planting and replacement programme (refer to Section 3.3). Whole streets will be planted for design coherence, the tree framework's continuity and ease of maintenance.

#### **3.1 COMMUNITY CONSULTATION ON SPECIES SELECTION**

The requirements for this are:

- (a) The species selected being consistent with the overall Concept, the soil and topography.
- (b) A limit on the number of species selected to one third of the number of streets in the neighbourhood.
- (c) The species including at least two of the main theme species designated for the neighbourhood.

#### **3.2 THE PARTICIPATION PROCESS FOR PLANTING PROJECTS**

The annual number of streets planted in trees will be higher in high priority areas and lower in low priority areas as determined by the Parks and Gardens Operations Manager. Other planting is determined mainly by traffic and street maintenance requirements, and public requests.

The opportunity for public participation will be promoted particularly in areas targeted by the planting programme. Projects will be programmed for at least two years ahead of implementation to allow production of suitable plants and allocation of resources.

In October - November the planting programme for the following year is established with opportunities for public participation projects.

The range of possible areas and schemes for public participation include the following:

- (a) Involvement by schools or community groups  
For example, 'Arbour Day' planting in streets - Educational units will be made available to schools in conjunction with local environmental organisations.
- (b) Partnership with local businesses  
For example, the 'Sponsor a Tree' scheme – to plant trees in commercial and industrial zones or to sponsor other tree planting.

- (c) Partnership with developers.

This will take place in new subdivisions, upon request and at the developer's cost, in accordance with designs provided or approved by Council.

### 3.3 TREE PLANTING PRIORITIES AND PROGRAMME

The City Council Street Beautification Policy (Reference 44/53, 1999) sets priorities for tree planting (see Objective 2 of Policy). These imply the following:

- (a) Priority for new and completion planting is from unplanted to planted streets.
- (b) Priority for new and replacement planting in substantially planted streets is from shrub planted to tree planted streets.
- (c) Priority for replacement (rotational) planting is from older trees to younger trees.

These priorities will be modified by the preference given to public request.

#### 3.3.1 Priorities for Tree Planting Programmes

- |     |                              |   |   |
|-----|------------------------------|---|---|
| (a) | <b>First Priority</b>        | Public Requests for Unplanted Streets   | Allow for 40-50 trees per year  |
| (b) | <b>Second Priority</b>       | Streets with Unsuitable (Shrub) Species   | Allow for replanting up to 150 trees per year   |
| (c) | <b>Third Priority</b>        | Streets with Older Trees  | Allow for replanting 1 street per year over 24 years, increasing to 5 streets per year after replacement is completed   |
| (d) | <b>Fourth Priority</b>       | New Streets   | There are about 10 new streets per year being added to the city (based on the last 10 year period). Council policy encourages developers to plant these streets but with no compulsion.<br>Allow for planting 200 trees per year. |
| (e) | <b>Projected Planting</b>    | Total projected planting is thus approximately 40 streets per year or between 600 to 800 trees in new plantings   |   |
| (f) | <b>Replanting Priorities</b> | The total projected city tree population as of 2006 is approximately 30,000 trees. Assuming the 'work life' of each tree is 30 years, about 1000 trees will need to be replaced every year to maintain the status quo. These replacements will be on an as-required basis as a result of, for example, vandalism, subdivision developments and city infrastructure improvements, in individual streets. Replacement quantities are not reflected in the Items 3.3.1 (a) to (e). |   |

## 4.0 MANAGEMENT AND PROTECTION

### 4.1 MANAGEMENT AND REPLACEMENT GUIDELINES

#### 4.1.1 Rotational Planting

To ensure that significant tree groups endure over time rotational planting will be undertaken. The programme is effective mostly for older planted areas. When replanting there should be assessment of the reasons for replacing existing trees and the most appropriate means of doing this. In any given area planting themes for the locality should be checked and significant existing planting should be retained or modified in consultation between designer and Operations Manager. Replanting should also retain the original style of planting of the major tree framework and conserve the open space network but allow the development of local diversity. However, any design problems arising from the original planting should be rectified and the design reworked if required by the Operations Manager. Health, Safety and visibility factors should all be considered. In general, it is preferable to prune rather than fell healthy trees.

#### 4.1.2 Replanting Principles

Replanting shall be based on the HCC Road Reserve Planting Part 1 - Design Statement street framework, local theme species and proposed replacement species for individual streets based on the HCC Road Reserve Planting Part 3 - Plant Palette. Additional guidelines are as follows:

##### (a) Formal Designs

The existing design is generally clear so that inter-planting between the original trees will ensure retention of the formal lines, spacing and structure of the planting. This will apply to older Minor Arterial, Collector and Local streets in Hamilton. Replanting in blocks will also maintain an even-aged asset.

##### (b) Informal or Mass Planting

The design is often less obvious here, and often the age structure of the planting is intentionally variable. The occasional removal of a few plants will not affect the long-term appearance, but larger scale or continuing removal of plants will erode the substance of the planting design.

Replacement should therefore be carried out gradually. Over time this will result in an enhancement of the diversity in the age structure appropriate to informal planting. However where felling of large trees is likely to affect replants, replacement should be done in small blocks.

##### (c) Shrub and Groundcover Species Replacement

The intent of the original design or its modification, as approved by the Operations Manager, shall be followed where replacement plantings are required. In gardens and traffic islands, replacement at maturity or decline of the planting is necessary to sustain the image for the locality.

When trees are being replaced in an area the supporting planting should be upgraded at the same time. In newer areas of the city where planting is far from mature, minor replacement planting will be as per asset condition assessment reports or audits. The following design principles apply:

- (i) Choice of replacement plants should match the original choice as far as possible.
- (ii) Where species change is necessary, alternatives should match as far as possible, in order of priority:
  - a) The size,
  - b) Form and texture (including leaf size or diversity), and
  - c) The colour of the original species.

Replacements should also be appropriate to the environmental factors. Any substitutions from the original design require the approval of the Operations Manager.

**(d) Replacement of Non-compliant Planting**

Private planting by residents has sometimes resulted in damage to utilities. Wherever street trees are being planted in 'unplanted' streets, replacements are being done or whole streets being replanted, species of trees not specified as approved as per the HCC Road Reserve Planting Part 3 - Plant Palette, will be removed after the residents have been notified by letter. Similarly, all residents will be notified before new or replacement tree planting is carried out in streets. Where large established trees are present, of species now considered inappropriate or where they are creating problems for utilities or services, root restraint materials will be investigated first as an option to removal of the trees and the choice of option will be made by the Operations Manager.

#### **4.1.3 Maintaining the Existing Planting**

Appropriate maintenance of planted areas is required to achieve the intentions of any design. Maintenance should keep the intended style and purpose of the design intact. Designs will meet criteria for low maintenance requirements. Where planting needs redesigning the Operations Manager, Parks & Gardens will direct the review.

The design and management regimes will be specified on plans where particular outcomes are intended. Basic guidelines are as follows:

**(a) Early Establishment for Minor Arterial, Collector and Local Roads**

During the first 2 - 3 years after planting, trees should normally be staked, trained to a single leader trunk and progressively limbed up to create a clear trunk of at least 1.5m. The establishment period is critical for the long term development and health of all street trees.

This is the period when most vandal damage occurs on street trees, so frequent monitoring of recent planting is required to quickly rectify any limb or trunk damage. Trees removed are to be recorded and replacements planted in the following Council planting season (April 1<sup>st</sup> to October 1<sup>st</sup>).

**(b) Formal Planting Style**

This is to be predominantly used for Minor Arterial, Collector and Local Roads. The visual rhythm of evenly spaced exposed tree trunks enhances the formality of the streetscape. The individual tree canopy creates a human scale to the street spaces but allows views into the parks. Where overhead services are a problem for existing trees, pruning should maintain the natural form of the species and planting symmetry while maintaining the clearances as required by current regulations.

**(b) Informal Planting Style**

This is to be predominantly used for Major Arterials and Major Roads. The normal purpose is to screen, soften hard landscape features, define open spaces, and reduce maintenance. However, where visibility or access is an issue trees need a clear trunk to at least 1.5m to maintain pedestrian and traffic visibility and clearance. Pruning should as far as possible be by attention to individual trees or shrubs.

**(c) Mass Shrub and Groundcover Planting**

The purpose of this planting is to screen, define edges to open spaces, reduce maintenance, control weeds and erosion and provide wildlife cover. In respect to Minor Arterial, Collector and Local roads this type of planting shall also increase interest and visual vibrancy to an area. Pruning will be necessary to control encroachment on to accessways, or to ensure visibility for traffic movement. Pruning should retain the natural form of the plants unless otherwise specified. If density of planting is a problem, thinning may be necessary. Both of these options are preferable to "hedging" of shrub borders. Limbing up is preferable to evenly trimming or 'hedging'. Hedging destroys the informality of planting by removing the diversity of form and texture in the plants. It replaces the contrasts with a very simple mass facade. Evenly trimming individual plants results in a topiary effect that again destroys the informal forms of the plants.

**(d) Excavation and Protection**

Contractors need to be informed of the need for adequate physical barriers and care on-site to protect existing trees especially where services and hardscape, such as paving, are to be installed within the dripline of the trees. Thrusting or boring may be required rather than trenching excavation. The Operations Manager, Parks and Gardens Unit must approve all excavation within the dripline of any street trees. Should a tree root of 50mm diameter or more be exposed and/or damaged during works, all operations within the immediate vicinity shall stop and the HCC Parks and Gardens arborist contacted. Works shall not recommence until any damage has been remediated to the satisfaction of the HCC Parks and Gardens arborist and HCC approval has been given to proceed.

Wherever roads are being repaired all trees or significant vegetation should be protected from construction works by a fully enclosed barrier erected around the dripline of the trees or edge of any planted area. Should silt travel be likely to occur, the barrier shall also include silt fencing to prevent damage to tree roots. No materials or plant are to be stored within the dripline area.

**(e) Tree Maintenance and Utilities**

Pruning regimes are defined in detail in the arboricultural contract documents managed by the Parks & Gardens Unit. However, the pruning clearances from utilities and structures can have a major impact on the appearance of street trees. The required clearances and shaping of trees are therefore included in the Development Manual. They ensure safe maintenance operations and protect structures and utilities from tree damage.

#### **4.1.4 Arterial Road Maintenance**

Plantings along Arterial routes are collectively intended to establish a natural seedbank whereby the ecosystem shall eventually self-generate plant species through flora and

fauna distribution. Maintenance therefore shall only be for weed control (preferably well-prepared Council-approved mulch installation or manual release), emergency removals, and vehicular and pedestrian safety.

**PARKS AND GARDENS**

**HAMILTON CITY  
ROAD RESERVE PLANTING**

**PART 3  
PLANT PALETTE**

## **PART 3 TABLE OF CONTENTS**

	<b>Page</b>
<b>1.0 INTRODUCTION</b>	<b>42</b>
1.1 Application of the Plant Palette	42
<b>2.0 MAJOR ARTERIAL AND OTHER MAJOR ROAD RESERVE ENVIRONMENT PLANT PALETTE</b>	
2.1 Introduction	43
2.2 Arterial And Major Road Environment Soil Type Vegetation Type Plant	43
2.3 Vegetation Type Plant Species Lists for Berm Planting	44
2.4 Planting In Traffic Islands Within Carriageway	52
<b>3.0 INTERSECTION PLANT PALETTE</b>	<b>54</b>
3.1 Introduction	54
3.2 Groundcover and Shrub Species List	54
3.3 Tree Species Lists	57
<b>4.0 ENTRANCES TO THE CITY PLANT PALETTE</b>	<b>61</b>
4.1 Introduction	61
4.2 Groundcover and Shrub Species List	61
4.3 Tree Species List	63
<b>5.0 MINOR ARTERIAL, COLLECTOR AND LOCAL ROAD PLANT PALETTE</b>	<b>64</b>
5.1 Introduction	64
5.2 Groundcover and Shrub Species List	64
5.3 Tree Species List	67
<b>6.0 REFERENCES</b>	<b>72</b>

## **1.0 INTRODUCTION**

### **1.1 APPLICATION OF THE PLANT PALETTE**

The following is to be applied to all planting within the Road Reserve:

- a.) All indigenous native species are to be eco - sourced where possible. This is especially relevant for Major Arterial and other Major Road reserve planting
- b.) When designing and implementing all plant schemes for any road reserve environment, ensure that the species selected from the Plant Palette is able to thrive in the type of microclimate that it is to be situated. (For example, shade and soil moisture tolerance).

## 2.0 MAJOR ARTERIAL AND OTHER MAJOR ROAD RESERVE ENVIRONMENT PLANT PALETTE

### 2.1 INTRODUCTION

The planting for these areas are to be based on the soil types as illustrated by the Hamilton Soil Map (refer to Appendix B) in conjunction with the following soil type template and the vegetation type plant lists. These have been sourced from “Clarkson B.D; Clarkson B.R; Downs T.M. 2001: Indigenous Vegetation Types of Hamilton Ecological District: Centre for Biodiversity and Ecology Research, The University of Waikato”. Planting within these areas shall be in accordance with the Road Reserve Strategy Part 2 – Road Reserve Planting Guidelines.

### 2.2 ARTERIAL AND MAJOR ROAD ENVIRONMENT SOIL TYPE TEMPLATE

ROAD NAME	SOIL TYPES	LANDFORM UNIT	VEGETATION TYPE
Te Rapa Road	MH, H, Tp, Tk	Alluvial Plains (Low mounds & ridges with pockets of shallow depressions & swales)	Mixed Conifer Broadleaf Forest with some pockets of Kahikatea Semi-Swamp Forest.
Cobham Drive	Kn, H-Hb, Kk, W	Alluvial Plains (Low Terraces adjacent Waikato River) with some areas of Gullies (Terrace scarps and gully sides)	Totara-Matai-Kowhai Forest
Avalon Drive	K, H, T (Minimal)	Peatlands (Peatland margins), Alluvium, rhyolitic silt, sand and gravel	Swamp Forest & Shrubland/ Mixed Conifer Broadleaved Forest
Lincoln Street	Ha, H, Kk	Alluvial Plains (Shallow depressions & swales)	Kahikatea Semi-Swamp Forest
Greenwood Street	K, T (Minimal)	Peatlands (Peatland margins)	Swamp Forest & Shrubland
Kahikatea Drive	Tp, K, R, Kn+Hm	Peatlands (Peatland margins)/ Alluvial Plains (Shallow depressions & swales)	Swamp Forest & Shrubland / Kahikatea Semi - Swamp forest
Lorne Street	Kk	Gullies (Terrace scarps & gully sides)	Totara-Matai-Kowhai Forest
Normandy Ave	H, Tk	Alluvial Plains (Shallow depressions & swales)	Kahikatea Semi-Swamp Forest
Ohaupo Road	Kn+Hm, Tk	Alluvial Plains (Shallow depressions & swales)	Kahikatea Semi-Swamp Forest
Whatawhata Road	Rk, Tk, H	Alluvial Plains (Shallow depressions & swales)	Kahikatea Semi-Swamp Forest
Massey Street	T, K	Peatlands (Peatland margins)	Swamp Forest & Shrubland

ROAD NAME	SOIL TYPES	LANDFORM UNIT	VEGETATION TYPE
Cambridge Road (West)	Rk, H	Alluvial Plains (Shallow depressions & swales)	Kahikatea Semi-Swamp Forest
Morrinsville Road	Kn, Rk, H, V	Alluvial Plains (Shallow depressions & swales) / Gully Bottom	Kahikatea Semi-Swamp Forest & Kahikatea-Pukatea-Swamp Marie Forest
Access Hamilton Ring (Road structure being Cobham Drv, Lorne St, Kahikatea Drv, Greenwood St)	Kn, Rk, H, V	Alluvial Plains (Shallow depressions & swales) / Gully Bottom	Kahikatea Semi-Swamp Forest & Kahikatea-Pukatea-Swamp Marie Forest
Resolution Drive	H, Mh	Alluvial Plains ( Low mounds & ridges)	Mixed Conifer-Broadleaf Forest

### 2.3 VEGETATION TYPE PLANT SPECIES LISTS FOR BERM PLANTING

The species selected below from the original ecological plant lists in the “Indigenous Vegetation Types of Hamilton Ecological District” are plants that are most suited to indigenous forest establishment and are more commonly available. Other species that are listed in the original ecological plant lists can be included once the planting has reached a semi-mature to mature state.

#### 2.3.1 Landform Unit Name: Alluvial Plains - Shallow Depressions and Swales

**Landform Type:** Alluvium, pumiceous silt and clay, poorly drained, flat

**Vegetation Type:** Kahikatea Semi-Swamp Forest

#### Indigenous Forest Ecosystem Overview:

Semi-swamp forest dominated by Kahikatea grew on the poorly drained shallow depressions. Several other species were present in varying amounts, including Rimu, Matai, Pukatea, Swamp Maire, Tawa, Pokaka, and occasional Cabbage Tree. Prominent in the understorey were Silver Fern, Mapou, Hangehange, *Coprosma areolata*, and Turepo, and tangles of Kiekie and Supplejack. The groundcover was dominated by ferns, herbs, grasses, and sedges including *Hymenophyllum demissum*, Hen and Chicken Fern, *Astelia fragrans*, *A. grandis*, and *Microlaena avenacea*. The best remnant of this type is Claudeland’s Bush (Jubilee Park).

<b>SPECIES</b>	<b>COMMON NAME</b>	<b>LIFE FORM</b>	<b>MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE</b>
<i>Astelia grandis</i>	Swamp Astelia	Monocot Herb	1.00m
<i>Asplenium bulbiferum</i>	Hen and Chicken Fern	Fern	0.40m
<i>Astelia fragrans</i>	Bush Astelia	Monocot Herb	0.60m
<i>Carex lambertiana</i>	Native Sedge	Sedge	0.30m
<i>Carex dissita</i>	Native Sedge	Sedge	0.30m
<i>Cordyline australis</i>	Cabbage Tree	Tree	1.00m
<i>Coprosma areolata</i>	Native Shrub	Shrub	0.60m
<i>Coprosma grandifolia</i>	Raurekau	Shrub	0.80m
<i>Cyathea dealbata</i>	Silver Fern	Fern	1.20m
<i>Dacrydium cupressinum</i>	Rimu	Tree	1.20m
<i>Dacrycarpus dacrydioides</i>	Kahikatea	Tree	1.20m
<i>Elaeocarpus hookerianus</i>	Pokaka	Tree	1.20m
<i>Geniostoma rupestre</i>	Hangehange	Shrub	1.00m
<i>Knightia excelsa</i>	Rewarewa	Tree	1.20m
<i>Laurelia novae-zelandiae</i>	Pukatea	Tree	1.20m
<i>Melicytus micranthus</i>	Divaricating Shrub	Shrub	0.80m
<i>Melicytus ramiflorus</i>	Mahoe	Small Tree	1.00m
<i>Microlaena avenacea</i>	Bush Rice Grass	Grass	0.30m
<i>Myrsine australis</i>	Mapou	Shrub	0.75m
<i>Prumnopitys taxifolia</i>	Matai	Tree	1.20m
<i>Schefflera digitata</i>	Pate	Shrub	1.00m
<i>Streblus heterophyllus</i>	Turepo	Tree	1.20m
<i>Syzygium maire</i>	Swamp Maire	Tree	1.00m

### 2.3.2 Landform Unit Name: Alluvial Plains - Low Mounds & Ridges

**Landform Type:** Alluvium, rhyolitic silt, sand and gravel, moderately well drained, flat

**Vegetation Type:** Mixed Conifer Broadleaved Forest.

#### Indigenous Forest Ecosystem Overview:

Extensive areas of well-drained, broad low ridges of the plains were covered in a mixture of species including conifers such as Totara, Matai, Rimu, and Kahikatea, and broadleaved trees such as Titoki, Tawa, and Rewarewa. Species common in the understorey and ground layers were Mahoe, Silver Fern, Hangehange, Raurekau, Lacebark, Hen and Chicken Fern, and *Microlaena avenacea*.

SPECIES	COMMON NAME	LIFE FORM	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE
<i>Asplenium bulbiferum</i>	Hen and Chicken Fern	Fern	0.40m
<i>Coprosma grandifolia</i>	Raurekau	Shrub	0.80m
<i>Cordyline australis</i>	Cabbage Tree	Tree	1.00m
<i>Cyathea dealbata</i>	Silver Fern	Fern	1.20m
<i>Cyathea medullaris</i>	Mamaku	Tree Fern	1.00m
<i>Geniostoma rupestre</i>	Hangehange	Shrub	1.00m
<i>Dacrydium cupressinum</i>	Rimu	Tree	1.20m
<i>Dacrycarpus dacrydioides</i>	Kahikatea	Tree	1.20m
<i>Hoheria sexstylosa</i>	Lacebark	Small Tree	1.00m
<i>Knightia excelsa</i>	Rewarewa	Tree	1.20m
<i>Melicytus ramiflorus</i>	Mahoe	Small Tree	1.00m
<i>Microlaena avenacea</i>	Bush Rice Grass	Grass	0.30m
<i>Phormium cookianum</i>	Wharariki	Monocot Herb	0.80m
<i>Plagianthus regius</i>	Ribbonwood	Shrub	1.00m

SPECIES	COMMON NAME	LIFE FORM	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE
<i>Podocarpus totara</i>	Totara	Tree	1.20m
<i>Prumnopitys taxifolia</i>	Matai	Tree	1.20m
<i>Sophora microphylla</i>	Kowhai	Tree	1.00m
<i>Streblus heterophyllus</i>	Turepo	Tree	1.20m

### 2.3.3 Landform Unit Name: Peatland Margins

**Landform Type:** Shallow Peaty Loam (<40 cm), poorly drained, flat  
Shallow Peaty Sand (<40 cm), imperfectly drained, flat

**Vegetation Type:** Mixed Conifer Broadleaved Forest.

#### Indigenous Forest Ecosystem Overview:

Swamp forest and shrubland grew on shallow peat characteristic of the low-lying sites of the plains and the outer margins of the peat bogs. Kahikatea was the main species but individual trees were much smaller than on the better-drained soils listed above. Cabbage Tree, Swamp Coprosma, *Coprosma propinqua*, Manuka, Flax, *Dianella nigra*, and *Hypolepis distans* were also relatively common.

SPECIES	COMMON NAME	LIFE FORM	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE
<i>Coprosma robusta</i>	Karamu	Shrub	1.00m
<i>Cordyline australis</i>	Cabbage Tree	Tree	1.00m
<i>Dacrycarpus dacrydioides</i>	Kahikatea	Tree	1.20m
<i>Dianella nigra</i>	New Zealand Blueberry	Monocot Herb	0.30m
<i>Dicksonia squarrosa</i>	Wheki	Tree Fern	1.20m
<i>Elaeocarpus hookerianus</i>	Pokaka	Tree	1.20m
<i>Hypolepis distans</i>		Fern	0.50m

SPECIES	COMMON NAME	LIFE FORM	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE
<i>Leptospermum scoparium</i>	Manuka	Shrub	1.00m
<i>Leucopogon fasciculatus</i>	Mingimingi	Shrub	0.80m
<i>Lobelia anceps</i>		Herb	0.50m
<i>Pennantia corymbosa</i>	Kaikomako	Shrub	1.20m
<i>Phormium cookianum</i>	Wharariki	Monocot Herb	1.00m
<i>Phormium tenax</i>	Harakeke	Monocot Herb	1.20m
<i>Sparganium subglobosum</i>		Monocot Herb	0.30m
<b>MOIST SOIL TO WET ENVIRONMENTS ONLY</b>			
<i>Baumea tenax</i>		Native Sedge	0.40m
<i>Baumea rubiginosa</i>		Native Sedge	0.40m
<i>Blechnum minus</i>	Swamp Kiokio	Fern	0.50m
<i>Carex virgata</i>	Native Sedge	Native Sedge	0.50m
<i>Carex secta</i>	Native Sedge	Native Sedge	0.50m
<i>Coprosma propinqua</i>	Swamp Coprosma	Shrub	0.80m
<i>Coprosma tenuicaulis</i>	Swamp Coprosma	Shrub	0.80m
<i>Schoenus brevifolius</i>		Native Sedge	0.40m
<i>Tetralia capillaris</i>		Native Sedge	0.40m

### 2.3.4 Landform Unit Name: Gullies - Narrow Gully Floors

**Landform Type:** Colluvium, rhyolitic sand, silt and gravel + organic, poorly drained, flat

**Vegetation Type:** Kahikatea-Pukatea-Swamp Maire Forest

#### Indigenous Forest Ecosystem Overview:

The poorly drained gully floors and their associated backswamps were dominated by Kahikatea, Pukatea, Swamp Maire, Cabbage Tree and Pokaka. Understorey and groundcover species included Mapou, Fuchsia, Lancewood, Pate, *Coprosma rotundifolia*, *Cyathea cunninghamii*, *Astelia grandis*, Kiekie, and Supplejack. This type is represented in a small (1 ha) remnant immediately east of Hammond Park, alongside the Waikato River.

SPECIES	COMMON NAME	LIFE FORM	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE
<i>Astelia grandis</i>	Swamp Astelia	Monocot Herb	1.00m
<i>Coprosma grandifolia</i>	Raurekau	Shrub	0.80m
<i>Coprosma robusta</i>	Karamu	Shrub	1.00m
<i>Coprosma rotundifolia</i>	Divaricating Coprosma	Shrub	0.80m
<i>Cordyline australis</i>	Cabbage Tree	Tree	1.00m
<i>Cyathea cunninghamii</i>	Gully Tree Fern	Tree Fern	1.20m
<i>Cyathea dealbata</i>	Silver Fern	Fern	1.20m
<i>Dacrycarpus dacrydioides</i>	Kahikatea	Tree	1.20m
<i>Dicksonia squarrosa</i>	Wheki	Tree Fern	1.20m
<i>Elaeocarpus hookerianus</i>	Pokaka	Tree	1.20m
<i>Geniostoma rupestre</i>	Hangehange	Shrub	1.00m
<i>Hedacarya arborea</i>	Pigeonwood	Shrub	1.20m
<i>Knightia excelsa</i>	Rewarewa	Tree	1.20m
<i>Laurelia novae-zelandiae</i>	Pukatea	Tree	1.20m

SPECIES	COMMON NAME	LIFE FORM	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE
<i>Melicytus ramiflorus</i>	Mahoe	Small Tree	1.00m
<i>Metrosideros fulgens</i>	Climbing Rata	Liane	1.00m
<i>Myrsine australis</i>	Mapou	Shrub	0.75m
<i>Pseudopanax crassifolius</i>	Lancewood	Shrub	0.80m
<i>Schefflera digitata</i>	Pate	Shrub	1.00m

### 2.3.5 Landform Unit Name: Gullies - Terrace Scarps and Gully Sides

**Landform Type:** Hinuera Formation, rhyolitic sand and gravel, well drained, steep

**Vegetation Type:** Totara-Matai-Kowhai Forest

#### Indigenous Forest Ecosystem Overview:

The scarps and steep gully side slopes were covered with forest dominated by totara, matai, and kowhai. Kanuka and kamahi were also present, and mahoe occurred in more poorly drained sites. The understorey included shrubs of mapou, mingimingi, and *Rhabdothamnus solandri*, and the ground was covered in a variety of ferns such as *Blechnum chambersii*, *Doodia media*, and *Polystichum richardii*. Slopes too steep for forest had herbaceous or shrubby vegetation including *Machaerina sinclairii*, Wharariki, Rangiora, Koromiko, and Heketara.

SPECIES	COMMON NAME	LIFE FORM	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE
<i>Brachyglottis repanda</i>	Rangiora	Shrub	1.00m
<i>Cyathea cunninghamii</i>	Gully Tree Fern	Tree Fern	1.20m
<i>Cyathea dealbata</i>	Silver Fern	Fern	1.20m
<i>Cyathea medullaris</i>	Mamaku	Tree Fern	1.00m
<i>Dacrydium cupressinum</i>	Rimu	Tree	1.20m
<i>Doodia media subsp. australe</i>	Rasp Fern	Fern	0.50m

<b>SPECIES</b>	<b>COMMON NAME</b>	<b>LIFE FORM</b>	<b>MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE</b>
<i>Hebe stricta</i>	Koromiko	Shrub	0.75m
<i>Knightia excelsa</i>	Rewarewa	Tree	1.20m
<i>Kunzea ericoides</i>	Kanuka	Tree	1.00m
<i>Machaerina sinclairii</i>	Pepepe	Monocot Herb	0.60m
<i>Melicytus ramiflorus</i>	Mahoe	Small Tree	1.00m
<i>Metrosideros robusta</i>	Northern Rata	Epiphyte to Tree	1.00m
<i>Myrsine australis</i>	Mapou	Shrub	0.75m
<i>Olearia rani</i>	Heketara	Shrub	0.60m
<i>Phormuim cookianum</i>	Wharariki	Monocot Herb	1.00m
<i>Podocarpus totara</i>	Totara	Tree	1.20m
<i>Polystichum richardii</i>	Common Field Fern	Fern	0.75m
<i>Prumnopitys taxifolia</i>	Matai	Tree	1.20m
<i>Schefflera digitata</i>	Pate	Shrub	1.00m
<i>Sophora microphylla</i>	Kowhai	Tree	1.00m
<i>Wiemannia racemosa</i>	Kamaha	Tree	1.00m

## 2.4 PLANTING IN TRAFFIC ISLANDS WITHIN CARRIAGEWAY

These lists are a selection of native species that are more conducive to a traffic island environment in regard to site condition tolerance and maintenance requirements. They are to be planted as such to complement the berm planting.

### 2.4.1 Groundcover and Shrub Species Plant List

SPECIES	COMMON NAME	APPROXIMATE HEIGHT	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE
<i>Carex buchananii</i>	Native Grass	0.40m	0.30m
<i>Carex dipsacea</i>	Native Grass	0.50m	0.40m
<i>Carex dissita</i>	Native Grass	0.75m	0.40m
<i>Carex testacea</i>	Native Grass	0.50m	0.30m
<i>Chionochloa flavicans</i>	Native Tussock	0.75m	0.50m
<i>Coprosma acerosa</i> 'Hawera'	Coprosma cultivar	0.30m	0.50m
<i>Coprosma</i> x <i>Kirkii</i> 'Minogue'	Coprosma cultivar	0.50m	0.50m
<i>Coprosma</i> 'Taiko'	Coprosma cultivar	0.45m	0.50m
<i>Coprosma</i> 'Te Puna'	Coprosma cultivar	0.35m	0.50m
<i>Dianella nigra</i>	New Zealand Blueberry	0.50m	0.30m
<i>Hebe diosmifolia</i>	Hebe	1.00m	0.50m
<i>Hebe diosmifolia</i> 'Minor'	Hebe cultivar	0.40m	0.30m
<i>Hebe</i> 'First Light'	Hebe cultivar	0.40m	0.40m
<i>Hebe</i> 'Inspiration'	Hebe cultivar	1.20m	0.50m
<i>Hebe parvifolia</i> (Dwarf Form)	Hebe	1.40m	0.50m
<i>Hebe townsonii</i>	Hebe	1.00m	0.50m
<i>Hebe</i> 'Wiri Cloud'	Hebe cultivar	0.40m	0.30m
<i>Hebe</i> 'Wiri Image'	Hebe cultivar	1.20m	0.50m

SPECIES	COMMON NAME	APPROXIMATE HEIGHT	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE
<i>Hebe 'Wiri Mist'</i>	Hebe cultivar	0.40m	0.30m
<i>Hebe 'Wiri Splash'</i>	Hebe cultivar	0.50m	0.30m
<i>Libertia ixioides</i>	New Zealand Iris	0.40m	0.30m
<i>Libertia peregrinans</i>	New Zealand Iris	0.40m	0.30m
<i>Machaerina sinclairii</i>	Pepepe	0.70m	0.50m
<i>Muehlenbeckia axillaris</i>		0.30m	0.50m
<i>Muehlenbeckia complexa</i>		0.30m	0.50m
<i>Phormium 'Black Rage'</i>	Flax cultivar	0.80m	0.50m
<i>Phormium 'Green Dwarf'</i>	Flax cultivar	0.60m	0.50m
<i>Phormium 'Surfer'</i>	Flax cultivar	0.75m	0.50m

#### 2.4.2 Tree Species Plant List

SPECIES	COMMON NAME	MINIMUM SPACING FROM BACK OF KERB / EDGE OF HARD SURFACE
<i>Alectryon excelsus</i>	Titoki	1.00m
<i>Cordyline "Green Goddess"</i>	Cabbage Tree cultivar	0.80m
<i>Dacrycarpus dacrydioides</i>	Kahikatea	1.20m
<i>Knightia excelsa</i>	Rewarewa	1.00m
<i>Kunzea ericoides</i>	Kanuka	1.00m
<i>Podocarpus totara</i>	Totara	1.20m
<i>Sophora Microphylla</i>	Kowhai	1.00m
<i>Sophora Microphylla var. Fulvida</i>	Kowhai	1.00m

### 3.0 INTERSECTION PLANT PALETTE

#### 3.1 INTRODUCTION

The plant species for Intersections are to be defined by:

- a.) The following plant lists; and
- b.) To be conducive with Section 2.0 – Major Arterial and other Major Road Reserve Environment Plant Palette for Intersections within Major Arterial and other Major Road Reserves; and
- c.) To be conducive with Section 5.0 – Minor Arterial, Collector and Local Road Plant Palette in conjunction with the “Hamilton Street Theme Species for Minor Arterial, Collector and Local Road Reserves” plan (refer to Appendix C) for the planting of intersections within Minor Arterial, Collector and Local Road Reserves.

#### 3.2 GROUNDCOVER AND SHRUB SPECIES LIST

SPECIES	COMMON NAME	APPROXIMATE HEIGHT	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE	INTERSECTIONS WITHIN MAJOR ARTERIAL & OTHER MAJOR ROAD RESERVES	INTERSECTIONS WITHIN MINOR ARTERIAL, COLLECTOR AND LOCAL ROAD RESERVES
<i>Carex buchananii</i>	Native Grass	0.40m	0.30m	✓	✓
<i>Carex dipsacea</i>	Native Grass	0.50m	0.40m	✓	✓
<i>Carex dissita</i>	Native Grass	0.705m	0.40m	✓	✓
<i>Carex testacea</i>	Native Grass	0.50m	0.30m	✓	✓
<i>Chionochloa flavicans</i>	Native Tussock	0.75m	0.50m	✓	✓
<i>Coprosma</i> ‘Autumn Haze’	<i>Coprosma</i> cultivar	0.30m	0.30m		✓
<i>Coprosma acerosa</i> ‘Hawera’	<i>Coprosma</i> cultivar	0.30m	0.50m	✓	✓
<i>Coprosma</i> ‘Black Cloud’	<i>Coprosma</i> cultivar	0.40m	0.30m		✓

SPECIES	COMMON NAME	APPROXIMATE HEIGHT	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE	INTERSECTIONS WITHIN MAJOR ARTERIAL & OTHER MAJOR ROAD RESERVES	INTERSECTIONS WITHIN MINOR ARTERIAL, COLLECTOR AND LOCAL ROAD RESERVES
<i>Coprosma 'Evening Glow'</i>	Coprosma cultivar	0.80m	0.50m		✓
<i>Coprosma x Kirkii 'Minogue'</i>	Prostrate Coprosma	0.50m	0.50m	✓	✓
<i>Coprosma 'Taiko'</i>	Prostrate Coprosma	0.45m	0.50m	✓	✓
<i>Coprosma 'Te Puna'</i>	Prostrate Coprosma	0.35m	0.50m	✓	✓
<i>Dianella 'Cassa Blue'</i>	Small Toetoe	0.50m	0.30m		✓
<i>Dianella nigra</i>	New Zealand Blueberry	0.50m	0.03m	✓	
<i>Escallonia "Gold Brian"</i>		0.80m	0.50m		✓
<i>Escallonia "Red Dream"</i>		0.60m	0.40m		✓
<i>Gazania splendons</i>		0.03m	0.30m		✓
<i>Hebe diosmifolia</i>	Hebe	1.00m	0.50m	✓	✓
	Hebe cultivar				
<i>Hebe diosmifolia 'Minor'</i>		0.40m	0.30m	✓	✓
<i>Hebe 'First Light'</i>	Hebe cultivar	0.40m	0.40m	✓	✓
<i>Hebe glaucophylla</i>	Hebe	0.40m	0.40m		✓
<i>Hebe 'Inspiration'</i>	Hebe cultivar	1.20m	0.50m	✓	✓
<i>Hebe 'Ohakea'</i>	Hebe cultivar	0.40m	0.30m		✓
<i>Hebe parvifolia (Dwarf Form)</i>	Hebe	1.40m	0.50m	✓	✓
<i>Hebe townsonii</i>	Hebe	0.80m	0.50m	✓	✓
<i>Hebe 'Wiri Cloud'</i>	Hebe cultivar	0.40m	0.30m	✓	✓
<i>Hebe 'Wiri Image'</i>	Hebe cultivar	1.00m	1.00m	✓	✓

SPECIES	COMMON NAME	APPROXIMATE HEIGHT	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE	INTERSECTIONS WITHIN MAJOR ARTERIAL & OTHER MAJOR ROAD RESERVES	INTERSECTIONS WITHIN MINOR ARTERIAL, COLLECTOR AND LOCAL ROAD RESERVES
<i>Hebe 'Wiri Mist'</i>	Hebe cultivar	0.40m	0.30m	✓	✓
<i>Hebe 'Wiri Splash'</i>	Hebe cultivar	0.50m	0.30m	✓	✓
<i>Hemerocallis sp</i> <i>Evergreen Hybrids</i>	Evergreen Day Lily	0.30 – 0.75m	0.30m		✓
<i>Libertia 'Goldfinger'</i>	New Zealand Iris cultivar	0.60m	0.30m		✓
<i>Libertia ixioides</i>	New Zealand Iris	0.40m	0.30m	✓	✓
<i>Libertia peregrinans</i>	New Zealand Iris	0.40m	0.30m	✓	✓
<i>Liriope muscari</i>		0.30m	0.25m		✓
<i>Muehlenbeckia axillaris</i>		0.30m	0.50m	✓	✓
<i>Muehlenbeckia complexa</i>		0.30m	0.50m	✓	✓
<i>Ophiopogon intermedius</i>	Mondo Grass	0.25m	0.20m		✓
<i>Ophiopogon planiscapus</i> <i>'Nigrescens'</i>	Black Mondo Grass	0.25m	0.20m		✓
<i>Phormium 'Black Rage'</i>	Flax cultivar	0.80m	0.50m		✓
<i>Phormium 'Golden Ray'</i>	Flax cultivar	1.00m	0.50m		✓
<i>Phormium 'Green Dwarf'</i>	Flax cultivar	0.60m	0.50m	✓	✓
<i>Phormium 'Pepe'</i>	Flax cultivar	0.30m	0.30m	✓	✓
<i>Phormium 'Rainbow Maiden'</i>	Flax cultivar	0.80m	0.40m		✓
<i>Phormium 'Surfer'</i>	Flax cultivar	0.75m	0.50m	✓	✓
<i>Phormium 'Thumbelina'</i>	Flax cultivar	0.40m	0.30m	✓	✓

SPECIES	COMMON NAME	APPROXIMATE HEIGHT	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE	INTERSECTIONS WITHIN MAJOR ARTERIAL & OTHER MAJOR ROAD RESERVES	INTERSECTIONS WITHIN MINOR ARTERIAL, COLLECTOR AND LOCAL ROAD RESERVES
<i>Pimela prostrata</i> 'Silver Ghost'	NZ Daphne	0.25m	0.50m	✓	✓
<i>Rosmarinus</i> 'Prostrata'		0.50m	0.50m		✓

### 3.3 TREE SPECIES LIST

SPECIES	COMMON NAME	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE	INTERSECTIONS WITHIN MAJOR ARTERIAL & OTHER MAJOR ROAD RESERVES	INTERSECTIONS WITHIN MINOR ARTERIAL, COLLECTOR AND LOCAL ROAD RESERVES
<i>Acer buergerianum</i>	Trident Maple	1.20m		✓
<i>Acer palmatum</i>	Japanese Maple	1.00m		✓
<i>Acer rubrum</i> - And Cultivars (Example: 'Scanlon, Columnare')	Red Maple	1.20m		✓
<i>Acer saccharum</i>	Sugar Maple	1.20m		✓
<i>Alectryon excelsus</i>	Titoki	1.00m	✓	
<i>Betula nigra</i>	River Birch	1.20m		✓
<i>Betula platyphylla</i>	Japanese White Birch	1.00m		✓
<i>Betula populifolia</i>	Gray Birch	1.00m		✓
<i>Cordyline</i> "Green Goddess"	Cabbage Tree Cultivar	0.80m	✓	
<i>Dacrycarpus dacrydioides</i>	Kahikatea	1.20m	✓	✓
<i>Dacrydium cupressinum</i>	Rimu	1.20m	✓	✓

SPECIES	COMMON NAME	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE	INTERSECTIONS WITHIN MAJOR ARTERIAL & OTHER MAJOR ROAD RESERVES	INTERSECTIONS WITHIN MINOR ARTERIAL, COLLECTOR AND LOCAL ROAD RESERVES
<i>Fagus griffithii</i>		1.20m		✓
<i>Fagus uhdei</i>	Evergreen Ash	1.20m		✓
<i>Fagus sylvatica</i>	European Beech	1.20m		✓
<i>Fraxinus angustifolia</i>	Narrow –Leafed Ash	1.20m		✓
<i>Fraxinus angustifolia</i> 'Raywood'		1.20m		✓
<i>Fraxinus bungean</i>		1.20m		✓
<i>Fraxinus chinensis</i> var. <i>Rhyncophylla</i>		1.20m		✓
<i>Fraxinus ornus</i>	Flowering Ash	1.20m		✓
<i>Fraxinus pennsylvanica</i>	Red Ash	1.20m		✓
<i>Fraxinus griffithii</i>		1.20m		✓
<i>Fraxinus uhdei</i>	Evergreen Ash	1.20m		✓
<i>Ginkgo biloba</i> (Male)	Maidenhair Tree	1.20m		✓
<i>Hoheria sexstylosa</i>	Lacebark	1.00m	✓	
<i>Knightia excelsa</i>	Rewarewa	1.00m	✓	✓
<i>Kunzea ericoides</i>	Kanuka	1.00m	✓	
<i>Liriodendron tulipifera</i> and Cultivar 'Fastigiata'	Tulip Tree	1.20m	✓	
<i>Magnolia virginiana</i>	Sweet Bay Magnolia	1.20m		✓
<i>Magnolia grandiflora</i>	Southern Magnolia	1.20m		✓
<i>Malus trilobata</i>		1.00m		✓

SPECIES	COMMON NAME	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE	INTERSECTIONS WITHIN MAJOR ARTERIAL & OTHER MAJOR ROAD RESERVES	INTERSECTIONS WITHIN MINOR ARTERIAL, COLLECTOR AND LOCAL ROAD RESERVES
<i>Malus tschonoski</i>		1.00m		✓
<i>Nothofagus menziesii</i>	Silver Beech	1.00m	✓	✓
<i>Plagianthus regius</i>	Ribbonwood	0.80m	✓	
<i>Platanus 'Insularis'</i>	Plane	1.20m		✓
<i>Podocarpus totara</i>	Totara	1.20m	✓	✓
<i>Prunus x blireana</i>	Double Flowering Plum	1.00m		✓
<i>Prunus ampanulate</i> <i>Cultivars</i>	Carmine Cherry	1.00m		✓
<i>Prunus sargentii</i>	Sargent Cherry	1.00m		✓
<i>Prunus serrula</i>	Tibetan Cherry	1.0m		✓
<i>Quercus acutissima</i>	Japanese Oak	1.20m		✓
<i>Quercus coccinea</i>	Scarlet Oak	1.20m		✓
<i>Sophora microphylla</i>	Kowhai	1.00m	✓	✓
<i>Sophora microphylla</i> var. <i>Fulvida</i>	Kowhai	1.00m	✓	✓
<i>Sophora tetraptera</i> (Upright Forms)		1.00m		✓
<i>Tilia x europaea</i>	Common Lime Tree	1.20m		✓
<i>Tilia cordata</i>	Small Leafed Linden	1.20m		✓
<i>Tilia cordata 'Swedish Upright'</i>		1.20m		✓
<i>Ulmus 'Groeneveld'</i>	Elm cultivar	1.20m		✓
<i>Ulmus parvifolia</i>	Chinese Elm	1.20m		✓

<b>SPECIES</b>	<b>COMMON NAME</b>	<b>MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE</b>	<b>INTERSECTIONS WITHIN MAJOR ARTERIAL &amp; OTHER MAJOR ROAD RESERVES</b>	<b>INTERSECTIONS WITHIN MINOR ARTERIAL, COLLECTOR AND LOCAL ROAD RESERVES</b>
<i>Ulmus pumila</i>	Siberian Elm	1.20m		✓
<i>Vitex lucens</i>	Puriri	1.00m		✓

## 4.0 ENTRANCES TO THE CITY PLANT PALETTE

### 4.1 INTRODUCTION

The plant species for the City Entrances areas are to be defined by the following plant lists in conjunction with relevant vegetation associations of the area in context with Hamilton City such as topographical or historical. (Refer to Part 1 and 2 of the Road Reserve Strategy for further details).

### 4.2 GROUNDCOVER AND SHRUB SPECIES LIST

SPECIES	COMMON NAME	APPROXIMATE HEIGHT	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE
<i>Carex dipsacea</i>	Native Grass	0.50m	0.40m
<i>Carex dissita</i>	Native Grass	0.75m	0.40m
<i>Carex testacea</i>	Native Grass	0.50m	0.30m
<i>Chionochloa flavicans</i>	Native Tussock	0.75m	0.50m
<i>Coprosma acerosa</i> 'Hawera'	Coprosma cultivar	0.30m	0.50m
<i>Coprosma</i> 'Autumn Haze'	Coprosma cultivar	0.30m	0.30m
<i>Coprosma</i> 'Evening Glow'	Coprosma cultivar	0.80m	0.50m
<i>Coprosma x Kirkii</i> 'Minogue'	Prostrate Coprosma	0.50m	0.50m
<i>Coprosma</i> 'Taiko'	Prostrate Coprosma	0.45m	0.50m
<i>Coprosma</i> 'Te Puna'	Prostrate Coprosma	0.35m	0.50m
<i>Dianella</i> 'Cassa Blue'		0.50m	0.30m
<i>Dianella nigra</i>	New Zealand Blueberry	0.50m	0.30m
<i>Hebe diosmifolia</i>	Hebe	1.00m	0.50m
<i>Hebe diosmifolia</i> 'Minor'	Hebe	0.40m	0.30m
<i>Hebe</i> 'First Light'	Hebe cultivar	0.40m	0.40m

SPECIES	COMMON NAME	APPROXIMATE HEIGHT	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE
<i>Hebe glaucophylla</i>	Hebe	0.40	0.40m
<i>Hebe 'Inspiration'</i>	Hebe cultivar	1.20m	0.50m
<i>Hebe 'Ohakea'</i>	Hebe cultivar	0.40m	0.30m
<i>Hebe parvifolia (Dwarf Form)</i>	Hebe	1.40m	0.50m
<i>Hebe townsonii</i>	Hebe	0.80m	0.50m
<i>Hebe 'Wiri Cloud'</i>	Hebe cultivar	0.40m	0.30m
<i>Hebe 'Wiri Image'</i>	Hebe cultivar	1.00m	1.00m
<i>Hebe 'Wiri Mist'</i>	Hebe cultivar	0.40m	0.30m
<i>Hebe 'Wiri Splash'</i>	Hebe cultivar	0.50m	0.30m
<i>Libertia 'Goldfinger'</i>	New Zealand Iris Cultivar	0.50m	0.30m
<i>Libertia ixioides</i>	New Zealand Iris	0.40m	0.30m
<i>Libertia peregrinans</i>	New Zealand Iris	0.40m	0.30m
<i>Muehlenbeckia axillaris</i>		0.30m	0.50m
<i>Muehlenbeckia complexa</i>		0.30m	0.50m
<i>Phormium 'Black Rage'</i>	Flax cultivar	0.80m	0.50m
<i>Phormium 'Golden Ray'</i>	Flax cultivar	1.00m	0.50m
<i>Phormium 'Green Dwarf'</i>	Flax cultivar	0.60m	0.50m
<i>Phormium 'Pepe'</i>	Flax cultivar	0.30m	0.30m
<i>Phormium 'Rainbow Maiden'</i>	Flax cultivar	0.80m	0.40m
<i>Phormium 'Surfer'</i>	Flax cultivar	0.75m	0.50m
<i>Phormium 'Thumbelina'</i>	Flax cultivar	0.40m	0.30m

**4.3 TREE SPECIES LIST**

<b>SPECIES</b>	<b>COMMON NAME</b>	<b>MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE</b>
<i>Agathis australis</i>	Kauri	1.20m
<i>Alectryon excelsus</i>	Titoki	1.00m
<i>Cordyline australis</i>	Cabbage Tree	1.00m
<i>Cordyline "Green Goddess"</i>	Cabbage Tree Cultivar	0.80m
<i>Dacrycarpus dacrydioides</i>	Kahikatea	1.20m
<i>Dacrydium cupressinum</i>	Rimu	1.20m
<i>Hoheria sexstylosa</i>	Lacebark	1.00m
<i>Knightia excelsa</i>	Rewarewa	1.00m
<i>Kunzea ericoides</i>	Kanuka	1.00m
<i>Melicytus ramiflorus</i>	Mahoe	1.00m
<i>Nothofagus truncata</i>	Hard Beech	1.20m
<i>Plagianthus regius</i>	Ribbonwood	0.80m
<i>Podocarpus totara</i>	Totara	1.20m
<i>Prumnopitys taxifolia</i>	Matai	1.20m
<i>Sophora Microphylla</i>	Kowhai	1.00m
<i>Sophora Microphylla var. Fulvida</i>	Kowhai	1.00m
<i>Streblus heterophyllus</i>	Turepo	1.00m

## 5.0 MINOR ARTERIAL, COLLECTOR AND LOCAL ROAD PLANT PALETTE

### 5.1 INTRODUCTION

The planting for these areas are defined by the “Hamilton Street Theme Species for Minor Arterial, Collector and Local Road Reserves” plan (refer to Appendix C) in conjunction with the following plant lists and in accordance with the Road Reserve Strategy Part 2-Road Reserve Planting Guidelines.

### 5.2 GROUNDCOVER AND SHRUB SPECIES LIST

SPECIES	COMMON NAME	APPROXIMATE HEIGHT	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE
<i>Anemanthele lessoniana</i>	Gossamer Grass	1.00m	0.50m
<i>Arthropodium cirratum</i> 'Parnell' (Shaded Sites Only)	Rengareanga Lily	0.75m	0.40m
<i>Carex dipsacea</i>	Native Grass	0.50m	0.40m
<i>Carex dissita</i>	Native Grass	0.75m	0.40m
<i>Carex testacea</i>	Native Grass	0.50m	0.30m
<i>Chionochloa flavicans</i>	Native Tussock	0.75m	0.50m
<i>Coprosma acerosa</i> 'Hawera'	Prostrate Coprosma	0.30m	0.50m
<i>Coprosma</i> 'Autumn Haze'	Coprosma cultivar	0.30m	0.30m
<i>Coprosma</i> 'Black Cloud'	Coprosma cultivar	0.40m	0.30m
<i>Coprosma</i> 'Evening Glow'	Coprosma cultivar	0.80m	0.50m
<i>Coprosma</i> x <i>Kirkii</i> 'Minogue'	Prostrate Coprosma	0.50m	0.50m
<i>Coprosma</i> 'Red Rocks'	Prostrate Coprosma	0.50m	0.50m
<i>Coprosma</i> 'Taiko'	Prostrate Coprosma	0.45m	0.50m
<i>Coprosma</i> 'Te Puna'	Prostrate Coprosma	0.35m	0.50m

SPECIES	COMMON NAME	APPROXIMATE HEIGHT	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE
<i>Correa 'Carmine Bells'</i>		0.60m	0.40m
<i>Corokia 'Silver Ghost'</i>		1.20m	0.40m
<i>Dianella 'Cassa Blue'</i>	New Zealand Blueberry	0.50m	0.30m
<i>Dianella nigra</i>	New Zealand Blueberry	0.50m	0.30m
<i>Doodia media (Shaded sites Only)</i>	Rasp Fern	0.40m	0.40m
<i>Escallonia 'Gold Brian'</i>		0.80m	0.50m
<i>Escallonia 'Red Dream'</i>		0.60m	0.40m
<i>Gazania 'Cinnabar'</i>		0.30m	0.30m
<i>Gazania 'Dounbe Yellow'</i>		0.30m	0.30m
<i>Gazania 'Splendons'</i>		0.30m	0.30m
<i>Hebe diosmifolia</i>	Hebe	1.00m	0.50m
<i>Hebe diosmifolia 'Minor'</i>	Hebe cultivar	0.40m	0.30m
<i>Hebe 'First Light'</i>	Hebe cultivar	0.40m	0.40m
<i>Hebe glaucophylla</i>	Hebe	0.40	0.40m
<i>Hebe 'Inspiration'</i>	Hebe cultivar	1.20m	0.50m
<i>Hebe 'La Seduisante'</i>	Hebe cultivar	1.00m	0.50m
<i>Hebe 'Mary Antoinette'</i>	Hebe cultivar	0.60m	0.40m
<i>Hebe 'Ohakea'</i>	Hebe cultivar	0.40m	0.30m
<i>Hebe parvifolia (Dwarf Form)</i>	Hebe	1.40m	0.50m
<i>Hebe townsonii</i>	Hebe	0.80m	0.50m
<i>Hebe 'Wiri Cloud'</i>	Hebe cultivar	0.40m	0.30m

SPECIES	COMMON NAME	APPROXIMATE HEIGHT	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE
<i>Hebe 'Wiri Image'</i>	Hebe cultivar	1.00m	1.00m
<i>Hebe 'Wiri Mist'</i>	Hebe cultivar	0.40m	0.30m
<i>Hebe 'Wiri Splash'</i>	Hebe cultivar	0.50m	0.30m
<i>Hemerocallis sp Evergreen Hybrids</i>	Evergreen Day Lily	0.30 – 0.75m	0.30m
<i>Kunzea 'Cerise'</i>	Kanuka cultivar	0.40m	0.50m
<i>Libertia "Goldfinger"</i>	New Zealand Iris Cultivar	0.50m	0.30m
<i>Libertia ixioides</i>	New Zealand Iris	0.40m	0.30m
<i>Libertia peregrinnans</i>	New Zealand Iris	0.40m	0.30m
<i>Liriope muscari</i>		0.30m	0.25m
<i>Loropetalum 'China Pink'</i> (Shaded Sites Only)		1.00m	0.50m
<i>Muehlenbeckia axillaris</i>		0.30m	0.50m
<i>Muehlenbeckia complexa</i>		0.30m	0.50m
<i>Nandina domestica 'Pygmaea'</i>		0.60m	0.30m
<i>Ophiopogon intermedius</i>	Mondo Grass	0.25m	0.20m
<i>Ophiopogon planiscapus 'Nigrescens'</i>	Black Mondo Grass	0.25m	0.20m
<i>Phormium 'Black Rage'</i>	Flax cultivar	0.80m	0.50m
<i>Phormium 'Golden Ray'</i>	Flax cultivar	1.00m	0.50m
<i>Phormium 'Green Dwarf'</i>	Flax cultivar	0.60m	0.50m
<i>Phormium 'Pepe'</i>	Flax cultivar	0.30m	0.30m
<i>Phormium 'Rainbow Maiden'</i>	Flax cultivar	0.80m	0.40m
<i>Phormium 'Surfer'</i>	Flax cultivar	0.75m	0.50m

SPECIES	COMMON NAME	APPROXIMATE HEIGHT	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE
<i>Phormium 'Thumbelina'</i>	Flax cultivar	0.40m	0.30m
<i>Pimela prostrata 'Silver Ghost'</i>	NZ Daphne	0.25m	0.50m
<i>Pittosporum 'Mini'</i>		0.60m	0.40m
<i>Rhododendron 'Tosca'</i>	Dwarf Rhododendron	0.50m	0.40m
<i>Rosmarinus 'Prostrata'</i>		0.50m	0.50m
<i>Rubus x barkeri</i>		0.40m	0.50m
<i>Rubus pentalobus</i>		0.10m	0.50m

### 5.3 TREE SPECIES LIST

SPECIES	COMMON NAME	MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE
<i>Acer buergerianum</i>	Trident Maple	1.20m
<i>Acer carpiniifolium</i>	Hornbeam Maple	1.20m
<i>Acer negundo 'Violaceum'</i>	Box Elder Maple	1.20m
<i>Acer nitida</i>		1.20m
<i>Acer palmatum</i>	Japanese Maple	1.00m
<i>Acer platanoides</i>	Norway Maple	1.20m
<i>Acer rubrum-</i> and Cultivars (Example: 'Scanlon, Columnare')	Red Maple	1.20m
<i>Acer saccharum</i>	Sugar Maple	1.20m
<i>Aesculus indica</i>	Indian Horse Chestnut	1.20m
<i>Aesculus subcordata</i>		1.20m

<b>SPECIES</b>	<b>COMMON NAME</b>	<b>MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE</b>
<i>Alectryon excelsus</i>	Titoki	1.00m
<i>Archontophoenix cunninghamiana</i>	Bangalow Palm	1.00m
<i>Betula alleghaniensis</i>	Yellow Birch	1.00m
<i>Betula nigra</i>	River Birch	1.00m
<i>Betula populifolia</i>	Gray Birch	1.00m
<i>Betula platyphylla</i>	Japanese White Birch	1.00m
<i>Carpinus betulus 'Fastigiata'</i>	Common Hornbeam	1.20m
<i>Castanea sativa</i>	Sweet Chestnut	1.20m
<i>Corylus colurna</i>	Turkish Hazel	1.20m
<i>Eucalyptus leucoxylon 'Rosea'</i>	South Australian Blue Gum	1.20m
<i>Dacrycarpus dacrydioides</i>	Kahikatea	1.20m
<i>Fagus griffithii</i>		1.20m
<i>Fagus uhdei</i>		1.20m
<i>Fagus sylvatica</i>	European Beech	1.20m
<i>Fraxinus angustifolia</i>	Narrow –Leafed Ash	1.20m
<i>Fraxinus angustifolia 'Raywood'</i>		1.20m
<i>Fraxinus bungeana</i>		1.20m
<i>Fraxinus chinensis var. rhyncophylla</i>		1.20m
<i>Fraxinus ornus</i>	Flowering Ash	1.20m
<i>Fraxinus pennsylvanica</i>	Red Ash	1.20m
<i>Ginkgo biloba (male)</i>	Maidenhair Tree	1.20m

<b>SPECIES</b>	<b>COMMON NAME</b>	<b>MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE</b>
<i>Gleditsia triacanthos f. inermis</i>	Honey Locust	1.20m
<i>Gleditsia triacanthos 'Skyline'</i>	Honey Locust	1.20m
<i>Hoheria sexstylosa</i>	Lacebark	1.00m
<i>Knightia excelsa</i>	Rewarewa	1.00m
<i>Kunzea ericoides</i>	Kanuka	1.00m
<i>Liriodendron tulipifera and cultivar 'Fastigiata'</i>	Tulip Tree	1.20m
<i>Liquidambar styraciflua 'Worplesdon'</i>	Sweet Gum	1.20m
<i>Magnolia acuminata</i>	Cucumber Tree	1.20m
<i>Magnolia virginiana</i>	Sweet Bay Magnolia	1.20m
<i>Magnolia grandiflora</i>	Southern Magnolia	1.20m
<i>Magnolia kobus</i>		1.20m
<i>Malus trilobata</i>		1.00m
<i>Malus tschonoski</i>		1.00m
<i>Melia azedarach</i>	Bead Tree	1.20m
<i>Metrosideros umbellata</i>	Southern Rata	1.20m
<i>Nyssa sylvatica</i>	Black Tupelo	1.20m
<i>Platanus 'Insularis'</i>	Plane	1.20m
<i>Podocarpus totara</i>	Totara	1.20m
<i>Prumnopitys ferruginea</i>	Miro	1.20m
<i>Prumnopitys taxifolia</i>	Matai	1.20m

<b>SPECIES</b>	<b>COMMON NAME</b>	<b>MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE</b>
<i>Prunus x blireana</i>	Double Flowering Plum	1.00m
<i>Prunus campanulata cultivars</i>	Carmine Cherry	1.00m
<i>Prunus maackii</i>	Manchurian Cherry	1.00m
<i>Prunus sargentii</i>	Sargent Cherry	1.00m
<i>Prunus serrula</i>	Tibetan Cherry	1.00m
<i>Prunus 'Spire'</i>		1.00m
<i>Pyrus calleryana 'Bradford'</i>	Callery Pear	1.20m
<i>Quercus acutissima</i>	Japanese Oak	1.20m
<i>Quercus coccinea</i>	Scarlet Oak	1.20m
<i>Quercus macrocarpa</i>	Bur Oak	1.20m
<i>Quercus phellos</i>	Willow Oak	1.20m
<i>Quercus palustris</i>	Pin Oak	1.20m
<i>Quercus robur 'Fastigiata'</i>	Common Oak	1.20m
<i>Quercus rubra</i>	Red Oak	1.20m
<i>Robinia pseudoacacia (upright cultivars)</i>	Black Locust	1.20m
<i>Sophora microphylla</i>	Kowhai	1.00m
<i>Sophora microphylla var. Fulvida</i>	Kowhai	1.00m
<i>Sophora tetraptera (upright forms)</i>	Kowhai	1.00m
<i>Syzygium maire</i>	Swamp Maire	1.00m
<i>Tilia x europaea</i>	Common Lime Tree	1.20m
<i>Tilia cordata</i>	Small Leafed Linden	1.20m

<i>Tilia cordata</i> 'Swedish Upright'		1.20m
<b>SPECIES</b>	<b>COMMON NAME</b>	<b>MINIMUM SPACING FROM BACK OF KERB/EDGE OF HARD SURFACE</b>
<i>Ulmus</i> 'Groeneveld'	Elm cultivar	1.20m
<i>Ulmus linus</i>	Siberian Elm	1.20m
<i>Ulmus pumila</i>	Dwarf Elm	1.20m
<i>Ulmus parvifolia</i>	Chinese Elm	1.20m
<i>Ulmus x sarniensis</i> 'Purpurea'	Elm cultivar	1.20m
<i>Vitex lucens</i>	Puriri	1.00m

## 6.0 REFERENCES

Beverley R. Clarkson<sup>1</sup> and Bruce D. Clarkson<sup>2</sup>  
*Indigenous Vegetation Types of Hamilton City*

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# APPENDICES

**APPENDIX A: HAMILTON ROAD & STREET HIERARCHY LAYOUT FOR ROAD RESERVE PLANTING**



**APPENDIX B: HAMILTON SOIL MAP FOR ROAD RESERVE PLANTING**



**APPENDIX C: HAMILTON STREET THEME SPECIES FOR MINOR ARTERIAL,  
COLLECTOR AND LOCAL ROAD RESERVES**