MANNINGHAM

Healthy Habitats

Bushland Management Strategy for Council Managed Land

August 2012

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EXECUTIVE SUMMARY

Only a little over a third of Manningham's bushland remains. Of that remaining, one third has degraded to such an extent that it is essentially a thin cover of eucalypts with very little indigenous understorey. Despite its reduced extent and quality, Manningham's bushland is vital to the area's character, health and identity, and is a haven for numerous native species. The Bushland Management Strategy identifies 409ha of bushland managed by Council across 72 Council open space reserves (322ha) and higher quality/significance roadsides (87ha).

As much of our bushland is in poor condition, a considerable effort is required to prevent it from disappearing. It is estimated that if the current rate of decline continues, at least one quarter of the municipality's remaining bushland will disappear by 2030[1]. **The purpose of this strategy is to formalise a strategic approach for the planning and delivery of bushland management on Council managed land.**

The overall goal for Council managed bushland should be to '*protect and enhance biodiversity'* in Manningham. The following four key objectives are to assist in setting priorities and guiding achievement of the goal:

(1) maintain and where possible, restore ecological processes;

(2) manage and minimise threatening processes;

(3) improve habitat; and

(4) protect threatened species.

The strategy prescribes planning and management principles that include:

- a standardised Management Plan template with defined management zones/treatments to be consistently applied for incorporating bushland management into Council's reserve management plans;
- a Prioritisation Matrix that strategically assesses all 72 bushland sites, to guide resource allocation and prioritise management actions across those sites;
- development of a Manningham 'Over-the-Counter' offset scheme to locate and achieve native vegetation offsets arising from internal (i.e. Council) and external planning permits, in Council reserves;
- continuation of an adaptive management approach to weed control that is informed by the condition of the vegetation, the threat and impact of the weed and site contexts; and
- the identification of funding opportunities to implement this strategy over the next five years.

[1] ibid.

Based on the 11/12 FY budget, $371,816[2] (+ $50,000 allocated from capital works) is spent on bushland management. This current level of resourcing equates to an expenditure of $1,031/ha – below the minimum 2002 target level of $1,420, well below the 2010 industry median of $3,014/ha[3] and at the lower end of the funding range of other urban and peri-urban Councils[4] - that range is $600-$6000/ha. Importantly, it is well below the amount required to adequately maintain our bushland areas and (at least) slow the decline.

A range of recommendations are presented (Section 4) to ensure efficient and effective bushland management, support for on-ground bushland management works, and a consistent approach across all Council units to bushland management on both public and private land.

[2] includes Rabbit Control of $18,870 that occurs over some non-bushland areas
[3] based on 2010 data from 16 Councils participating in the 'Integrated Open Space Services' annual benchmarking exercise.
[4] based on 2010 data from 16 Councils participating in the 'Integrated Open Space Services' annual benchmarking exercise.

1 Section One: Introduction

1.1 About the Strategy

What is bushland & why manage it?

The 'original' native vegetation that occurred naturally in Manningham before European settlement, is referred to as our 'remnant' or 'indigenous' vegetation. Indigenous vegetation includes native trees, shrubs, grasses, herbs/forbs, scramblers/climbers and groundcovers.

For the purposes of readability and 'user-friendliness' this strategy refers to areas of indigenous vegetation collectively as 'bushland', although some areas of indigenous vegetation or bushland may comprise only grasses and groundcovers with no trees and few if any shrubs (for example, mown areas).

The following definition from the Manningham Green Wedge Action Plan 2020 may be helpful:

> *'Manningham's 'bushland' is those areas of land in private and public ownership which contain vegetation that occurred naturally in the municipality prior to European settlement. This vegetation is also referred to as 'remnant' or 'indigenous' vegetation. It includes hundreds of species of grasses, rushes and sedges, herbs and forbs, ferns, creepers and climbers, aquatic plants, shrubs and trees.*
>
> *Bushland quality varies across the municipality. High quality bushland contains a structure according to its community type. Most local vegetation communities are composed of at least three layers - usually canopy (trees), mid-storey (shrubs) and ground storey (grasses, herbs etc). Elements including large old trees with hollows, logs on the ground, leaf litter, and connectivity with other bushland areas are also valuable.*
>
> *Even low quality bushland that may only have one or two of the original layers and elements left can still be very important habitat to fauna such as birds, insects, frogs and lizards.'*

Only a little over a third of Manningham's bushland now remains[5]. Of that remaining, one third has degraded to such an extent that it is essentially a thin cover of eucalypts with very little indigenous understorey. Much of the balance is at risk of decline – this decline in extent and condition is occurring at an alarming rate. It is estimated that if the current rate of decline continues, at least one quarter of the municipality's remaining bushland will disappear by 2030[6].

Furthermore, many of the plant species comprising that bushland are classified as 'threatened' (i.e. in one or other of the categories of 'critically endangered', 'endangered' or 'vulnerable') according to IUCN (International Union for the Conservation of Nature) criteria. In fact two hundred and forty-six species, or 42% of

[5] Manningham City Council *Sites of (Biological) Significance Review,* November 2004.
[6] ibid.

all indigenous species currently growing in Manningham, fall into the 'Critically Endangered' level of risk of extinction in the municipality[7].

The implications of this decline and loss are alarming. Regardless of land tenure, all of our bushland could be gone by the end of this century. If our bushland disappears so too will our indigenous fauna that relies on that bushland for habitat. The Manningham Biosites Report listed over 297 vertebrate species for the municipality and over 300 invertebrates - 15% of those vertebrate species occurring in Manningham are already listed as threatened at a state or national level.

The extinction of our local fauna is only one of the more direct and obvious outcomes that will result from the loss of our bushland. Many other tangible benefits and vital functions that remnant bushland and indigenous vegetation in general provides are also at risk. Many of these functions are not immediately apparent or acknowledged and thus are arguably under-appreciated by the community and thus even more at risk.

These functions and benefits we derive from our bushland are sometimes referred to as 'ecosystem services'. These services include:

- maintenance of atmosphere and climate suitable for human life;
- filtration, purification & delivery of water;
- maintenance of soil fertility & structure;
- pollination of crops & other vegetation;
- control of potential pests, diseases & weeds;
- provision of genetic resources;
- production of goods like foods & fibres; and
- provision of cultural, spiritual & intellectual values.

In recognition of the values and services our bushland provides, and the vital role it serves, Manningham City Council is committed to protecting and conserving it. This commitment is reflected in a number of key Council documents including:

- Public Open Space Strategy September 2004 *(currently under review);*
- Green Wedge Action Plan 2020;
- Roadside Environmental Management Strategy June 2004; and
- Municipal Strategic Statement (MSS).

The following information on Manningham's bushland was derived from the Manningham City Council *Sites of (Biological) Significance Review,* November 2004.

- 1,121.3ha (27%) of Manningham's remaining bushland (i.e. Core or Buffer Conservation Areas) is on land owned by the State Government, Manningham City Council or a Statutory Authority. The balance i.e. 3,102.5ha (73%) is on 'private property'.
- Of the total 4,223.8ha of bushland in Manningham (i.e. Core and Buffer conservation areas), 67% (2,817.7ha) is in the Green Wedge i.e. outside the

[7] *Locally Threatened Plants in Manningham*, Lorimer, G.S., June 2010.

Urban Growth Boundary. Therefore the balance, 23% (1,406.1ha) is inside the Urban Growth Boundary i.e. in the more urban parts of the municipality.

- All of the bushland has been modified to some extent from its presumed natural state, so none can truly be deemed to be 'pristine'. Mapping indicates that 547.9ha (13%) are in a 'least modified' or least disturbed state.

1.2 Strategy Purpose

The origins and purpose of this strategy

As much of our bushland is in poor condition, a considerable effort is required to prevent it from disappearing along with the native animals which rely upon it for habitat, and the human benefits we enjoy such as pleasant views, scenic landscapes and improved property values.

The purpose of this strategy is:

to formalise a strategic approach for the planning and delivery of bushland management on Council managed land.

The need for a documented strategic approach (i.e. the development of this strategy) arises from the recommendations and outcomes of a number of previous Council studies and strategies, including:

- Manningham Non-Urban Areas Review 2002
- Public Open Space Strategy 2004 (currently under review)
- Green Wedge Strategy 2004 (now the Green Wedge Action Plan 2020)
- Sites of (Biological) Significance Review 2004
- Roadside Environmental Management Strategy 2004
- Roadside Environmental Management Strategy Handbook 2005

These documents identified a need to generate improved biodiversity outcomes for all Council managed bushland by addressing a number of issues and gaps. This strategy attempts to address those gaps and fulfil the overall purpose above by undertaking the tasks below.

1.3 Strategy Tasks

Agreed objectives and tasks required to fulfil the purpose

The following tasks were developed from consultation undertaken during the preparation of this Strategy. Their order of listing is not intended to reflect their importance or priority for action.

- Continue to identify and map (audit) areas of managed remnant indigenous vegetation (bushland) on Council land.
- Document a set of principles and approach for managing that bushland.
- Develop a methodology that integrates bushland management planning into Council's Open Space reserve management plans and planning process.
- Establish priorities for undertaking bushland management and allocating resources to those remnants including making recommendations with regards to resourcing of bushland management works.
- Ensure bushland management and Council promotion of and involvement with biodiversity initiatives on private land, are integrated and aligned.
- Specify the values of remnant bushland and establish objectives for conserving/enhancing those values.
- Establish procedures for mitigating/managing the impacts of any works adjacent to or within Council managed remnant vegetation.
- Identify opportunities for environmental interpretation and education in suitable reserves.
- Make recommendations for supporting and enhancing existing community programs (e.g. 'Friends of' groups, Landcare) and other forms of community involvement including individuals willing to work alongside the Council's Bushcrew.

2 Section Two: Policy and Planning

2.1 Goal & Objectives for Bushland Management

Specific aims and objectives for managing our bushland

Goal

The overall goal for Council managed bushland should be to protect and enhance biodiversity in Manningham.

Objectives

The following four key objectives are to assist in setting priorities and guiding achievement of the goal:

(1) maintain and where possible, restore ecological processes;
(2) manage and minimise threatening processes;
(3) improve habitat; and
(4) protect threatened species.

These objectives are also identified in the Sites of (Biological) Significance Review, as key strategies for biodiversity conservation in Manningham.

2.2 Management Principles

Guiding principles for managing bushland on Council (and private) lands

The following 'management principles' have been developed to:

- ensure community and organisational-wide awareness of the approach taken to conserving bushland in Manningham;
- provide a common basis for aligning strategic planning for reserves and bushland with on-the-ground management activities; and
- align the approach of EEP Unit staff providing incentives and support for bushland management on private land with the approach by Parks and Recreation Unit staff to bushland management on Council managed land.

2.2.1 PROTECT AND PREVENT

Identifying and protecting our highest quality remnant vegetation (bushland) and preventing any disturbance or negative impacts to those remnants should be the highest management priority.

This principle acknowledges that revegetation and recreation of bushland landscapes and habitat has limited biodiversity effectiveness and should be a lower priority than protecting and managing existing bushland.

Whilst the science of revegetation and restoration has advanced significantly over the years and moved beyond simple tree planting and weed control, it is arguably simply not possible to replace and replicate bushland once it has gone or been severely disturbed. This is due to a range of factors including:

- the complex nature of ecosystems and the relationships within and between them – some of which we understand some, of which we do not;
- our ability to regrow and replant indigenous vegetation is limited to the more common and easily cultivated genera. For example many, more obscure, lifeforms (e.g. mosses, liverworts and fungi) generally are not cultivated at all whilst some, more common, species (e.g. Cherry Ballart *Exocarpus cuppressiformis* and Yellow Rush-lily *Tricoryne elatior*) generally are not able to be cultivated…and
- the difficulty, impossibility or 'resource intensive' nature of reversing some impacts.

2.2.2 CONTEXT DEPENDANT

The priority for and application of management activities in bushland will differ from site to site and is therefore context dependant. This means that what may be applicable at one site may not be appropriate at another.

This principle acknowledges that whilst the same suite of threatening processes and issues is often common to a number of bushland sites, the level of that threat and nature of the impacts varies according to the site. It is also a recognition that environmental attributes vary naturally from site to site and over time (e.g. differing vegetation, soil types and weather patterns) and that management needs to be aware of and responsive to that natural variation. For example the same weed species that may be a priority at one site may not necessarily have the same priority at another site.

2.2.3 RESTORE AND MINIMISE

As virtually all of Manningham's bushland is already in a degraded state it will require concerted management to even maintain its present condition and halt further decline. In some instances it may only be possible to slow the rate of decline, and the idealistic goal of 'conserving and enhancing' may be beyond reach. Management focus should be on restoring and mimicking ecological processes and minimising the degrading impacts.

This will ideally mean identifying those threatening processes that are contributing to the decline and tackling them at their root cause. For example weed invasion(s) may be the symptom of increased water and/or nutrients from adjoining properties. In such instances a focus only on eradicating the weeds without addressing the root cause (e.g. fixing a leaking septic tank) would be a waste of resources. However, in many instances the root cause may be beyond our ability to control and minimising the impacts may be the only appropriate course of action.

2.2.4 STRATEGIC AND LANDSCAPE-WIDE APPROACH

Our scarce resources, limited knowledge and time available, mean that a strategic and landscape wide approach is required to maximise biodiversity outcomes. This needs clearly stated priorities that may result in difficult decisions, such as 'accepting' a 'lower quality' outcome at some sites to increase resources and works at other higher priority sites.

Such a strategic approach is also a recommendation of the Manningham Sites of (Biological) Significance Review.

> *'Many of the larger, more significant reserves already receive some attention, the nature and scale of this effort often needs to be stepped up. Some relatively minor urban sites are often over managed at the expense of parcels in the Green Wedge that are effectively neglected'*[8]

[8] pg 99, Manningham City Council *Sites of (Biological) Significance Review*, November 2004.

2.3 The Planning Process

How planning for our remnants will be undertaken

2.3.1 OPEN SPACE PLANNING CONTEXT

Planning for Manningham's Bushland areas is undertaken essentially 'reserve by reserve', as Management Plans are produced for the Park or Reserve within which that bushland occurs. This is within the overall framework of Council's Public Open Space Strategy (currently under review), whereby management or development plans are developed and implemented for all of Council's Parks and Reserves on a rotating basis. Management Plans are typically to be reviewed five years after implementation is 95% complete, in recognition that implementation can take up to 10 years and some recommendations may have lost relevance.

The draft 2012 Public Open Space Strategy (in preparation) proposes a classification system for reserves according to their main role and function. This system categorises each individual parcel of public open space to quickly highlight its:

- major functions;
- visitor catchment; and
- landscape character.

Major Functions

There are eight proposed major function classifications; reflecting a site's potential and well as existing functions. Where a site has multiple characteristics, it may be included under multiple classifications to ensure this complexity and diversity is not overlooked i.e. sites may fall under multiple major function classifications if they contain a diversity of features, for example sporting fields as well as remnant vegetation.

Sites with managed bushland areas will be designated as having a 'Flora/Fauna Conservation' area. These are defined as areas protected and managed for the existing or potential significance of indigenous flora and fauna. Visitor access and informal recreational experiences will be provided as a secondary function where possible without impacting negatively on the dominant function, and would typically be based around experience and interpretation of ecological values.

Visitor Catchment

Reserves will also be designated with one of three visitor catchment classifications. This classification set gives an indication of a reserve's potential significance, visitation levels, level of complexity, and requirements for ongoing management and maintenance.

1. Regional

These reserves serve a catchment that covers the whole of the municipality as well as adjoining municipalities and tourists from further afield. The wide catchment area is attracted by the size and/or special features and recreational opportunities of the space. Visitation levels will be high, will vary from daily or weekly to one-off or annual visits, and may well be of long duration: from an hour or two to a half day. Regional level reserves require a management plan to guide their planning, development and management.

2. District

These reserves serve one or more suburbs and attract visitation from beyond walking distance. They offer special or diverse attractions or facilities, but of a lower level than regional reserves. Frequency and length of visits will vary considerably depending on the individual features of the reserve. Visitation levels are often periodically high associated with structured sporting or community events.
District level reserves require a management to guide their planning, development and management.

3. Local/Neighbourhood

Local/neighbourhood reserves typically are provided for local residents within walking distance for the purposes of informal recreation, green respite and flora/fauna conservation. Visitation levels are typically low and are expected to be from daily to weekly and will not be of long duration.

Regional and district classifications indicate that the site warrants a management plan.

Landscape Context
The landscape context classification will be aspirational rather than descriptive and will prioritise where there is an existing mix of characters. It will assist in determining priorities and directions for design, management and marketing. This classification system gives guidance for the level of landscaping, planting character and most importantly has implications for nearby development. These classifications are detailed in the Public Open Space Strategy.

1. Indigenous Bushland
2. Open Parkland
3. Waterway or waterbody
4. Informal native
5. Informal exotic or mixed native/exotic
6. Formal mixed exotic/native
7. Lawn dominated or managed sports surfaces
8. (other)

RECOMMENDATION 1

All Council-managed open space reserves with an indigenous bushland component have Management Plans prepared for them as part of the

Manningham Reserve Management Plan process, which ensures at least the indigenous bushland component of those reserves have developed Management Plans. This process generally is in accordance with the Bushland Reserves Priority Table (see Table 1).

2.3.2 MANAGEMENT & PLANNING STRUCTURE

Bushland management on Council managed land in Manningham (*refer Map 1*), is the responsibility of Council's Parks & Recreation Unit. A Bushland Management Officer (BMO) is employed in a fulltime, permanent capacity to undertake and oversee bushland related works. The BMO position is the only staff resource directly employed by Council in relation to bushland management; however contractors are continually employed mostly for on-ground works. Responsible to the Manager, Parks & Recreation, in the Assets & Engineering directorate, the BMO has responsibility for the management of all bushland areas on Council open space. Strategic planning for those bushland areas is the responsibility of Council's Economic and Environmental Planning Unit (EEP), in the Planning & Environment directorate. EEP recently has increased the responsibilities of an Environmental Planner in the Unit to include the role of liaising and working with the BMO during the preparation of management plans. Whilst the quality of 'on-the-ground' management of bushland is not in question, several Council strategies identified a gap between strategic planning functions and on-the-ground outcomes and the aim of this role is to address the issues below to ensure:

- increased support for and awareness of the role and activities of the BMO position within Council;
- more detail about and recognition of the importance and nature of bushland management activities in Council management plans;
- bushland management and Council promotion of and involvement with biodiversity initiatives on private land, are integrated and aligned; and
- development and implementation of appropriate policies and processes to protect and conserve bushland from the impact of operational activities/construction works in or near bushland areas.

RECOMMENDATION 2

The current structure for bushland management is appropriate and it is recommended that no changes are required, beyond reviewing the EEP Environmental Planner's role in the management of bushland areas after two years implementation of this strategy.

2.3.3 PRIORITISING BUSHLAND MANAGEMENT SITES

Historically a significant proportion of bushland management expenditure in Manningham was focussed on high profile sites that do not necessarily reflect the priorities in terms of biodiversity outcomes or the quality and significance of the bushland e.g. Mullum Mullum Creek Linear Park – Currawong. This has been a reflection of the need to undertake works associated with funding arising

from capital works and grant funded projects and recommendations arising from Reserve Management Plans that were not ecologically driven.

Over time, the BMO has redirected expenditure and management efforts to ecologically higher quality and higher priority bushland sites. This Strategy reinforces and supports that change. However whilst quality should be the primary driver it is also acknowledged that other factors need to continue to be taken into account including:

- presence of rare or threatened species;
- landscape context of the remnant (e.g. habitat corridor); and
- political/community imperatives.

The priorities below have been developed to guide and align the allocation of funding, resourcing and support for bushland remnants on Council managed and private lands. The Bushland Reserves Priority Table (Table 1) will drive the allocation of resources and the development of management plans/habitat hectare assessments for each site.

Manningham has responsibility for managing 409 hectares of bushland across 72 Council open space reserves – including parks, drainage reserves, walkways, roadsides (where fair-good or higher quality and/or significance) but excluding tree reserves. The Bushland Reserves Priority Table (Table 1) displays each of Manningham's 72 bushland reserves. It assigns each bushland reserve a level of priority for management and resourcing, based on:

- Biosites (Sites of Biological Significance Study 2004) mapping and attribute data;
- comparative assessment of bushland 'quality'[6]; and
- size and landscape context. *'Large natural areas of remnant vegetation are of fundamental importance for nature conservation and are irreplaceable. All other things being equal, large remnants are inherently more valuable than small patches that total the same area.*'[9]

Table 1 lists all of the reserves classified as having a 'Flora and Fauna' major function i.e. reserves with bushland managed by Manningham City Council. Twenty-one of the 72 reserves (29%) have a regional catchment, 12 (17%) have a district catchment and 38 (54%) have a local/neighbourhood catchment. The Bushland Reserves Prioritisation Matrix (Table 2) provides an explanation/definition of criteria driving the priorities. It is recommended that the priority ratings be adjusted as data on threatened flora/fauna species is collected for each reserve, to account for the presence/absence of significant (e.g. threatened) species.

[9] *Victoria's Native Vegetation Management: a Framework for Action*, Victorian Government 2002.

Table 1: Bushland Reserves Priority Table (*refer Map 2*)

	RESERVE NAME	CATCHMENT			Priority	AREA (ha)	Significance	Date MP Last Approved	Review
		Regional	District	Local					
1	Currawong Bush Park	✓	·	·	VH	60.81	STATE	2011	2022
2	Mullum Mullum Crk Linear Park - Buck	✓	·	·	VH	43.35	STATE	2005	2017
3	The 100 Acres	✓	·	·	VH	40.77	STATE	2010	2020
4	Mullum Mullum Crk Linear Park - Tikilara	✓	·	·	VH	31.94	STATE	2001	2019
5	Mullum Mullum Crk Linear Park - Currawong	✓	·	·	VH	14.39	STATE	2011	2022
6	Mullum Mullum Crk Linear Park - Mathews	✓	·	·	VH	11.06	STATE	2003	2016
7	Mullum Mullum Crk Linear Park - Whitefriars	✓	·	·	VH	8.21	STATE	2003	2019
8	Bulleen Park	✓	·	·	VH	7.19	NATIONAL	2000	2016
9	Stintons	·	✓	·	VH	7.15	STATE	1994	2018
10	Warrandyte River Reserve	✓	·	·	VH	4.90	NATIONAL	2005	2017
11	Colman Park	·	✓	·	VH	4.86	STATE	2009	2018
12	Husseys Reserve	·	✓	·	VH	3.80	STATE		
13	Wonga Park	·	✓	·	VH	3.71	STATE	2008	2019
14	Wittons	✓	·	·	VH	3.59	NATIONAL		
15	Yanggai Barring Linear Park	✓	·	·	VH	2.53	STATE	2011	2022
16	Tindals Wildflower Reserve	✓	·	·	VH	2.52	STATE	Expected 2012	2023
17	Finns Reserve	✓	·	·	VH	2.48	NATIONAL	2006	2020
18	Stiggant Reserve/Warrandyte River Reserve	✓	·	·	VH	2.16	NATIONAL	2005	2017
19	One Tree Reserve	·	·	✓	VH	2.06	STATE		
20	Alan Morton Reserve	·	✓	·	VH	1.89	STATE		
21	Penderel Reserve	·	·	✓	VH	1.86	NATIONAL		
22	Bimbadeen Reserve	·	·	✓	VH	1.23	NATIONAL		
23	Husseys Bend Reserve			✓	VH	1.16	STATE		
24	Warrandyte Reserve	·	✓	·	VH	1.04	NATIONAL	2003	2020
25	Ruffey Lake Park	✓	·	·	H	16.50	REGIONAL	1995	2016
26	Fitzsimons Reserve	✓	·	·	H	7.51	buffer		
27	Green Gully Linear Park	·	✓	·	H	4.12	REGIONAL	1995	Expected 2012
28	Ruffey Creek Linear Park	✓	·	·	H	2.96	buffer	1995	2016
29	Koonung Creek Linear Park 2 of 3	✓	·		H	2.86	REGIONAL	2011	2022
30	Koonung Creek Linear Park 3 of 3	✓	·	·	H	2.27	REGIONAL	2011	2022
31	Koonung Creek Linear Park 1 of 3	✓	·	·	H	2.02	buffer	2011	2022
32	Zerbes Reserve	·	✓	·	H	1.73	REGIONAL	2011	2022
33	Dirlton Reserve	·	·	✓	H	1.32	buffer		
34	Domeney Reserve	·	✓	·	H	1.09	buffer	2003	2017
35	Lynnwood Reserve	·	✓	·	H	1.05	REGIONAL		
36	Prowse Reserve	·	·	✓	H	1.04	REGIONAL		
37	Anderson Park	✓	·	·	H	1.00	REGIONAL	1992	2021

	RESERVE NAME	CATCHMENT			PRIORITY	AREA (ha)	SIGNIFICANCE
		Regional	District	Local			
38	Arthur John Upton Reserve	·	·	✓	M	1.38	-
39	Aloha Reserve	·	·	✓	M	0.74	REGIONAL
40	Bullen Reserve	·	·	✓	M	0.67	REGIONAL
41	Alexander Reserve	·	·	✓	M	0.62	STATE
42	Woolerton Reserve	·	·	✓	M	0.53	STATE
43	Diane (opp Tindals)	·	·	✓	M	0.48	STATE
44	Hermann Reserve	·	·	✓	M	0.42	REGIONAL
45	Oakland Reserve	·	·	✓	M	0.29	STATE
46	Orchid Reserve	·	·	✓	M	0.29	STATE
47	Ringwood-Warrandyte Reserve north			✓	M	0.29	STATE
48	Jura Reserve	·	·	✓	M	0.25	STATE
49	Valley Reserve	·	·	✓	M	0.23	STATE
50	Bellevue Reserve	·	·	✓	M	0.22	REGIONAL
51	McGowans Reserve	·	·	✓	M	0.19	STATE
52	Raymond Elliot Reserve	·	·	✓	M	0.05	STATE
53	Gold Memorial Reserve	·	·	✓	M	0.03	STATE
54	Lynette Reserve	·	·	✓	ML	0.71	buffer
55	Harris Gully Reserve	·	✓	·	ML	0.58	buffer
56	Blackwood Reserve	·	·	✓	ML	0.22	buffer
57	Barooga Reserve	·	·	✓	ML	0.20	buffer
58	Knees Patch (formerly part Domeney Reserve)	·	·	✓	ML	0.15	buffer
59	Brackenbury Reserve	·	·	✓	ML	0.08	buffer
60	Third Reserve	·	·	✓	ML	0.08	buffer
61	Pigtail	·	·	✓	ML	0.02	buffer
62	Tuscany Reserve	·	·	✓	L	0.85	-
63	Jenkins (refer Green Gully No 26)	·	✓	·	L	0.72	-
64	Ringwood-Warrandyte Reserve south			✓	L	0.45	-
65	Tiffany Reserve	·	·	✓	L	0.4	-
66	Teena		·	✓	L	0.2	-
67	Larne Reserve	·	·	✓	L	0.16	-
68	Edwin Reserve	·	·	✓	L	0.13	-
69	Sinclair Reserve	·	·	✓	L	0.1	-
70	Joroma Reserve	·	·	✓	L	0.09	-
71	Kerry Anne North Reserve	·	·	✓	L	0.09	-
72	Kerry Anne South Reserve	·	·	✓	L	0.09	-
	72 Bushland Management Reserves					**322.13ha + 86.99ha roadsides**	

Table 2: Bushland Reserves Prioritisation Matrix (*refer Map 3*)

Priority Ranking*		
Very High	>1ha of bushland within a Biosite of National or State significance	VH
High	>1ha of bushland within a Biosite of Regional significance or a Buffer Conservation Area	H
Medium	>1ha of bushland outside a Biosite or a Buffer Conservation Area OR less than 1ha of bushland within a Biosite	M
Medium-Low	<1ha of bushland in a Buffer Conservation Area	ML
Low	<1ha of bushland outside a Biosite or Buffer Conservation Area	L

*It is recommended that criteria be developed for incorporating threatened species attributes into this Bushland Reserves Prioritisation Matrix.

The Bushland Reserves Prioritisation Matrix will be adapted as appropriate to:

- rank and prioritise Council managed roadsides in a consistent way; and
- incorporate a review and update of the 2002 Roadsides Significance Mapping.

2.3.4 PROPOSED MANAGEMENT PLAN 'TEMPLATE'

As Management Plans are prepared for reserves, the following template (Figure 1) is to be used as a guide to the required content, structure, type and range of information to be provided in the bushland management component of the Management Plan.

The template is proposed as a guide or minimum content required in a Management Plan and to provide some consistency in the amount of environmental detail provided in each plan. However it is acknowledged that this will vary somewhat from site to site depending on the size and complexity of the reserve, its visitor catchment and ecological values.

RECOMMENDATION 3

Adopt the proposed Management Plan Template (Figure 1) as a standard for Management Plans, acknowledging the need for site-specific adaptations.

Habitat Hectare Assessments

It is recommended that for every reserve and every Management plan that includes a bushland management area, the Victorian Habitat Hectare methodology be applied to determine the extent, condition and conservation significance of indigenous vegetation on the site. This methodology involves the assessment of a

number of site-based habitat and landscape components against a pre-determined 'benchmark' relevant to the vegetation type being assessed.
Over time as all reserves are assessed this will allow comparative assessments to be made and the Bushland Reserves Priority Table to be reviewed and adapted to account for conservation significance and habitat hectare scores.

'One of the major reasons for the development of the habitat hectares approach is to enable vegetation condition or quality to be accounted for in native vegetation planning and investment decision-making processes. The habitat hectares approach is not a measure of conservation significance in itself but it can help determine the conservation significance of native vegetation in combination with other assessed biodiversity attributes'[10]

The advantages or particular usefulness to Council (and all other land managers) of the habitat hectare methodology is that it can reasonably;

- Provide an objective assessment of 'quality' that is both reliable and repeatable.
- Measure the degree of 'naturalness' as a contribution to broader conservation value assessments.
- Indicate the direction and amount of potential improvement for lower quality sites.
- Allow comparison between different vegetation types.
- Combine quality and quantity assessments.
- Enable calculation of net outcomes, either for trade-off/offset scenarios or for measuring overall performance of policies and program.
- Be undertaken rapidly by a range of natural resource managers (i.e. not just botanical ecologists).
- Present a simple and robust message to land managers about the important components of native vegetation and its management.11

RECOMMENDATION 4

According to the Bushland Reserves Priority Table (Table 1) apply the Victorian Habitat hectare methodology to determine the extent, condition and conservation significance of indigenous vegetation on each site.

RECOMMENDATION 5

Collect data on threatened flora/fauna species for each reserve, and adjust the Bushland Sites Prioritisation Matrix accordingly to account for the presence absence of significant or threatened species.

[10] DSE (2004) *Vegetation Quality Assessment Manual–Guidelines for applying the habitat hectares scoring method*. Version 1.3. Victorian Government Department of Sustainability and Environment, Melbourne.
[11] Parkes, D., Newell, G., & Cheal D *'Assessing the quality of native vegetation: The 'habitat hectares' approach'* in Ecological Management & Restoration Vol 4 Supplement February 2003.

RECOMMENDATION 6

Review and update the Roadside Quality and Significance Mapping Study 2002. Promote the existence of roadside mapping on the GIS system to internal staff in relevant units so they are aware of roadside values and utilise the mapping.

RECOMMENDATION 7

Adapt/adopt as appropriate the Bushland Reserves Prioritisation Matrix and apply it to rank and prioritise Council managed roadsides.

Figure 1: Proposed Bushland Template for Management Plans

RESERVE NAME

SITE DESCRIPTION

1. Background

Briefly discuss the environmental and landscape context of the site. Present a broad overview/background of management of the bushland at the site to date.

2. Vegetation (Habitat Hectare/Scattered Tree Assessments)

Describe the extent, quality and significance of the indigenous vegetation on the site. Describe and map the Ecological Vegetation Classes (EVC) across the site and their habitat hectare score and bioregional conservation status.

3. Fauna

Develop a list of fauna recorded within 2km of the site based on reliable records from the DSE fauna database on Councils GIS system. Supplement with local records if reliable.

4. 'Significant' Species

Describe any significant or threatened flora and fauna species likely or known to be present on the site.

5. Geomorphology & Hydrology

Briefly describe the landform and topography of the site including information on soils, water and geology if available.

Key Issues & Recommendations

Describe and discuss the key management issues and recommend management actions for each in relation to native vegetation management for the site e.g.

- *invasive plants & animals*
- *flora and fauna habitat*
- *significant species*
- *visitor infrastructure e.g. tracks, fencing, signs, seating*
- *refer section 3 of this Strategy for other key issues*

Management Zones

Define management zones as per section 2.3.5 below. Describe the key management objective(s) for each zone and detailed management prescriptions (actions) for achieving that objective(s).

Site Map

Using the site mapping prepared for this strategy as a base map, produce overlay map(s) to show the designated zones and identify the location(s) relevant for any of the management prescriptions/key issues & recommendations.

BUSHLAND MANAGEMENT ZONES

Defined management treatments ('zones') are applied to each bushland site. Each zone has a management objective and specific prescriptions (actions/recommendations) for achieving that objective. Choice of management treatment(s) applied to a site or reserve generally relates to the condition of the vegetation. In theory, this relationship would be reflected by a corollary Habitat Hectare score (i.e. condition index).

Five management treatments are used; these broadly are based on the management objective for the area and its quality (usually represented by extent of weediness or degree of intactness of the vegetation). There will be consistent use of the five management treatments/zones in all management plans, across all reserves and roadsides, unless site-specific anomalies arise. It is acknowledged that further delineation into sub-zones may be appropriate for some reserves, and that these may vary or change over time in response to a new threat or asset, or changing quality or resources.

Zone 1: 'Comprehensive' Weed Management Zone

Consisting of those areas with a medium to highly diverse indigenous groundstorey/midstorey, and generally with some level of indigenous canopy tree cover. This zone usually comprises sites where 'higher quality' (i.e. least disturbed from presumed 'original' state) indigenous vegetation remains.

All or almost all weed species are controlled in this zone (with some exceptions at some sites e.g. Onion Grass *Romulea rosea* usually is not controlled unless present in only small numbers; Hair Grass *Aira* spp. or Fescue *Vulpia* spp. are not controlled in some areas), especially grassy and herbaceous species and all woody weeds and climbers.

Management objective: Manage all weeds (where possible) and all other threats to maintain or improve quality over time.

Zone 2: 'Select' Weed Management Zone

Those areas of indigenous vegetation, (usually of lower 'quality' than Comprehensive Management Zone areas) where not all weed species are controlled. i.e. only selected 'higher threat' grassy and herbaceous weeds will be controlled. Generally no annual grass species (except Annual Veldt-grass *Erharta longiflora*) or annual herbs are controlled. All other woody, climbing, rhizomatous and succulent weed species are controlled.

The weeds that require control in this Zone (i.e. the `select' weeds) are those that if not checked, will cause a reduction in the remaining diversity of plant and animal species on a site. Some weed species are not considered a threat to the remaining plant and animal diversity on a site, as; a) they are already well established all over the site and in becoming established have already `done their damage', or b) their population is very small and their rate of spread is relatively slow compared to other weed species on site so their threat level is extremely low.

Funding is not always available to tackle all the `select' weeds that require control, and so these are prioritised above others. Those of lower priority are tackled as funding becomes available. Over time, some parts of the `Select Weed Management' Zone will change to become `Comprehensive Weed Management' Zones, whilst others will never need to change. This change depends not only on funding, but also on the particular 'vegetation scenario' or 'weed scenario', i.e. the particular combination of weeds and indigenous species in a patch, how readily controllable a weed species is, the relative abundances of the weed and indigenous species, and on the rarity and biology of the remnant indigenous species in a patch.

Management objective: Manage higher threat weeds, other threats and maintain and/or improve quality over time.

Zone 3. 'Minimal' Weed Management Zone

Those areas that are generally of lowest 'quality' indigenous vegetation. Dominated by weeds and sometimes with no or very little indigenous groundstorey vegetation but still having habitat value. Supplementary planting of small shrubs, trees and vines can be undertaken. Rocks and logs also are added.

Management objective: Manage woody and vine weeds and any other weed species where control is a legislative requirement. Aim to prevent further quality decline as far as is practical. Supplementary planting may occur as appropriate to enhance diversity.

Zone 4: Landscaped/Revegetation Zone

These areas are existing mulched 'garden beds' within reserves that support planted indigenous species and offer some habitat value. This value can often be greatly increased by ensuring that these beds do not remain underplanted (e.g. replace dead plants promptly).

Management objective: Similarly to Zone 3, manage woody and vine weeds and any other weed species where control is a legislative requirement. Aim to prevent further quality decline as far as is practical. Further supplementary planting may occur as appropriate to enhance diversity.

Zone 5: Conservation Mowing Zone

These are areas of open space with a component of indigenous groundstorey species (e.g. grasses, wildflowers, groundcovers) and which are currently regularly mown.

They may appear to be 'manicured lawn' areas but are dominated by native grasses, in particular Wallaby Grasses *Austrodanthonia* spp. and Weeping Grass *Microlaena stipoides*. In addition, some parts of these sites contain orchids, lilies and other indigenous herbaceous species. They often have no tree canopy, either of indigenous or non-indigenous species.

The indigenous groundstorey species still present on such sites are those that are able to withstand some level of mowing. On the whole, the diversity

and abundance of these species decreases with increasing mow frequency and decreasing cut height.

The very regular ‘amenity’ mow regime on such sites does not allow many of the remaining indigenous species to continue into the long term or to increase their abundance. A decision to change an amenity mow regime to a conservation mow regime is required to minimise the loss of the remaining biodiversity on these sites. The exact frequency of mowing in a designated Conservation Mowing Zone will be different in different parts of the zone as it depends on the growth habits of the weed and indigenous species present in each part of the zone. Generally the whole zone will require at least an annual mow, with cut material immediately removed and the indigenous species not able to withstand this are mown around. Given the history of most of these existing and proposed conservation mow sites, few such indigenous species remain, and so the number of `mow around’ locations is low.

Mature trees in an area mown with an ‘amenity’ frequency can also be advantaged by a reduced mow frequency and higher cut. Both changes will enhance soil health through reduced compaction (less visits by a heavy machine) and increased biomass at ground level which will help with increased soil aeration and reduced soil compaction and erosion.

Management objective: To enhance the retention and management of indigenous species within mown areas by investigating altered mowing regimes (e.g. timing, height & frequency) and other techniques for these areas.

The five management zones above will be applied consistently across Councils reserves including roadsides, and used as per the Bushland Management Template in Reserve and bushland management plans. However it is recognised that in some instances it may be appropriate to identify sub-zones or variants of those described. The bushland management section of each management plan should prescribe recommendations for each zone consistent with the objectives defined above.

2.4 Resourcing and Benchmarking

Manningham has responsibility for managing 409 hectares of bushland across 72 Council open space reserves – including parks, drainage reserves, walkways, roadsides (where fair-good or higher quality and/or significance) but excluding tree reserves. In 2002, a Council benchmarking study[12] identified that Council managed 187ha of bushland; this equates to a 119% increase in the bushland area managed by Council since 2002. The 2002 benchmarking recommended a minimum expenditure level for bushland management of $1,420/ha compared to an industry average at the time of $3,577/ha[13]. Despite the significant increase in the bushland area now managed compared to that managed in 2002, the current budget per hectare is still below the minimum expenditure level identified in 2002 – without factoring in the compounding effect of CPI and other inflationary influences.

Based on the 11/12 FY budget, $371,816[14] (+ $50,000 allocated from capital works) is spent on bushland management. This current level of resourcing equates to an expenditure of $1,031/ha – below the minimum 2002 target level of $1,420, well below the 2010 industry median of $3,014/ha[15] and at the lower end of the funding range of other urban and peri-urban Councils[16] - that range is $600-$6000/ha. Importantly, it is well below the amount required to adequately maintain our bushland areas and (at least) slow the decline.

Thus, a decade of under-allocation of resources has passed. Minimum expenditure has not been met and, consequently, we have not been managing bushland to minimum requirements to maintain the *status quo*. As a result, management issues have escalated and even greater financial input now will be required to redress the last decade of underfunding. Indeed, the issues at some reserves have become so severe that reversing the degradation to vegetation quality may be extremely difficult, even if significantly more funds were made available. Unfortunately, allowing the continuation of this degradation is not an option, as the degradation will impact other private and public resources.

A minimum level of management and expenditure is required to maintain the *status quo* and avoid a continual decline and net loss in bushland extent and quality. This is critical as 65% of Council managed bushland reserves are partially or wholly within Manningham's Biosites network (Table 3). Biosites (Foreman 2004) are those areas of Manningham with more than 25% indigenous vegetation cover in variable condition, which (it is assumed) support the majority of Manningham's biodiversity. Eleven per cent of Council reserves are part of a Biosite of National Significance for their ecological values, over a third (37%) are part of a State significant Biosite, whilst 17% are part of a Regionally significant Biosite. The remaining 35% are either Buffer habitat (18%) or neither Buffer nor Biosite (17%).

[12] Manningham's Maintenance Specification Council Report, July 2002
[13] ibid.
[14] includes Rabbit Control of $18,870 that occurs over some non-bushland areas
[15] based on 2010 data from 16 Councils participating in the 'Integrated Open Space Services' annual benchmarking exercise.
[16] based on 2010 data from 16 Councils participating in the 'Integrated Open Space Services' annual benchmarking exercise.

Table 3: Bushland Reserves Analysis Table

No. of Sites	Significance	% of All Sites
46	Within a Biosite	65%
8	National	11%
26	State	37%
12	Regional	17%
13	Within a Buffer Conservation Area	18%
12	Neither in Buffer nor Biosite	17%

It is estimated that without the recommended minimum expenditure, the current rate of loss (estimated at approx. 20 habitat hectares of bushland per year) will continue apace, leading potentially to almost half of Manningham's bushland quality disappearing by 2040[17]. As managers of these public reserves, we have a responsibility to constituents – past, present and future – to (at least) maintain the condition of these reserves.

As bushland is considered to be one of the assets of the municipality (in a similar manner to buildings, roads and other community assets), a minimum amount of $50,000 annually is provided in Council's capital works budget, allocated for capital improvements of this bushland asset under the budgetary responsibility of the Parks and Recreation Unit. The addition of this $50,000 lifts the total expenditure on bushland to $421,816p.a. This equates to an expenditure still well below the 2010 industry standard of $3,014/ha and well below what is required to maintain the *status quo* and slow the current rate of bushland quality decline. To exacerbate the situation, capital currently is redirected to post-fire related activities (e.g. weed management) when Council runs burns with CFA. Thus, funding is severely compromised.

Whilst it is acknowledged that additional funding sometimes also is available for bushland management works in Management Plan implementation budgets[18], nevertheless there has been a progressive decline over time in bushland expenditure. This decline is directly related to the new bushland areas for which Council takes on management responsibility: as noted, there has been a 72% increase in the area of bushland under management by the EEP/Parks and Recreation Units without a commensurate increase in resources to manage and maintain these new and valuable assets.

[17] on private and public lands - pg 35, Manningham City Council *Sites of (Biological) Significance Review*, November 2004

[18] e.g. in the 11/12 FY an additional amount of approximately $49,000 was budgeted for bushland management in Management Plan implementation budgets (Mullum Mullum Linear Park Stages 1,3 and 4, 100 Acres Reserve and Ruffey Lake Park Management Plan). Adding this $49,000 to the ongoing bushland management budget lifts the total bushland spend to $470,816 for the 11/12FY, equating to $1,467/ha.

Resourcing gap analysis

Owing to historical under-funding of bushland management within Manningham, some management activities have been given low priority based on the unfeasibly high cost associated with implementing the activity. With limited budgets, there is little that can be done differently, however, the problems do not disappear over time – they become worse. Weeds that are difficult to control that occur in lower priority reserves are too expensive to control (or, ideally, remove) when budgets are tight, so they are left and in the next years, the infestation grows and, in many cases, spread to other reserves and private property. Given many of our worst weeds are bird dispersed, weed seeds can travel – literally – anywhere. So, not only are we not managing the problem we are making it worse. At the same time, we are ordering private landholders to remove weeds from their property and, in some cases, providing financial incentives for these activities. If higher funding was available to bushland management, the Bushland Management Team could tackle bigger problems – such as major weed infestations – and incentives for private landholders could be used to improve their property in more appropriate ways, rather than managing a situation we may have inadvertently created.

Further, current under-funding means only medium and high quality and/or significance roadsides are being managed adequately – at best. Bushland in low- and medium-low quality roadsides supporting native vegetation are not being managed at all. Over time, this will result in the loss of remnant vegetation in low- and medium-low ranked roadsides and weeds that proliferate throughout these lower quality/significance roadsides will spread to higher quality/significance roadsides – and other reserves and private property - increasing the cost and effort associated with bushland management.

The scale of management problems presented by gullies and the cost of managing them means that gullies also often have been neglected due to budget constraints. Whilst gullies should be given high priority – they are prone to (and do have) serious weed infestations and act as a source of weed propagules for properties, reserves and other LGAs downstream – the cost associated with reversing the degradation and managing them adequately is prohibitive under current funding arrangements. Again, the problem *in situ* and beyond exacerbates the longer it is unmanaged. Increasing budgets and allocating capital funds for special projects such as weed blitzes in problem gullies would reduce Council's management costs in the longer term.

Examples such as these are innumerous – larger, arguably more important, management activities are not being conducted so that at least some reserves can be maintained. Of course, this is at the long-term expense of both Council and biodiversity values and must be rectified. Recommendation 10 provides details of additional, necessary projects that could be undertaken with additional funding. Ultimately, to make the current budget work, issues are not being managed or, at best, are being managed at a lower level than is necessary to slow the degradation of our valuable, and valued, reserves.

RECOMMENDATION 8

Expenditure should be increased to the minimum management and expenditure targets across Manningham's bushland reserves.

RECOMMENDATION 9

Additional funds should be made available for a strategic, weed-led approach across the reserve system (e.g. problem gullies) to respond to critical weeds that threaten biodiversity values but which could be managed if funds were available.

For individual reserves, expenditure will vary above and below the average figure depending on the management priority ranking of that reserve, the condition and extent of the bushland on the site and the priority of any particular management action (primarily, weed control).

RECOMMENDATION 10

Capital works funding for improvements to Council's bushland assets should not be expended on 'routine' ongoing or operational bushland management works but on those activities not routinely undertaken as part of bushland management work and, in most cases, require specialist knowledge. Appropriate examples of such works include:

- initial/urgent capital works required in 'newly' acquired Bushland Reserves and/or those without Management Plans;
- studies, monitoring, mapping & research (e.g. habitat hectare assessments – baseline studies that enable future comparisons on management progress, flora and fauna surveys, management planning);
- removal of mature Pines in appropriate areas;
- fencing of bushland areas;
- works on Council managed roadsides and in reserves in support of private land incentive programs;
- directional/interpretative & educational signage; and
- educational/interpretive materials e.g. brochures, self-guided walks.

RECOMMENDATION 11

Additional funding should be allocated to bushland management to implement post-fire related activities on Council land. Post-fire related activities (e.g. post-burn weed management and enhancement works) require significant resources - under current funding arrangements there is a consequent loss of bushland management resources.

With funds allocated to post-fire related activities, bushland management funds could be redirected to priority actions. It is recommended that an agreed component of the Capital works funding for bushland management be allocated to implementing the recommendations of this Bushland Management Strategy over the first five years of the strategy's implementation and any other priority capital works projects as described for bushland management.

2.5 Management of new reserves

New areas of bushland regularly come into Council ownership or under Council management responsibility, placing added pressure on resourcing and budgets. New reserves come about as a result of the handover to Council of the required Public Open Space component of new subdivisions, or as land acquired under Public Acquisition Overlays (PAOs) or as land is purchased or swapped/negotiated by Council in relation to other developments (e.g. land subdivision) or purposes. Thus, in many instances of increased bushland management responsibility for Council, there is a corollary increase in Council revenue (e.g. rates).

If the land supports bushland, additional cost pressure is imposed on the Bushland Management budget due to the fact that usually or almost always, ongoing funding for management is not provided along with the new land. Thus the amount of funding and expenditure per hectare on bushland decreases over time. To date, the increase in revenue has not flowed through to those Council units required to manage the increased reserve base; rectifying this imbalance is of paramount importance. Indeed, the cost of bushland management (moreover, the long-term cost of *not* managing bushland) should be viewed as a legitimate, valued and necessary aspect of such developments and so be factored in to rate pricing and other strategic decisions.

RECOMMENDATION 12

An appropriate proportional bushland management budget increase must be provided whenever any land with a bushland component/liability comes into Council ownership.

RECOMMENDATION 13

Policies and processes should be established whereby a portion of revenue realised by Council as part of an income-generating development that also increases Council's bushland areas is allocated to these areas, to ensure adequate management of these new bushland sites.

The following areas are identified as sites that are proposed/expected to come under Council management responsibility over the life of this Strategy and will require operating budgets for management of the bushland component of the sites:

- Yanggai Baring Linear Park;
- parts of Mullum Mullum Creek Linear Park - Whitefriars and Mathews;
- 51 Reserve Rd, Wonga Park;
- East Doncaster Golf Club as it is developed into urban housing and public open space; and
- scattered areas of bushland within the Koonung Linear Park.

2.6 Implementing Net Gain & Offsetting

2.6.1 OVERVIEW

If a permit is needed for the removal of native vegetation the State Government and Council requires that the 'three step approach' is followed. The 'three step

approach' forms part of the 'Net Gain' policy, a State Government policy that aims to reverse the decline in native vegetation cover that has occurred historically across Victoria. It means that losses of native vegetation must be 'offset' by commensurate 'gains', preferably on the same site - or elsewhere, if insufficient offsets are available on-site. Victoria's *Native Vegetation Management – a Framework for Action* (2002) defines the principles and guidelines for protecting and managing native vegetation in Victoria, including the offset requirements for native vegetation removed as part of a planning permit.

The three steps of the Net Gain policy are:

- ***Avoid*** adverse impacts on native vegetation, particularly removal;
- ***Minimise*** adverse impacts by planning and design; and
- ***Offset*** all removals.

Offsets are achieved by protecting and improving other existing areas of native vegetation (e.g. through weed control or preventing grazing) or by planting new native vegetation. Actions to achieve offset requirements include any works or other actions to make reparation for the losses arising from the removal of native vegetation. An offset may be achieved on:

- an area of existing remnant vegetation;
- an area that is revegetated;
- an area that is set aside for regeneration or restoration; or
- a combination of the above…

…provided there is an approved Offset Management Plan and on-title protection that protects the offset *in perpetuity*.

There are a number of mechanisms currently available for securing native vegetation offsets *in perpetuity*, each offering a different degree of security based on the ability of the mechanism to be enforced, revoked or removed. These include: conditions on a planning permit or an agreement under Section 69 of the *Conservation Forests and Lands Act* 1989; registered on-title agreements (section 173 of the *Planning and Environment Act* 1987, section 69 of the *Conservation Forests and Lands Act* 1987 or a conservation covenant under the *Trust Act* 1972); location on a secure public land site where biodiversity is an objective; and transfer of freehold land to public reserve dedicated to the purpose of conservation.

Several offset brokers/agents exist. For example, BushBroker (an agency established by the Victorian State Government) facilitates the identification of sites that could generate native vegetation *credits* for potential use as offsets in situations when offsets cannot be achieved on-site (i.e. the site where vegetation was removed) and brokers agreements between the credit 'owner' and the permit holder. These offsets are called third-party or off-site offsets. Details of trades, credits and offsets sites are maintained on the Native Vegetation Credit Register which is managed by the Department of Sustainability and Environment (DSE). Other agencies have similar operations. However the availability of potential offset sites is dependent on what type, quality and conservation significance of native vegetation is registered with the offset brokers, which can result in restricted choice of offset site. Availability is further limited by the location of registered sites as offsets must be achieved as close as possible to the native vegetation losses, in

accordance with the rules stipulated in *Native Vegetation Management – a Framework for Action* (2002).

To date, developers in Manningham have found it problematic to acquire native vegetation offsets through BushBroker (and others) because of issues that include:

- a lack of registered properties offering suitable native vegetation;
- a lack of registered offsets within the allowed geographic area (i.e. bioregion);
- additional 'red tape' and delays involved in finding suitable BushBroker registered potential offset sites and dealing with BushBroker (DSE) and the property owners; and
- negotiating and agreeing on transaction costs and an offset price.

Alternative potential offset mechanisms that have been investigated also have proven to be difficult (e.g. placing offsets on private land through Landcare Groups). The State Government has acknowledged that the demand for offset sites exceeds the number of sites registered with BushBroker and other agencies. The difficulty in sourcing appropriate offsets either within or outside the Manningham municipality is generating frustration and difficulties for planning permit applicants who cannot commence their development without first meeting the offset conditions of their planning permit.

In an effort to streamline the efficacy of sourcing offsets to permit holders, BushBroker has introduced the 'Over-the-Counter' (OTC) scheme. Currently only available for scattered tree offsets, permit holders pay a set price for each plant they must source to fulfil their offset obligations. These funds are paid directly to the land manager who has been contracted to provide the offsets in an arrangement that fulfils the policy requirements (e.g. on-title protection mechanisms). Several municipal councils have established (or are in the process of establishing) their own OTC scheme to provide permit holders within the municipality an efficient way to achieve their offsets.

2.6.2 A MANNINGHAM 'OVER-THE-COUNTER' OFFSET SCHEME

Ultimately, it is desirable that losses of native vegetation within Manningham are offset within Manningham to minimise biodiversity losses within the municipality – currently, there are no properties within the municipality registered as an offset site through BushBroker. In order to overcome the difficulties discussed above, achieve a local biodiversity gain for local losses, and facilitate an easier, quicker and more streamlined process for permit holders a Manningham offset scheme should be investigated. It is recommended that a Business and Operations Plan be developed as a high priority to implement a Manningham OTC offset scheme.

A Manningham OTC offset scheme would use similar principles, mechanisms and structures of the State Government's BushBroker OTC Scheme. Council would establish an OTC mechanism to simplify the payment process for Manningham permit holders requiring offsets. The mechanism would allow permit holders requiring native vegetation offsets to make payments directly (over the counter) to Council as a DSE authorised agency. In this way they would be purchasing native vegetation 'credits' from Council. In addition to Council's position as an authority to facilitate the sale of these native vegetation credits, Council would also be the

credit holder, that is creating and providing the supply of the native vegetation credits through a 'native vegetation bank'.

Payments received by Council for the sale of native vegetation 'credits' would be transferred to an approved trust account where the funds would be held and used to pay for the implementation of endorsed Offset Management Plan for OTC sites. DSE could manage Council's Native Vegetation Credit Register and make accounting adjustments to the Register as native vegetation credits are sold and extinguished ('allocated'). DSE also could adjust Council's credit register when Council's own activities result in vegetation losses that need to be offset.

Alternatively should DSE involvement prove unduly cumbersome and bureaucratic, it is arguably within Council's ability to develop a Manningham OTC scheme that is as far as possible independent of DSE involvement. However in line with legal advice received, any scheme would have to have at least DSE's tacit if not explicit approval, given that they are a Referral Authority. *'In our view it is important to ensure that the scheme has the endorsement of DSE, particularly if the scheme is to be used as offsets for permit applications where DSE is referral authority'*[19]. Such approval might take the form of a Memorandum of Understanding (MoU) between Council and DSE.

Additionally, it would be useful if such schemes had statutory status as a legitimate way of providing and funding offsets. New South Wales has established the NSW Biobanking Scheme through the enactment of legislation. The use of legislation could give native vegetation credits statutory force. A Manningham OTC scheme would instead be created by contracts, and consequently, the credits created through the Register and traded by contract would not have statutory force. However the BushBroker scheme operated by DSE also is contract based. This means that the status of credits as personal property is somewhat unclear in Victoria[20].

There are a number of conditional features of a Manningham OTC Scheme that would facilitate its operation. These include:

- offset sites are established in advance of receiving payments for sale of credits;
- credits are usually sold at a fixed price;
- credits are not tradeable;
- credits are extinguished on sale (unlike other schemes, where credits are tradeable and so are extinguished on allocation, not necessarily on sale – this system creates a market where credits can be bought by non-permit holders as an 'investment' and sold to permit holders at a later date usually when credits are in short supply and so worth more than the original purchase price. In this system, Manningham could see all its credits purchased in the early days of the scheme and credits would be held by others, to be traded at a later date);

[19] Email correspondence/advice received from Maddocks to Council, June 2011.
[20] ibid

- trading criteria apply to sale of native vegetation credits (i.e., Like-for-Like criteria/trading up);
- offsets can apply to remnant 'patches' or new 'recruits'; and
- a clear statement of the offset requirement must be detailed within a planning permit condition.

RECOMMENDATION 14

Produce a Business and Operations Plan to investigate and implement a Manningham 'Over-the-Counter' offset scheme.

2.6.3 BENEFITS AND RISKS OF AN OTC SCHEME

There are benefits to Manningham establishing an OTC scheme. Council as a permit applicant itself regularly needs to find appropriate offsets for its own permitted native vegetation removal – sourcing and achieving these offsets is currently problematic and can create time and cost delays for major (and minor) Council projects. A large project that will generate a significant offset obligation for Council is the proposed Jumping Creek Road re-alignment. Further, the development of the Mullum Mullum Creek Linear Park - Whitefriars and Mathews shared path and the proposed Bolin Bolin retarding basin will require offsets to DSE's satisfaction. Permit holders face similar offset requirements: for example, the proposed development of the Eastern Golf Course will generate a substantial offset requirement for the provision (planting or 'recruitment') of indigenous plants. The initial calculation of the offset requirement for scattered trees alone on the EGC site is 13,585 plants.[21]

Other benefits arising from establishing a Manningham OTC offset scheme include:

- native vegetation offsets are retained within the municipality at priority sites selected and managed by Council;
- provision of offsets for developers is quicker and more convenient than BushBroker;
- offsets are concentrated within a few, appropriate sites selected by Council to maximise biodiversity outcomes;
- degraded sites with biodiversity values are restored/enhanced;
- lower long-term maintenance cost of sites after establishment of vegetation;
- payments received for sale of native vegetation credits can be used to cover the cost of establishing and managing an OTC site; and
- additional income potentially can be derived through sale of native vegetation credits to permit holders from other municipalities or bioregions.

The risks/difficulties to Council in establishing an OTC scheme include:

- commitment to, and cost of, establishing an OTC scheme and setting up the sites is required prior to receiving any payments from selling the credits;

[21] *Eastern Golf Course, Doncaster: Vegetation Quality Assessment of EVC patches for Net Gain,* Biosis Research Pty. Ltd., 03 December 2010.

- the price of vegetation credits established in OTC facility must match the demand, i.e. prices could be set too low to cover the cost of establishing the scheme and generating the credits;
- the quantity, condition and type of vegetation credit established in OTC facility must match the demand;
- probity to ensure there is transparency and accountability, disclosed conflicts of interest (if any exist) and appropriate auditing to achieve compliance with the *Native Vegetation Management – a Framework for Action* (2002);
- opportunity costs associated with using a Council reserve as an offset site;
- credits created through the Register and traded by contract will not have any 'statutory weight'; and
- meeting the Like-for-Like criteria - one of the key elements of finding an appropriate offset. The Like-for-Like criteria include the following:
  - vegetation or habitat type of offset
  - landscape role
  - quality objectives for offset
  - vicinity
  - timing

2.6.4 ESTABLISHING AN OTC SCHEME

Establishing an OTC facility will involve several steps, including:

- preparation and endorsement by DSE and Council of a *Manningham Over-the-Counter Offsets Business and Operations Plan* (supply/demand, risk assessment, site selection);
- selecting appropriate site(s) and preparing DSE-approved Offset Management Plans for each site(s) to identify and prescribe the generation of native vegetation credits available from the site(s);
- 'securing' the site(s). DSE prefers an on-title agreement e.g. S69 agreement with DSE. A Forestry and Carbon Management Agreement (FCMA) under section 27 of the *Climate Change Act* 2010 may also suffice and has the added advantage of reserving the rights to any future Carbon credits which may arise from protecting and managing the vegetation.
- establishing an agreed cost/pricing model for credits;
- establishing a transparent and accountable OTC transaction mechanism (e.g. Council to receive money over the counter, then transfer funds into a BushBroker, DSE or Council trust account);
- establishment of connections to the DSE Native Vegetation Credit Register or Council managed alternative, and
- establishment of connections with statutory planning (linking planning permit conditions/process to OTC offset scheme).

2.6.5 POTENTIAL MANNINGHAM OTC OFFSET SITES

The following factors will influence the selection by Council of sites suitable for establishing an OTC scheme:

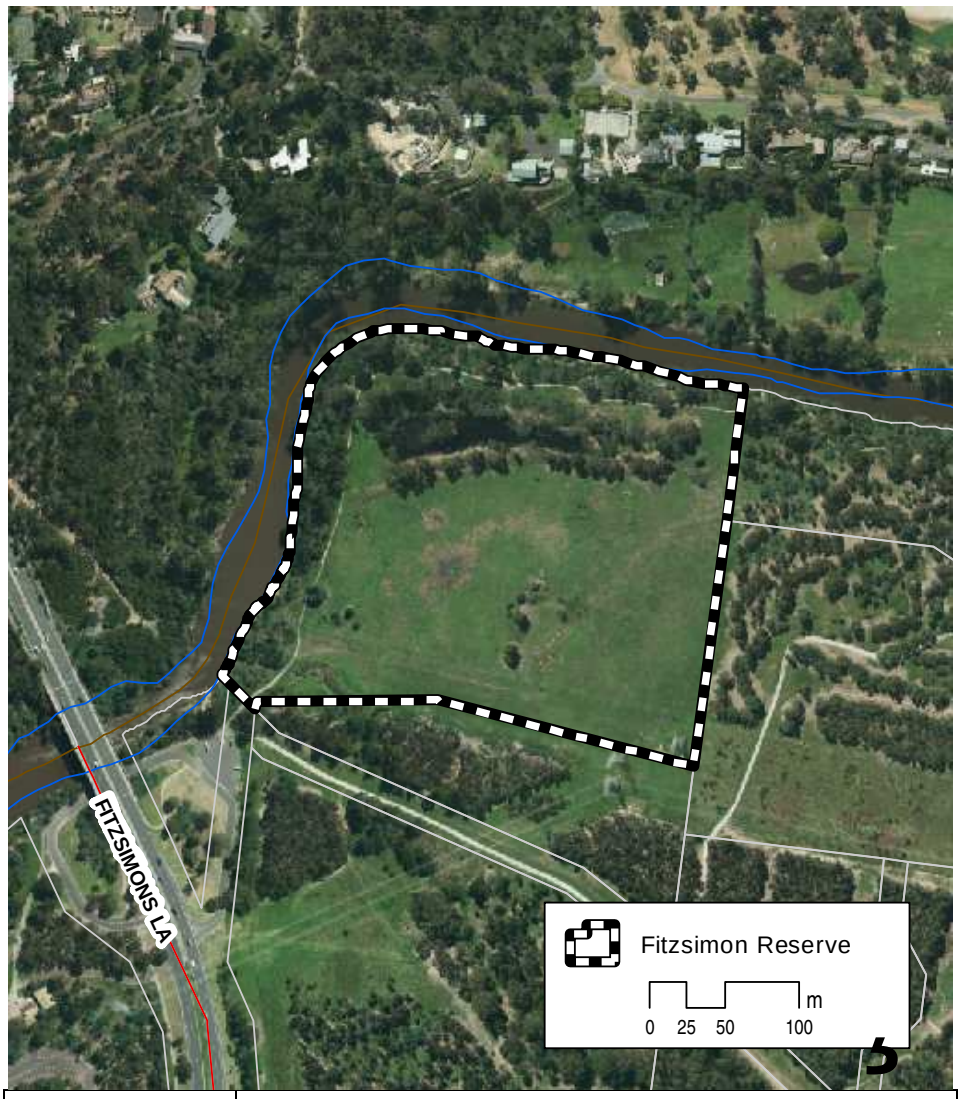
- the greatest number of native vegetation credits will be generated on Council owned land compared with other public land managed by Council *(Guide for assessment of referred planning permit applications, DSE 2007)*;
- ongoing management requirements (including offset plan preparation and implementation, fencing and weed control) and potential risks (including bushfire, dangerous trees, vandalism);
- quality and conservation significance of vegetation on the site;
- potential gains (credits) available from the site; and
- opportunity cost of reserving Council reserves as protected offset sites.

Considering the above factors the following five sites are identified as possible Manningham OTC offset sites for further investigation. Three of the sites are on Council owned land and two of the sites are in the process of, or are proposed to be, coming into Council ownership in the future. As credits are sold and extinguished it may become financially viable to consider acquiring strategic biodiversity hotspots that currently are in private ownership, to conserve and enhance Manningham's biodiversity *in perpetuity* and provide ongoing credits for permit holders.

RECOMMENDATION 15

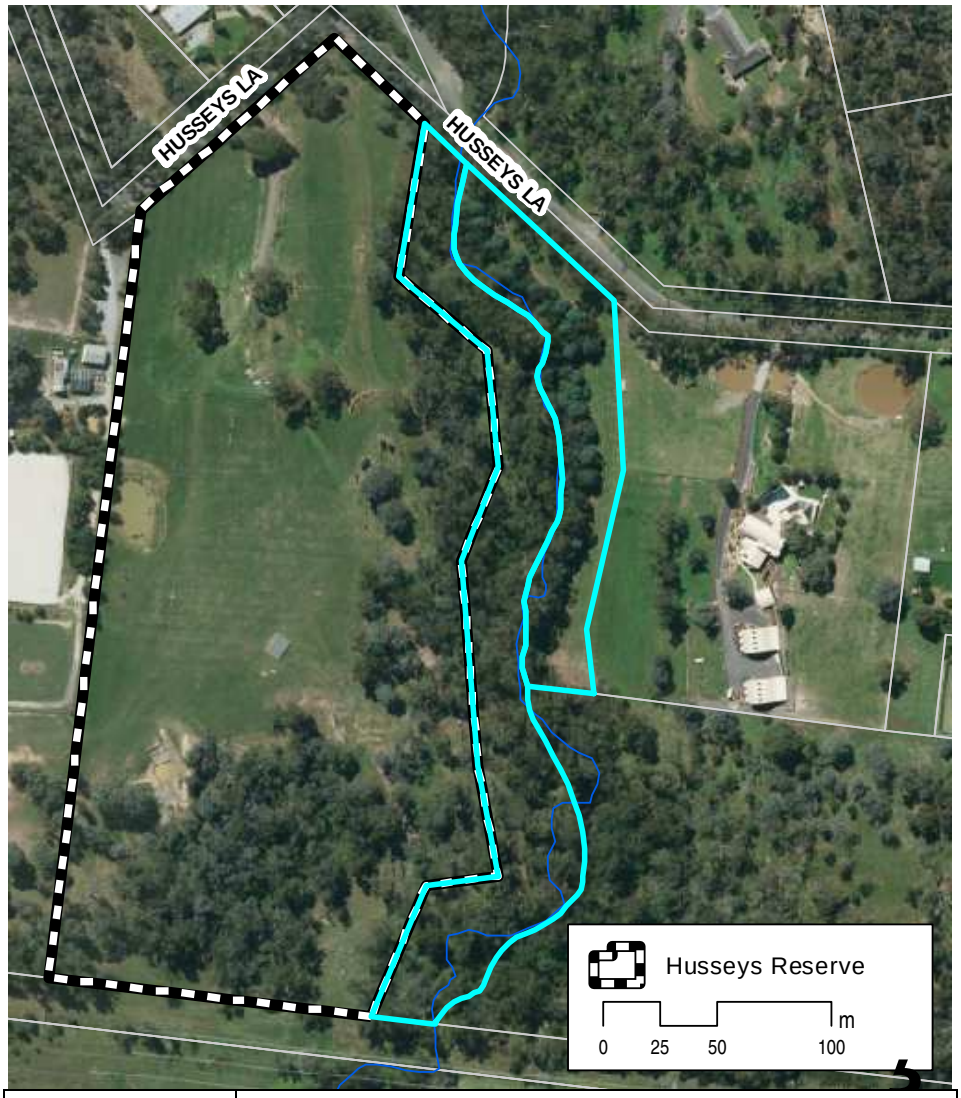
Investigate the need for, and appropriateness of, purchasing potential offset sites. This includes actively seeking appropriate private property that meets DSE and Council offset criteria and is for sale (or potentially for sale).

Possible OTC Offset Site 1: Fitzsimons Reserve



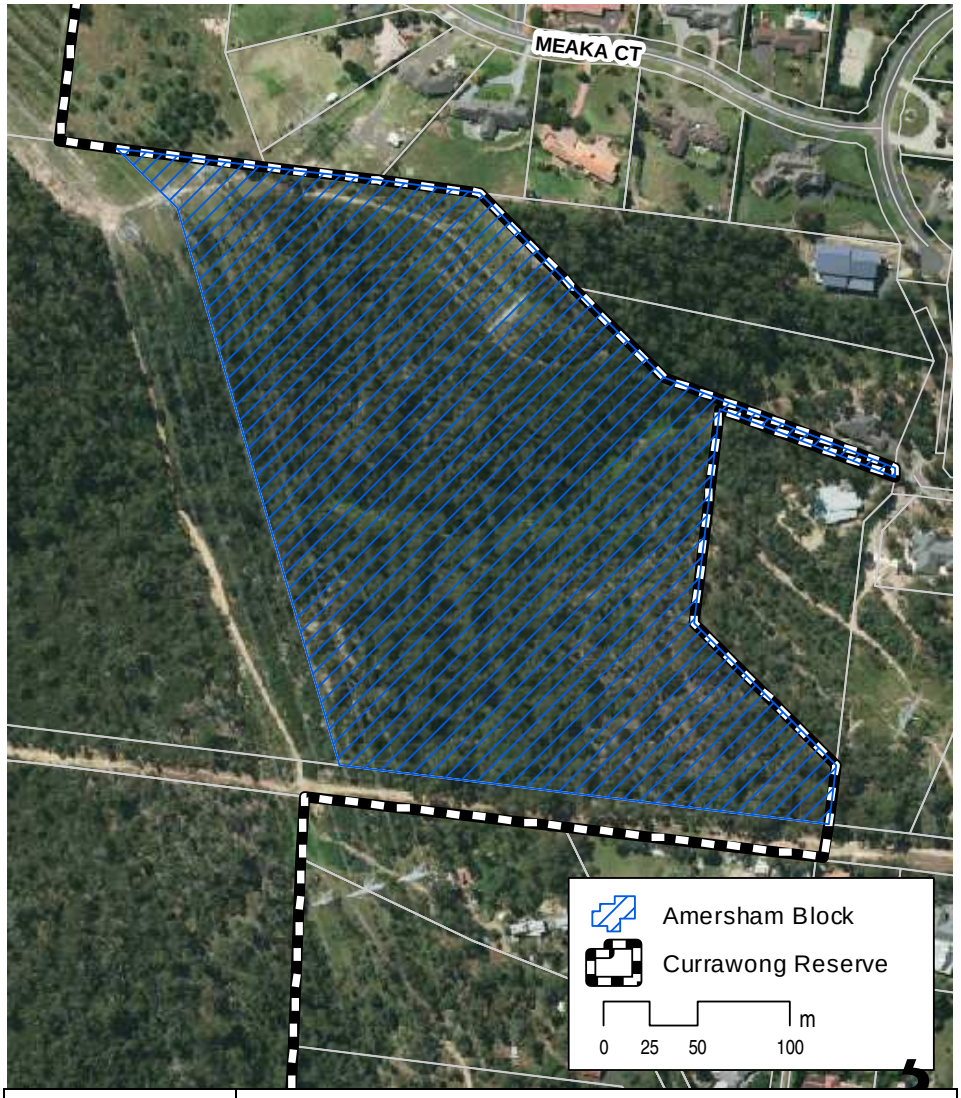
Reserve Size:	7.31 ha
Potential Offset:	Recruitment to DSE EVC revegetation standards
Biodiversity Values:	Substantially cleared and modified riparian habitat between Biosites of National and State significance. Part of significant Yarra River habitat corridor.
Comment:	Existing Council owned reserve. Large site suitable for a great number of recruitment offsets if not required for other open space function.

Possible OTC Offset Site 2: Husseys Reserve



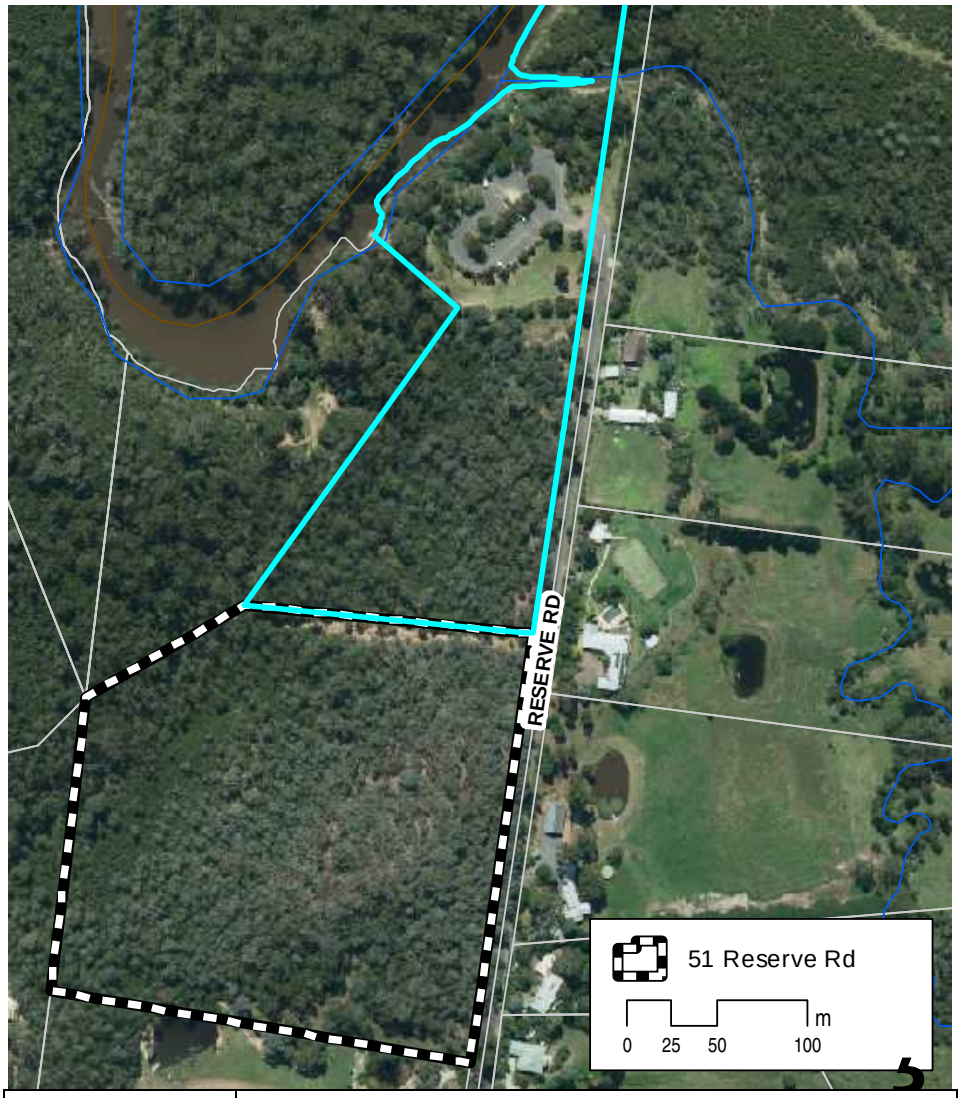
Reserve Size:	6.09 ha
Potential Offset:	Recruitment planting. Possible Patch gains. Protected tree offsets?
Biodiversity Values:	Largely modified Riparian and Valley Grassy Forest habitat within Biosite of State significance. Part of Andersons Creek habitat corridor.
Comment:	Existing Council owned reserve, currently used by Wyeena Pony Club as their cross country horse course site. Could be possible to continue this use and achieve recruitment offsets along the creek flats. Fenced off patch gains may also be possible. The adjacent parcels highlighted in teal, are owned by Melbourne Water and could also be possible offset sites by negotiation.

Possible OTC Offset Site 3: Currawong: 'Amersham Block'



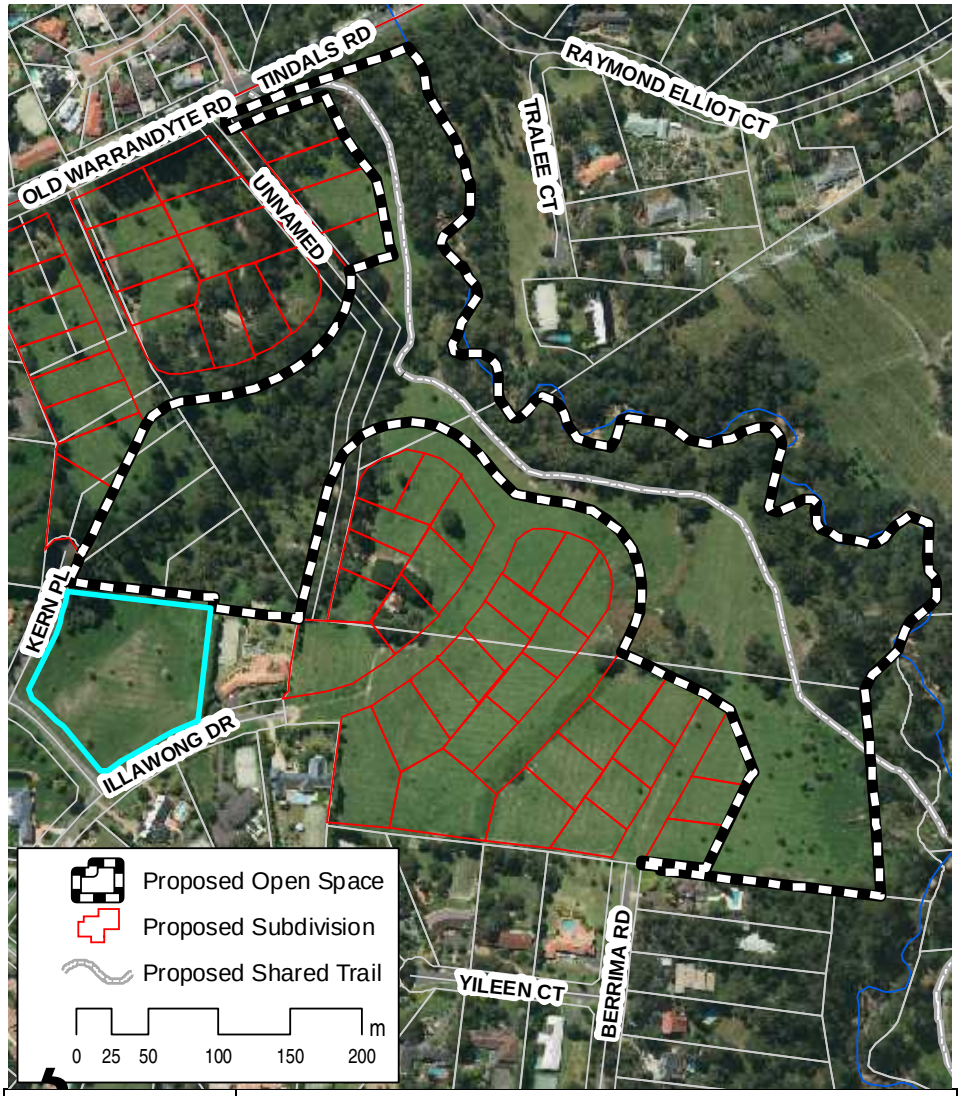
Reserve Size:	Amersham block = 7.53 ha
Potential Offset:	Habitat hectare gains. Revegetation & Protected tree offsets?
Biodiversity Values:	Largely modified Creekline Herb-rich Woodland, Grassy Dry Forest and Valley Grassy Forest habitat within a Biosite of State significance. Eastern most part of Currawong Bush Park, part of Mullum Mullum habitat corridor. Possible threatened species values.
Comment:	Existing Council owned parcel part of Currawong Reserve. Steep and weed infested block with potential for habitat hectare gains, particularly from woody weed control and possible prescribed burning? Limited or no public access. Revegetation/supplementary planting along creekline?

Possible OTC Offset Site 4: 51 Reserve Rd, Wonga Park'



Reserve Size:	5.24 ha
Potential Offset:	Habitat hectare gains.
Biodiversity Values:	Modified Creekline Herb-rich Woodland, Grassy Dry Forest and Valley Grassy Forest habitat within a Biosite of National significance. Teal highlighted parcel to the north is Council owned Wittons Reserve which could also be part of the offset site. Part of Yarra River habitat corridor. Possible threatened species values.
Comment:	Proposed to be purchased by Council from Melbourne Water. Wittons Reserve is currently owned by Council. South-east corner of block is proposed to be sold as a private allotment. Limited public access. Adjacent to Warrandyte State Park.

Possible OTC Offset Site 5: Mullum Mullum Creek Linear Park - Mathews



Reserve Size:	Proposed open space area = 9.23 ha
Potential Offset:	Habitat hectare and recruitment gains.
Biodiversity Values:	Largely modified Creekline Herb-rich Woodland and Riparian Forest habitat within a Biosite of State significance. Part of Mullum Mullum habitat corridor.
Comment:	Proposed to become Council owned public open space. Teal highlighted parcel to the south-west is Council owned Illawong Reserve which might be part of the offset site for recruitment gains. Habitat hectare gains possible in bushland between Illawong and Mullum Mullum Creek. Recruitment/HHa gains between proposed shared trail and Creek? Public open space/access issues may conflict with Offset objectives.

3 Section Three: Key Environmental Issues

Discussion of issues common to most if not all of Council's bushland sites

This section presents the key environmental issues, opportunities and challenges facing Council's bushland areas. Recommendations throughout the text are collated in the 'Summary Table of Recommendations' as part of the Executive Summary section at the front of this strategy.

Globally, land clearing is the most significant threat to natural environments and biodiversity. Within Manningham, land clearing is particularly problematic. Indeed, the following environmental issues all relate to (or result in) land clearing, landscape fragmentation and loss of biodiversity, either directly or indirectly. The *accrual* of threats is particularly concerning: whilst the loss of bushland may not be as sudden and obvious as would be if cleared by a bulldozer, the long term result for bushland quality and significance is likely to be the same. Therefore each of the individual points should not be considered in isolation, rather as a part of the whole.

Large and intact areas of native bushland are resilient, and capable of resisting degradation unless the pressures are extreme or numerous. In contrast, small bushland remnants on the urban rural fringe often face rapid loss of quality and lack of vigour under stress from multiple sources. The smaller the area of native vegetation, the greater the edge effect of stress from these accumulated pressures. For example, a small reserve surrounded by residential properties is likely to be facing the combined impacts of weed invasion, lack of appropriate fire regime, cats and dogs hunting and scaring wildlife, rubbish dumping, vandalism and bike riding. While each of these alone may only have a relatively small impact, the combination may tip the balance and cause accelerated degradation. Larger areas, or remnants well connected by a functioning, healthy habitat corridor, are better able to resist these effects.

3.1 Weeds

3.1.1 OVERVIEW OF THE THREAT

Other than land clearing, weeds are arguably *the* most serious nature conservation problem facing our bushland areas. A landmark review of the weed problem in Victoria[22] identified the number of ways in which weeds can impact upon the environment. These included:

- accelerating rates of soil erosion;
- altering geomorphic processes (e.g. dune formation);
- altering biogeochemical cycling;
- altering hydrological patterns;

[22] pg 2 *Environmental Weed Invasions in Victoria: Conservation & Management Implications*, Carr G.W., Yugovic J.V. and Robinson K.E., 1992.

- altering fire regimes;
- preventing recruitment of native species;
- accelerating extinction rates;
- changing genetics (e.g. hybridising); and
- direct and indirect affects on fauna.

The review found that every native vegetation type in Victoria was subject to weed invasion and that:

'Without appropriate management, gross structural and floristic alteration of vegetation will occur in many, if not all areas. Unless managed, plant communities will become floristically impoverished and indigenous species will ultimately be unable to regenerate due to competition from aliens'.[23]

The gardening and horticultural industry is the main source of weed invasion, although some agricultural weeds also pose a high threat to biodiversity within Manningham. Two thirds (66%) of the 2,779 plant species listed as established (naturalised) in the Australian environment, are 'escaped' garden plants[24]. Agricultural escapees also can become weeds: Sweet Vernal-grass *Anthoxanthum odoratum* is one of the most threatening weed species for medium and high quality bushland in Manningham. It is also one of the most expensive weed species, as it is difficult to control.

In Victoria it is estimated that 30% of the State's flora comprises naturalised non-native species[25]. Despite this large number of plants that have already naturalised, there is potential for many more species to do so. Thousands of plant species are present in Australia, but not yet naturalised in Victoria[26]. Many more, with high weed potential, are not yet present in Australia. The current rate of new plant naturalisations in Victoria is at least ten per year[27].

These exotic plants spread in a number of ways. Birds and animals can spread fruits and/or seeds that are attached to their bodies (e.g. seeds trapped in fur) or deposited via their droppings. Seeds or small pieces of plant material can be dispersed by water along drains and waterways or from seed drift by wind. Garden waste dumped in parks and reserves is a source of weeds in bushland as are weeds growing through or over the fences of neighbouring properties. Seed and plant material attached to vehicles and footwear also is a recognised dispersal mechanism for weed propagules.

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[23] Carr G.W., Yugovic J.V. and Robinson K.E. 1992. *Environmental Weed Invasions in Victoria: Conservation & Management Implications*. pg 2

[24] CSIRO. 2005. *Jumping the Garden Fence: Invasive Garden Plants in Australia and their Environmental and Agricultural Impacts.* CSIRO report for the World Wildlife Fund.

[25] Walsh, N.G. & Stajsic, V. 2007. *A Census of the Vascular Plants of Victoria.* 8th edition, Royal Botanic Gardens Melbourne, South Yarra.

[26] Spencer, R. 2006. *Garden Plants as Environmental and Agricultural Weeds: Resource and Information Pack with an Emphasis on Victoria.* Royal Botanic Gardens Melbourne, Weed Working Group, South Yarra.

[27] Victorian Government. 2010. *Weeds and Vertebrate Pests. Module 1 within the Invasive Plants and Animals Policy Framework.* DPI Victoria, Melbourne.

Despite the extent and seriousness of the problem posed by garden and agricultural plants, restrictions to limit the threat are not widely imposed. In Victoria over 88% of naturalised plants still are available for sale. In the case of weeds declared noxious[28] within Victoria, almost a third (30%) can still be sold and purchased either in this state or elsewhere in Australia[29].

Council's approach

Council practises adaptive weed management. This means weed management is modified depending on the quality of bushland being affected and the level of threat presented by weed species. Always, Council considers and adopts the various federal, state, regional and local frameworks, laws, strategies, recommendations and lists that relate to weed management (Appendices 1 - 5). Various other factors may influence the adaptive weed management approach, including funding availability, habitat values, presence of threatened species, and community expectations. Council's Bushland Management Team, as well as many volunteer groups and individuals, undertake weed management. The Middle Yarra Landcare Network (MYLN) groups, including Andersons Creek Catchment Landcare (ACCA) liase with Council's Bushland Management Team on the best approach to eradicate certain weeds.

In general three weed management approaches are used by the Bushland Management Team (BMT). Usually, the BMT follows the '*asset based approach*' (also called a site-led approach) (Section 2.3.3). This approach works to protect the highest quality areas from weed invasion or spread. Weeds treated under the asset based approach include many environmental weeds not covered by any legislation (though acknowledged as weeds in various lists and documents). In comparison, control of weeds managed using the following two approaches is mandated by federal and/or state legislation although the methods could be applied to areas where infestations of non-legislated weeds were threatening bushland values, if funds were available. The '*weed led approach*'(or *eradication/zero tolerance approach*) is used on a select few weeds that are either 'new and emerging' or very high threat to a range of vegetation types. 'New and emerging weeds' are 'a recognised weed that has recently been detected or a plant species that has been known in the area for some time, but has only recently been recognised as having invasive properties.'[30] (Appendix 6). The '*contain and prevent approach*' is a combination of these two approaches and aims to control and prevent new invasions of high threat, high impact weeds that elsewhere already are widespread, well established weeds (Appendix 6).

3.1.2 COUNCIL JURISDICTION

Legislated Responsibilities & Local Laws

Under the *Catchment and Land Protection Act* 1994 (CaLP Act), Council as a landowner and land manager must take all reasonable steps to eradicate regionally prohibited weeds; and prevent the growth and spread of regionally

[28] Formally declared as a weed in legislation or regulation

[29] *Jumping the Garden Fence: Invasive Garden Plants in Australia and their Environmental and Agricultural Impacts*, CSIRO report for the World Wildlife Fund, 2005.

[30] Victorian Government (2010) *Invasive Plants and Animals Policy Framework*

controlled weeds. Additionally, the Act states that for roadsides[31] *'a land owner must take all reasonable steps to prevent the spread of regionally controlled weeds and established pest animals on a roadside that adjoins the land owner's land*'.

The *Local Government Act* 1989 also allows Councils to enact local by-laws targeting specific weeds. The Victorian Invasive Plants and Animals Policy Framework (IPAPF) supports this role, recognising that *'local government can also add value by …addressing local weed issues in whatever manner it sees fit, including local laws, provided that they do not duplicate or conflict with the CaLP Act or other relevant legislation'.*

Roadsides

The Victorian IPAPF notes that the role of local government with respect to roadside weed (and pest animal management) has yet to be resolved. In June 2010, the Minister for Agriculture established a Working Party to examine responsibilities for operational management of invasive plants and animals on roadsides and for funding such activities. In June 2011 the Report of the Roadside Weeds & Pests Working Party was released.

The report found that the issue of managing invasive plants (and animals) on roadsides is principally regulated by the CaLP Act but that responsibility also is affected by other legislation, including the *Road Management Act* 2004 and the *Local Government Act* 1989. The report further found that legal responsibility may vary depending on the category of pest and the status of the road. Thus in some situations the Victorian Government may be responsible, while municipal Councils may have responsibilities in other situations and some of these may be shared with adjoining landowners. The Working Party was concerned that this did not *'inspire confidence that the existing arrangements will provide for effective control of the spread of roadside weeds and pest animals in Victoria*'.

The Working Party's Report identifies proposed responsibilities for overall program management, on-site management and funding for different categories of weeds and rabbits on various types of roadsides. The proposed control responsibilities for different categories of roads are outlined below:

State Prohibited Weeds
Responsible for overall management of response:
State Government (DPI)
Responsible for on-site management:
State roads – DPI
Municipal roads[32] – DPI
Other roads[33] - DPI
Funding of response:
State roads – State Government (100%)
Municipal roads – State Government (100%)
Other roads - State Government (100%)

[31] with some exceptions including freeways, arterial roads and crown land.
[32] Municipal roads - Roads listed on a municipality's 'Road Register'
[33] Other roads - Roads that are neither State roads nor Municipal roads

Regionally Prohibited Weeds

Responsible for overall management of response:
State Government (DPI)
Responsible for on-site management:
State roads – VicRoads
Municipal roads – Local government
Other roads – Land manager
Funding of response:
State roads – State Government [VicRoads] (100%)
Municipal roads – State Government (100%)
Other roads – Land manager (100%)

Regionally Controlled Weeds & rabbits

Responsible for overall management of response:
State Government (DPI)
Responsible for on-site management:
State roads – VicRoads
Municipal roads – Local government
Other roads – Land manager
Funding of response:
State roads – State Government [VicRoads] (100%)
Municipal roads – cost shared between State Gov't/Local gov't
Other roads – Land manager (100%)

Cost sharing between the State Government and local Councils has been proposed for activities to manage regionally controlled weeds and rabbits on municipal roads, i.e. roads listed on a municipality's 'Road Register'.

The Working Party considered that local government's responsibilities for controlling these categories of pests needed to be separated from those of other land managers and defined in terms of planning and delivering on agreed priorities, rather than meeting defined responsibilities for lists of weeds declared under the CaLP Act.

Local government's obligation for managing regionally controlled weeds and rabbits in relation to municipal roadsides needs to be limited to managing these pests where the following criteria are met:

- sustained community led action, by an appropriately recognised group (e.g. Landcare, a statewide or regionally based community led group), is making progress in managing targeted regionally controlled weeds or rabbits in a defined geographic location;
- weed management on municipal roadsides is needed to meet the objectives of this community led group and/or municipal roadsides represent a significant pathway of spread for the targeted regionally controlled weeds or rabbits;
- State and regional (CMA) priorities are being appropriately addressed, including the need to contain priority species and to protect key assets both on the municipal roadsides and in the surrounding private and public land; and

- Community led action is clearly producing public benefit.

The report proposes that Council develop and adopt 'Road Management Plans' as provided for in the *Road Management Act* 2004, to define actions and cost sharing for controlling weeds and rabbits on municipal roads within their jurisdiction. *'Thus, local government would have its role defined for regionally controlled weeds and rabbits as preparing and implementing an agreed 'Roadside Weed and Rabbit Control Plan' that would include measures to minimise municipal roadsides as a source of weed and rabbit problems for others. Implementation of the Plan would be cost shared with the State Government. However, weed hygiene measures, such as minimising the risk of seed spread on machinery used on municipal roadsides, would need to be met by local government funding.'*

RECOMMENDATION 16

Support, in principle, the findings of the June 2011 Report of the DSE/DPI Roadside Weeds & Pests Working Party and the goal to clarify responsibilities and formalise a cost sharing arrangement for managing Invasive Plants and Animals on roadsides.

3.2 Fire

3.2.1 OVERVIEW AND OBJECTIVES

Manningham's bushland is typical of the eucalypt woodlands that dominate south-eastern Australia. That vegetation coupled with the temperate climate creates one of the most fire-prone landscapes in the world. Thus as urban development occurs within and around our bushland areas; the need to prevent and suppress fire is the major priority.

However fire also is an ecological process that encourages the germination or re-sprouting of a range of species that otherwise would be unable to sustain themselves over the long term. One of the objectives of Manningham's Bushland Management Team is to judiciously reintroduce fire at appropriate locations, controlling its *intensity* and *frequency* to mimic this natural process, in order to enhance biodiversity values and contribute to increased community safety. Too frequent or too intense burns can be as damaging as none at all, so using fire as a management tool is more complex than 'more burns, more often'. *'From an ecological perspective, both these regimes* [too frequent/too intense, too infrequent/insufficient intensity] *are problematic and* [have] *already likely contributed to the extinction of species and the general deterioration in ecosystem health and resilience. The reintroduction of fire in many areas of remnant habitat will be a necessary component of restoring and sustaining Manningham's natural heritage'* [34].

The objective of reintroducing fire to Manningham bushland in a controlled manner can be compatible with that of community safety. Ecological burning can have the desirable effect of reducing forest fuel loads and so, at least temporarily, reducing the likelihood and risk of wildfire.

[34] Pg 26, Manningham City Council *Sites of (Biological) Significance Review*, November 2004.

RECOMMENDATION 17

Endorse and adopt the objectives of the Victorian Code of Practice for Fire Management on Public Land[35], specifically:

- *'To reduce the impact of major and catastrophic bushfires on human life, communities, essential and community infrastructure, industries, the economy and the environment.*
- *To enhance the resilience of our natural ecosystems and their ability to deliver services such as biodiversity, water, carbon and forest products.'*

These objectives are consistent with Manningham City Council's 2011/12 Council Plan:

- *Objective 1. Safe Community*
  To foster a safe place to live, for people of all ages and abilities.

and

- *Objective 9. Environment and Global Warming*
  To adopt sustainable practices that reduce our carbon footprint on the environment, reduce waste, energy and water use, and protect and enhance biodiversity.

Manningham's Bushland Management Team continue to work with the Country Fire Authority (CFA) to have ecological/fuel reduction burns undertaken in Council's bushland reserves as appropriate, including:

- Domeney Reserve;
- 100Acres;
- Tindals Wildflower Reserve;
- Colman Park;
- Wonga Park Reserve; and
- Bimbadeen Reserve.

RECOMMENDATION 18

Continue to undertake burns in Council bushland reserves where possible to achieve community safety and ecological objectives. For this to occur regular liaison and discussion is required between the Parks & Recreation, EEP and Local Laws units and fire agencies i.e. CFA/MFB/Parks Victoria/DSE, with a view to addressing issues such as resourcing, planning, community notification and communication and risk management. The Municipal Fire Management Planning Committee (MFPC) is considered the appropriate forum for such ongoing liaison and consultation.

RECOMMENDATION 19

[35] Currently under review – the objectives quoted are from the Draft Code released for consultation 6 October 2011 and 9 December 2011. The final code is expected to be released in June 2012.

Continue EEP representation on the MFPC in addition to Local Laws and Parks and Recreation representation.

3.2.2 LEGISLATIVE RESPONSIBILITIES

The Council's bushfire prevention responsibilities derive from the *Country Fire Authority Act* 1958 (CFA Act) and require Council to take all practical steps (including burning) to prevent the occurrence of fires on, and minimise the danger of spread of fires on and from land under its control or management[36].

It is CFA's role to superintend and enforce fire prevention[37] and to report any failure by a public authority or municipal Council to properly carry out their duties[38]. The CFA may also appoint a Municipal Fire Prevention Committee (MFPC) to undertake a range of functions including advising Council on the existence and management of hazards and making recommendations in the preparation of the Municipal Fire Prevention Plan[39].

The Municipal Fire Prevention Plan must:

- identify areas, buildings and land use in the municipal district which are at particular risk of fire;
- specify how each risk is to be treated; and
- specify who is responsible for treating those risks[40] .

The CFA Act also requires Council to appoint a Municipal Fire Prevention Officer (MFPO) and provides Council and the MFPO with certain legal protections when acting in good faith[41].

A small area bordering the 100 Acres Reserve comes under the *Metropolitan Fire Brigades Act* 1958. Responsibilities under this Act are to take all practical steps (including burning) to prevent the occurrence of fires on, and minimise the danger of spread of fires on and from land under its control or management[42].

3.2.3 POLICY & PLANNING

Fire management planning in Victoria is currently being reformed through the Integrated Fire Management Planning (IFMP) initiative. Whilst this will not alter Council's legislative responsibilities, it is likely to change the planning process and structures, with increased emphasis on cross-tenure planning, risk assessment, community engagement, performance monitoring, and consistency of terminology and plan format[43]. In addition to the IFMP process, policy and planning in relation to bushfires in Council reserves is driven by Manningham's Municipal Fire

[36] CFA Act, s.43
[37] CFA Act, s.20
[38] CFA act, s.46
[39] CFA Act, s.55
[40] CFA Act, s.55A
[41] CFA Act, s.94
[42] MFB Act, s.5(1)(a)
[43] IFMP (2008). The Integrated Fire Management Planning Framework. IFMP, Melbourne.

Prevention Plan (MFMP) 2010-2015 which prescribes a number of programs/tasks, including:

- *develop fuel management plans for bushland reserves; and*
- *develop fire management plans for bushland areas where required.*

Accordingly, Council commissioned a series of Wildfire Prevention and Preparedness Plans (WPPPs) for those reserves considered most at risk from bushfire, specifically:

- Currawong Bush Park and Mullum Mullum Creek Linear Park - Currawong;
- Mullum Mullum Creek Linear Park - Buck;
- Mullum Mullum Creek Linear Park - Tikilara;
- 100 Acres Reserve;
- Tindals Wildflower Reserve; and
- Stintons Reserve.

A common context and methodology has been adopted to underpin each WPPP and the management of fire in all other Council reserves. The objectives are:

- no unplanned fires within a reserve;
- no person should suffer injury or lose their life from wildfire in the reserve;
- potential for damage to houses and infrastructure should be minimised;
- fire management should protect and enhance environmental values within the reserve;
- fire management should recognise and protect social and heritage values within the reserve; and
- the built and natural environment beyond the reserve should not suffer significant damage from a fire in the reserve.

A series of strategies and specific actions are prescribed to achieve each of the objectives above. One of the strategies is to identify and maintain as appropriate Fuel Management Zones (FMZs) as a buffer between bushland reserves and adjacent developments. The primary purpose of the FMZs is to achieve the objective of no direct flame contact or radiant heat ignitions of adjacent dwellings.

The WPPPs and Council's approach is one of 'shared responsibility' whereby fuel managed zones are based on management of vegetation along reserve boundaries by Council and on adjacent properties by neighbouring landowners. The width of FMZs is based on a model with inputs including vegetation type, slope and distance of dwellings from the vegetation, thus will vary from site to site.

FMZs immediately adjacent to reserve boundaries may have additional functions such as providing emergency access, a control line under moderate fire conditions, reducing the impact on private assets near the boundary such as fencing and sheds, and providing residents with a highly visible indicator that the reserve is being managed responsibly.

RECOMMENDATION 20

Ensure that the existing WPPPs are regularly updated as Management Plans are reviewed and completed for each reserve. Also, in line with the Municipal Fire Prevention Plan, ensure WPPPs/Bushfire Management Plans are produced for other bushland reserves as appropriate, including for the following reserves:

- Yanggai Baring;
- Mullum Mullum Creek Linear Park – Whitefriars and Mathews; and
- 51 Reserve Road.

3.3 Burgan

Burgan *Kunzea ericoides* is a tea-tree like plant that is problematic in some areas of Manningham's bushland. Although an indigenous species, Burgan can spread and dominate the vegetation to such an extent that it acts like a weed, creating dense thickets that exclude other indigenous species and lower biodiversity. Burgan is also perceived as contributing to an increase in risk and intensity of bushfire. Some of the most affected Council reserves are parts of Currawong Bush Park, Mullum Mullum Creek Linear Park - Buck and 100 Acres.

Manningham's Bushland Crew are experimenting with techniques to remove Burgan including:

- cutting mature plants, removing them and painting the stumps with herbicide to prevent regrowth;
- hand-pulling Burgan seedlings to prevent the regeneration of existing stands and contain their spread; and
- monitoring the impact of controlled burns on thickets of Burgan.

The issue of Burgan as a potential bushfire hazard has been discussed at the Municipal Fire Management Planning Committee. Continued work is needed to determine the most appropriate management response.

RECOMMENDATION 21

Investigate the issue of Burgan further by:

- commissioning a study to investigate and report on the ecological role of Burgan and the location, extent and nature of any increased bushfire risk it may pose (including recommendations to manage and mitigate any identified risk);
- monitoring existing stands to measure density and or 'spread';
- establishing 'trial plots' where various techniques for Burgan management can be trialled and researched;
- identifying 'priority areas' where Burgan is considered a threat to the ecology and/or community assets;
- liaising with Parks Victoria (Warrandyte State Park) to share information on Burgan management; and
- investigating the appropriateness or otherwise of a planning scheme amendment to exempt specific Burgan management techniques (e.g. removal) from requiring a planning permit in specified locations and under specified conditions.

3.4 Fauna

The goal of conserving and protecting fauna is usually best achieved by conserving, protecting and managing their habitat – i.e. the bushland vegetation. In this way vegetation management actions to conserve and enhance indigenous vegetation also will have the effect of enhancing and conserving habitat for fauna.

RECOMMENDATION 22

Ensure actions to conserve and enhance bushland prescribed in this strategy are implemented with the dual objective of enhancing and conserving habitat for fauna.

Additionally the following specific habitat management actions should continue to be undertaken in bushland areas to contribute to retaining and where possible enhancing fauna habitat.

a) Retain all upright and fallen dead and decaying logs

Fallen logs provide refuges for a range of animals especially lizards and insects. Many animals, including birds use as a food source the fauna found under or within such logs, especially the invertebrates and fungi. Similarly in waterways and wetlands dead and decaying vegetation can be feeding, nesting and resting sites for birds and insects. The removal of such dead vegetation for aesthetic reasons or timber harvesting (including firewood collection) should be prevented.

b) Hollows

Dead, upright trees often contain or can form hollows that become essential habitat for hollow dependent animals such as birds, bats and arboreal mammals. The loss of hollows is a major factor in the decline of a large range of fauna species across the state. Indeed the 'loss of hollow bearing trees' is listed as a 'potentially threatening process' under the Victorian *Flora and Fauna Guarantee Act* 1988. Erection and monitoring of artificial hollows (nest boxes) can be a useful activity to enhance this habitat factor, however: they need to be well designed for particular species, appropriately sited and erected, and regularly monitored and checked to remove any pest animals that may be occupying the boxes.

c) Disturbance

Indigenous fauna can be impacted greatly by disturbance of their habitat by humans. This can occur when people walk through remnant vegetation off the designated pathways, allow their dogs to run off-lead through conservation areas or undertake inappropriate recreation activities in bushland reserves (refer section 3.11).

d) Predation & Displacement

Indigenous fauna are threatened from predation by a range of introduced animals including foxes, rats and cats. They can also be displaced or excluded from their habitat as is the case when feral bees take over hollows (see section 3.5).

3.5 Invasive Animals

3.5.1 OVERVIEW

Pest or invasive animals are those fauna species that have been introduced to Victoria and have an adverse and often dramatic impact on biodiversity values. The scale and nature of the pest animal threat is similar to that of pest plants i.e. weeds. In 2004, the Invasive Animals Cooperative Research Centre (IACRC) conservatively estimated the economic and environmental impacts of 11 of Australia's major pest animal species to be over $720 million annually[44].

There are at least 50 introduced species of vertebrates established on the Australian mainland, including 25 mammals, 20 birds, 4 reptiles and 1 amphibian[45]. Of these, 19 mammals and 15 birds are present in Victoria. Additionally other species are present in the wild as 'occasional escapees' including camels, ferrets, Red-eared Slider Turtles, Canada Geese and Indian Ring-neck Parakeets[46]. Examples of other high risk invasive animals of concern to the state government include Grey Squirrel, Cane Toad, Macaque Monkey, Northern Palm Squirrel, Asian Black Spined Toad, Japanese Fire Bellied Newt, and Boa Constrictor[47].

Pest animal species problematic in Manningham are discussed below. Arguably the most serious pest animal threats in Manningham are grazing by rabbits and predation by cats and foxes. These threats are listed as 'potentially threatening processes' under the Victorian *Flora and Fauna Guarantee Act* 1988 (FFG Act). The reduction in biodiversity of native vegetation by Sambar (deer) also is listed under the FFG Act and anecdotal evidence suggests this is an emerging and potentially very serious threat to Manningham bushland.

Similar to our weed responsibilities under the CaLP Act, Council as a landowner and land manager must take all reasonable steps to *'…prevent the spread of, and as far as possible eradicate, established pest animals.'*

The CaLP Act recognises the following four categories of Pest Animals.

a) Prohibited pest animals

Do not occur naturally in Australia, are a serious threat to primary production, Crown land, the environment or community health in a place outside Victoria (or its potential threat in Victoria is unknown) and the importation, keeping and sale should be banned.

[44] McLeod, R 2004, *'Counting the cost: impact of invasive animals in Australia'*, Cooperative Research Centre for Pest Animal Control, Canberra.

[45] Vertebrate Pest Committee. 2007. *Australian Pest Animal Strategy – A National Strategy for the Management of Vertebrate Pest Animals in Australia'*, Department of the Environment and Water Resources, Canberra.

[46] Victorian Government. 2010. *Weeds and Vertebrate Pests. Module 1 within the Invasive Plants and Animals Policy Framework*, DPI Victoria, Melbourne.

[47] http://www.dpi.vic.gov.au/agriculture/pests-diseases-and-weeds/pest-animals

b) Controlled pest animals

Do not occur naturally in Australia, have a high potential to become a serious threat to primary production, Crown land, the environment or community health in Victoria and should only be kept in approved high-security collections.

c) Regulated pest animals

Do not occur naturally in Australia, have the potential to become a serious threat to primary production, Crown land, the environment or community health in Victoria and should only be kept in approved collections.

d) Established pest animals

Are established in the wild in Victoria, are a serious threat to primary production, Crown land, the environment or community health in Victoria and should be eradicated, controlled or their spread in the wild should be prevented.

RECOMMENDATION 23

Monitor and investigate any reports/sightings of invasive animals, particularly Sambar and other deer.

Continue to work with the DPI/DSE to monitor and investigate any reports /sightings of Red-eared Slider Turtles.

3.5.2 RABBITS

The *Catchment and Land Protection Act* 1994 is the principle legislation relating to rabbit management in Victoria. The Act requires Council (and other land managers) to *'…prevent the spread of, and as far as possible eradicate, rabbits from their land'*[48].

In 2003 a Regional Rabbit Action Plan was released for the Port Phillip and Westernport Region of which Manningham is a part. The plan identifies 'high priority zones' for the region, within which '*enhanced government services will be focused*' and long-term control areas are identified[49]. As Manningham is on the edge of a zone and outside a defined long-term control area, it is not a priority for state government resourcing and only benefits from a base level of support. However, in recognition of our successful rabbit program for private land owners, Council benefited from several years of grant funding that enabled the employment of a Rabbit Group Co-ordinator. At its peak this position encouraged, facilitated and liaised with residents and community groups to undertake rabbit control across 945 hectares by 28 groups[50]. Unfortunately funding for the position has not continued and the role of facilitating rabbit control on private land currently is shared by EEP Land Management Officers and the Middle Yarra Landcare Network Community Facilitator.

Rabbit control in Council managed bushland has been successfully taking an integrated and long-term approach for more than a decade. Monitoring figures indicate that where rabbit works have been undertaken, rabbit numbers have fallen

[48] Pg 6, *Rabbit Management Strategy*, Department of Natural Resources and Environment, 2002.
[49] Pg 8, *Regional Rabbit Action Plan*, Port Phillip and Westernport Regional Catchment Management Authority, 2003.
[50] pers. comm. Ant Owen.

on average by 73%.[51]. The monitoring of rabbit numbers is via spotlight transect counts, whereby the same route is walked or driven at approximately the same time each year and rabbits seen by spotlight are counted. Undertaken by experienced counters, relative rabbit densities can be calculated so the need for rabbit control, and the best control technique, can be determined.

In Council managed bushland the following techniques are most commonly used as part of the integrated rabbit management approach. The methods chosen at each site depend upon the significance and quality of the vegetation, the resources available, the ease of access and the density of rabbits present.

- *Collapsing/destruction of warrens/burrows.*
- *Harbour Destruction/Removal*
- *'Pindone'* Baiting.

The following additional methods also are sometimes used.

- *Ferreting*
- *Fumigation*
- *Rabbit Proof Fencing*

RECOMMENDATION 24

Continue to implement integrated rabbit control programs in conjunction with other Authorities (Melbourne Water & Parks Victoria/DSE/DPI) and with residents and Landholder groups.

Figure 2: Rabbit Proof Fencing at Currawong Bush Park

3.5.3 FOXES

As with rabbits, foxes are a serious vertebrate pest in Manningham and in most if not all areas of Victoria. However whilst the rabbit issue benefits from having a high community awareness of their presence and impact, many residents may not

[51] pers. comm. Jane Pammer

realise that foxes are present in all areas of Manningham, sometimes in high numbers. Indeed urban areas of Melbourne have a significantly higher density of foxes than rural Victoria – in some suburbs, densities of up to 16 foxes per square kilometre have been recorded[52].
Managing the fox problem to minimise their impact is a problematic and arguably fruitless exercise in Manningham. This is because fox populations are resilient to conventional methods of control. The most common and effective technique of laying 1080 poison baits is used only in rural areas and not permitted in an urban environment such as Manningham. This is due to the risk and consequence of non-target species ingesting the poison baits. An alternative method of fox control was trialled at Currawong Bush Park in 2001. This involved the humane trapping and removal of foxes across the 45ha reserve over a period of several weeks. 'Free-feeds' (i.e. baits laid without any poison) were used to gain the foxes' confidence in taking baits. Small traps were then set around the baits to capture foxes arriving to take the baits. The traps were checked each night at four hourly intervals and captured foxes were released from the traps and then taken to a fox-research facility. Over four trapping nights, nine foxes were captured. Whilst this was successful in terms of at least temporarily lowering the fox population in the area, it was observed that some foxes were not able to be trapped and monitoring sites (sand pads showing footprint activity) showed that fox activity resumed to 'normal' soon after trapping. This was probably due to neighbouring foxes quickly reinvading the reserve and establishing themselves to replace the resident fox population.

The results of the Currawong trial confirm the fact that that rapid invasion of fox-free areas usually occurs after control measures are applied. Consequently control is either rarely achieved or is inadequately achieved, especially when tackling the problem over a relatively small area (e.g. in one reserve or park) or using a 'once-off' management technique.

Therefore, it is considered that fox control will not be undertaken routinely or regularly in Manningham's bushland areas until new and effective techniques or methods are developed. Alternative methods are currently the subject of research and include the laying of baits laced with agents that aim to humanely 'sterilise' foxes to prevent breeding or the dispersal of a biological control agent.

3.5.4 DOGS & CATS

Unrestrained dogs and cats have a major impact on native flora and fauna. The impacts include:

- 'Direct' predation on native fauna, capturing and killing or chasing and injuring/scaring wildlife. 'Predation of native wildlife by the cat' is listed as a threatening process under the *Flora and Fauna Guarantee Act* 1988;
- 'Indirect' disturbance of habitat for native fauna caused by the noise, scent and visual impact of roaming animals; and
- Impact of faeces including scent marking/spraying and increased nutrients. Encountering and having to deal with cat and dog faeces whilst hand weeding amongst remnants is a major issue for the Native vegetation management

[52] *Foxes and their Impact*, Department of Sustainability and Environment Fact Sheet, 2003.

Team, particularly in popular dog walking spots such as Warrandyte Walk, Ruffey Lake Park and along the Mullum Mullum Creek Linear Park. The faeces and urine of cats and dogs can also change the acidity and nutrient levels in soil, to the detriment of indigenous plants and the benefit of those weeds species that favour the changed conditions.

A combination of appropriate signage, increased education and enforcement is required at locations where the problem is greatest. Around significant conservation reserves or identified Sites of (Biological) Significance, planning scheme controls can apply to restrict cat/dog ownership. Local Laws Officers should continue to work with schools and other organisations to educate the public as to responsible cat and dog ownership. Further site-specific guidance should be sought from the Domestic Animals Strategy, reserve Management Plans and Local Laws.

RECOMMENDATION 25

Establish and enforce rules relating to dogs in reserves: in fenced and various other bushland areas, dogs should be prohibited; on trails and tracks in bushland areas where dogs are not prohibited, dogs should always be on lead. Investigate and implement as appropriate methods and techniques to avoid or minimise the negative impacts of domestic animals on Green Wedge natural values, including feasibility and desirability of a cat curfew, that concur with Local Law controls.

3.5.5 EUROPEAN WASPS & INTRODUCED BEES

European wasps are an introduced species that can pose a threat to human and non-human enjoyment of bushland areas. European wasps are known to prey directly upon native invertebrates. Humans are at risk of being stung, especially on warm days when many wasps are attracted to rubbish bins and picnics, lured by the sweet scent of food and drink. Introduced bees also are an issue, affecting wildlife by occupying hollows that would otherwise be available for native fauna, however bee populations are not actively managed.
The BMT regularly monitor bushland areas near recreational facilities during spring and summer. Individual wasps often can be followed back to their nests or searches undertaken to locate their distinctive nest entry points in vegetation or embankments. Regular searches should be made by staff in an effort to locate the nests for subsequent eradication by appropriately qualified contractors. Visitors should also be encouraged to report both wasps' and nests. Wherever nests are located Council ensures they are destroyed. Follow up is required to ensure the nests are completely destroyed.

RECOMMENDATION 26

Each summer period search for and destroy European Wasp nests at the high profile parks and reserves including:

- Ruffey Lake Park
- Currawong Bush Park
- Mullum Mullum Creek Linear Park

- Wonga Park Reserve
- Finns Reserve
- Stiggants Reserve/Warrandyte Walk

RECOMMENDATION 27

Monitor feral bee populations and respond as appropriate.

3.5.6 MICE & RATS

Introduced mice and Brown- or Black Rats are a problem for human and non-human animals. Mice and rats can frequent sites of high human activity such as playgrounds and picnic areas to scavenge on dropped foodstuffs. At Ruffey Lake Park rats have been observed coming out with ducks in anticipation of being fed with bread by park visitors. Their faeces and bodies are a vector for disease. Vegetation and waterways offer refuge and habitat for these rodents. Native fauna are affected as the rats prey upon lizards, insects and eat birds' eggs. Control of mice and rats requires regular monitoring, trapping and baiting at recreational sites where they are considered to be a problem. In bushland reserves the problem is not able to be addressed given the scale and resources it would require. Furthermore, rodents do offer diet opportunities for fauna including birds of prey and snakes.

RECOMMENDATION 28

Monitor mice and rat populations and respond as appropriate.

3.5.7 MOSQUITO FISH

This exotic pest is native to rivers that drain into the Gulf of Mexico. It is understood to have first been introduced into Australia in 1925, with further introductions before and during World War II.[53] It was initially introduced to control malarial mosquitoes, however dietary studies indicate that the value of the species in this area is no better than other insectivorous fishes[54]. In a similar fashion to the Cane Toad, it has assumed pest proportions in some waters and appears to have had a significant effect on some native fish populations by preying upon them as well as frogs and other aquatic invertebrates.

It is declared a 'Noxious Fish' in Victoria, which makes it an offence to release live specimens into Victorian waters and the use of live Mosquito Fish as bait in Victorian waters is also prohibited. This carnivorous fish is well established in several Manningham bushland dams and ponds. It has been introduced into the Wildlife Pond in Currawong Bush Park, presumably by release of life fish from an aquarium. Once introduced, it is very difficult to eradicate – think 'rabbits of the water systems'. Since its release, the diversity of aquatic life in the pond has dramatically declined. Over summer thousands of Mosquito Fish can be seen swarming just under the water surface.

[53] Department of Primary Industries. 2003. *Mosquito Fish.* Fisheries Note, FN0068.
[54] Ibid.

Essentially ponds have to be drained and dried or 'limed' over the summer period to kill any remaining Mosquito Fish. It is presumed that most native species will have changed to non-aquatic lifeforms over summer, left the pond, or as with turtles, be rescued from the pond and temporarily held elsewhere while eradication measures are implemented.

Valuable wildlife habitat ponds where Mosquito Fish have not yet been introduced should be identified and monitored for the presence of this species. Signs alerting to the dangers of releasing fish or other foreign organisms should be considered for these ponds.

RECOMMENDATION 29

Identify ponds with high habitat values that are still free of Mosquito Fish. Implement signage and monitoring to try to keep them free of this invasive pest. Waterbodies with Mosquito Fish should be ranked based on habitat values; over time, action should be taken to try to eradicate Mosquito Fish prioritising the waterbodies with higher habitat values.

3.5.8 BELL MINERS, NOISY MINERS & INDIAN MYNAS

Many people enjoy the calls and presence of Bell Miners and Noisy Miners and appreciate their presence. However these native species are territorial, aggressive birds and a large colony can control an area of many hectares, excluding most other species of birds particularly small, insectivorous species such as pardalotes. This is problematic because, unlike other insectivorous birds, Bell Miners and Noisy Miners do not eat sap-sucking insects known as psyllids (although they do consume the white, sugary coverings ('lerps') which psyllids secrete as coverings to protect themselves). By excluding other insectivorous birds which do predate psyllids, predation by other birds is reduced or absent and psyllid populations can flourish. Trees supporting large numbers of psyllids may become severely debilitated or die ('dieback') owing to the stress caused to the tree by the insect's feeding mechanism.

The impact of dieback attributable to Bell Miners or Noisy Miners can be significant in remnant stands of trees. This is especially noticeable in some of our bushland areas including Currawong Bush Park and Warrandyte State Park. The scale of the effects is likely to have been exacerbated by clearing of large areas of bush. However Bell Miners and Noisy Miners may be only one of many factors involved in dieback, including changing hydrology, soil compaction, altered soil nutrient status, clearing and fragmentation, and the effects of reduced natural diversity.

The effect can be temporary and as the trees decline, the bird populations can move on to another area, allowing recovery. Nonetheless, this issue highlights the need to retain a healthy understorey and mid-storey to offer refuge for the smaller insectivorous birds and, ultimately, demonstrates the impact of long-term ecological degradation. In recent years, the Bell Miner population has decreased dramatically and inexplicably, but populations need to be monitored. In extreme cases, trapping and removal of the Miners may be possible.

Unlike Bell Miners and Noisy Miners, Indian Mynas are not native and have spread through eastern Australia since being introduced to control insect pests in the 1880s. They have been considered naturalised in Victoria for many decades.

The Indian Myna[55] is listed by the World Conservation Union (IUCN) as among the world's 100 worst invasive species. However the Indian Myna is not a declared pest animal under the CaLP Act as the Department of Primary Industries (DPI) does not consider it reasonable to impose the lawful responsibility of control of Indian Mynas upon landowners when it is unlikely to result in the desired outcome of *'eradicate or control or prevent its spread in the wild'* (the requirements that must be satisfied to be able to declare a species).

RECOMMENDATION 30

Monitor Bell Miner, Noisy Miner and Indian Myna populations and respond as appropriate.

3.6 Locally Threatened Plants in Manningham

A study commissioned by Council[56] identified plant species that are threatened with extinction within Manningham using international standard criteria. The study examined 584 plant species that have been credibly recorded as indigenous in Manningham. To determine whether they are threatened with extinction in Manningham, the study assessed each species using the internationally accepted method for classifying threatened species - the 'Red List' criteria and guidelines of the International Union for Conservation of Nature (IUCN 2001, 2003, 2008). The results are alarming (Figure 3) and indicate that if current trends continue, scores of plant species could die out in Manningham over the next decade or so – far more than have become extinct within Manningham since first settlement.

The study revealed that 19 species (just over 3% of Manningham's indigenous flora) are presumed to be extinct in Manningham (Figure 3). Two hundred and forty-six (246) species, comprising 42% of Manningham's indigenous flora, are *'Critically Endangered'* within the municipality. Twenty-one per cent of species are *'Endangered'* and 17% are *'Vulnerable'*.

[55] Acknowledgement: Information in this section on Indian Mynas is sourced from the DPI website, 2012.

[56] Two documents comprise this study - *'Locally Threatened Plants in Manningham'* and *'Red List Assessments of Plant Species in Manningham'*, Dr Graeme S. Lorimer, Biosphere Pty Ltd, for Manningham City Council, June 2010.

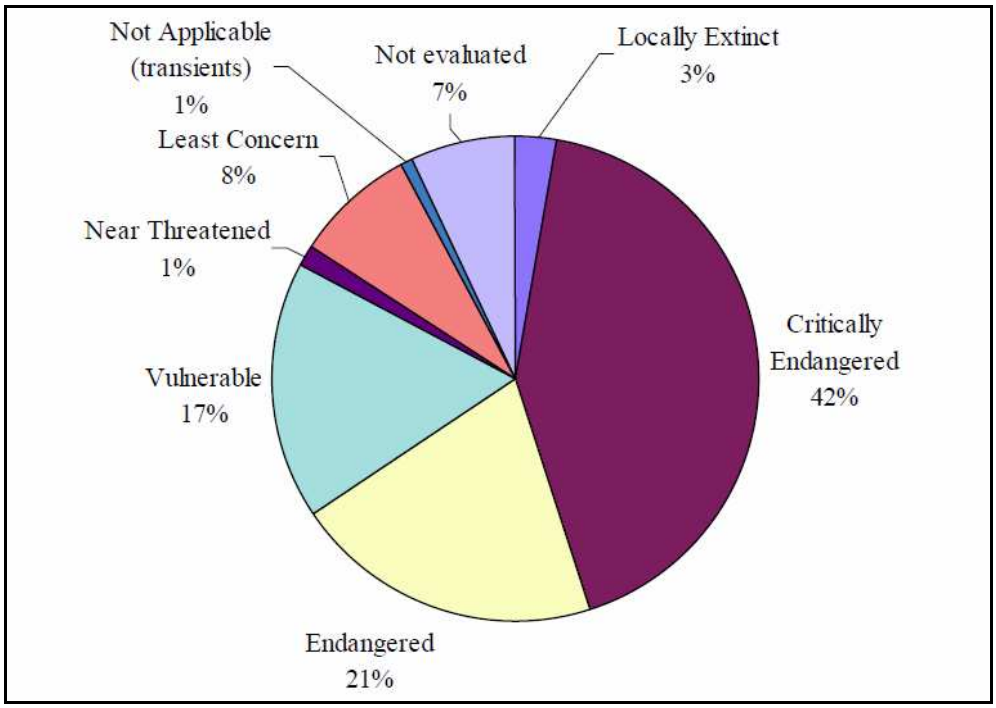


Figure 3: Risk Ratings of Locally Threatened Plants in Manningham.
(the level of risk reduces clockwise from the 'Locally Extinct' category)

The large proportion of plant species that are threatened with extinction in Manningham is striking. Eighty-two per cent (82%; 466) of all the assessed species that are not already extinct are threatened with extinction – i.e. they are classified as either 'Critically Endangered', 'Endangered' or 'Vulnerable' by the Red List criteria. Many of these species are present at very few sites, and many have critically small populations.

To clarify the implications of this assessment it is useful to understand what each of the threatened categories means.

- *Critically Endangered species* have fewer than 250 mature individuals throughout Manningham and less than 50 in each subpopulation (Subpopulations are essentially independent of each other);
- *Endangered species* have fewer than 2,500 mature individuals throughout Manningham and less than 250 in each subpopulation; and
- *Vulnerable species* have fewer than 10,000 mature individuals throughout Manningham and less than 1,000 in each subpopulation.

That a little under half of all indigenous species currently growing in Manningham meet the criteria for Critically Endangered in the municipality is an indication that conservation of native flora in Manningham is at a critical stage, and this has grave implications for native fauna. Scores of plant species could die out in Manningham over the next decade, unless preventative measures are taken. Loss of these species would have a significant and potentially irreversible impact on Manningham's biodiversity values.

The study includes recommendations for addressing the decline in local plant populations and notes that '*…one of the quickest and most powerful responses*

that Council can make…is to provide protection for locally threatened plants in the Manningham Planning Scheme.' Furthermore, *'it is…recommended that the threat ratings of plant species in Manningham should be taken into consideration when Council is assessing proposals for works or land development that may adversely affect native vegetation. Preference should be given for project designs, methods or locations that avoid (or at worst, minimise) the loss of locally threatened plants. When harm to a locally threatened species cannot be avoided, compensating measures should be encouraged or required, e.g. by propagation, planting or rabbit control to improve the security of retained locally threatened plants.'*

RECOMMENDATION 31

Prepare a Locally Threatened Species Management Plan to determine strategies and specific actions that Council and others can take in response to the unprecedented declines that are affecting Manningham's flora. One such action should be to establish a GIS based database recording the presence and locality of threatened species on Council land and where permission is obtained, on private land. Procedures and records for collecting this data will need to be established.

RECOMMENDATION 32

Establish a GIS based database recording the presence and locality of threatened species on Council land and where permission is obtained, on private land. Procedures and records for collecting this data will need to be established.

3.7 Habitat Corridors & Revegetation Sites

Whilst priority should be placed on maintaining and restoring remnant indigenous habitat rather than focusing first on revegetation or threatened species conservation or recovery, [57] this does not mean that revegetation should not occur in Council's bushland reserves.

Rather, it should occur as a result of strategic planning that identifies that revegetation will result in a biodiversity benefit. Additionally, revegetation or planting of indigenous species in Council parks and reserves for amenity or horticultural benefit should be differentiated from bushland management revegetation which may have amenity *and* biodiversity benefits. Expenditure on such 'amenity plantings' should be from budgets other than that allocated for bushland management.

As discussed in Section 2.6, planting/revegetation for offset purposes will be strategically planned for and located in selected reserves/areas. However, this strategy also identifies a number of potential strategic locations/reserves for revegetation/planting based on GIS analysis identifying gaps in Manningham's habitat corridors. This analysis is based on the '*Wildlife Movement and Habitat Needs in Manningham'* study by Dr Graeme Lorimer (June 2009). Lorimer (2009) investigated the location and effectiveness of existing habitat corridors and the opportunities for improving mobility of wildlife across the Manningham landscape.

[57] pg 95 Manningham City Council *Sites of (Biological) Significance Review*, November 2004.

The key findings of the study were

- *Habitat fragmentation* is a major threat to the survival of indigenous fauna and flora in Manningham.
- *Manningham's streams, gullies and valleys are functioning as effective corridors for a range of native birds*, including many of the more significant species. This is true even along Brushy Creek and Ruffey Creek, with their sparse and highly fragmented scatterings of native vegetation. Platypus and fish also move along some of the streams. Many bird species prefer to move along valley floors even when there is superficially superior habitat on the adjacent slopes.
- *A bottleneck on the Mullum Mullum Creek corridor was shown to cause many birds to converge into the neck rather than traverse an untreed expanse*. Widening such bottlenecks by revegetation is expected to be beneficial.
- Because of the fragmented patchwork of native vegetation in Manningham, *a substantial proportion of wildlife movements occur across residential areas with only scattered trees.* These movements, and hence the landscape of these residential areas, are important to the management of wildlife in Manningham. Conversely, the movements are important to residents who enjoy the presence of native birds and mammals such as koalas and kangaroos in their neighbourhood.
- Along corridors and within treed residential areas, *maintenance of native tree cover (and particularly the locally indigenous species) is the most important requirement for facilitating wildlife movements.* These movements are important for the survival of both the wildlife and many indigenous plants that rely on wildlife for pollination, seed dispersal or pest control.
- *Small insect-eating birds do not persist in the absence of a shrub layer* that provides them with cover from predators. The species of shrubs also are important. Exotic shrubs and certain Australian native shrubs with prolific nectar production can exacerbate an ecological imbalance between bird species, leading to displacement of small insect-eating birds by aggressive wattlebirds or miners. Loss of small insect-eating birds is associated with outbreaks of insect pests and consequent tree dieback, a major problem in Manningham[58].

The two main conclusions of the study relevant to this strategy reveal that Manningham City Council can support the movement of wildlife by:

- conducting revegetation and habitat restoration to broaden and connect stream corridor vegetation (particularly on the key wildlife corridors) - however, narrow linear plantings are not recommended; and
- managing Council bushland reserves in ways that minimise fragmentation, e.g. when choosing alignments for firebreaks or deciding priority areas for habitat restoration.

To implement the study conclusions, land outside the Urban Growth Boundary and within 50m of a major waterway has been included in the ESO2 schedule as part

[58] Dr Graeme S. Lorimer, Scott Baker and David Lockwood, *Wildlife Movement and Habitat Needs in Manningham*, Manningham City Council, June 2009.

of the Manningham Planning Scheme Amendment C54. Also specific objectives and decision guidelines relating to the protection and enhancement of habitat corridors are included in the proposed ESO schedules 2, 3, 4 & 5 and as appropriate in the proposed Native Vegetation Policy and Municipal Strategic Statement (MSS).

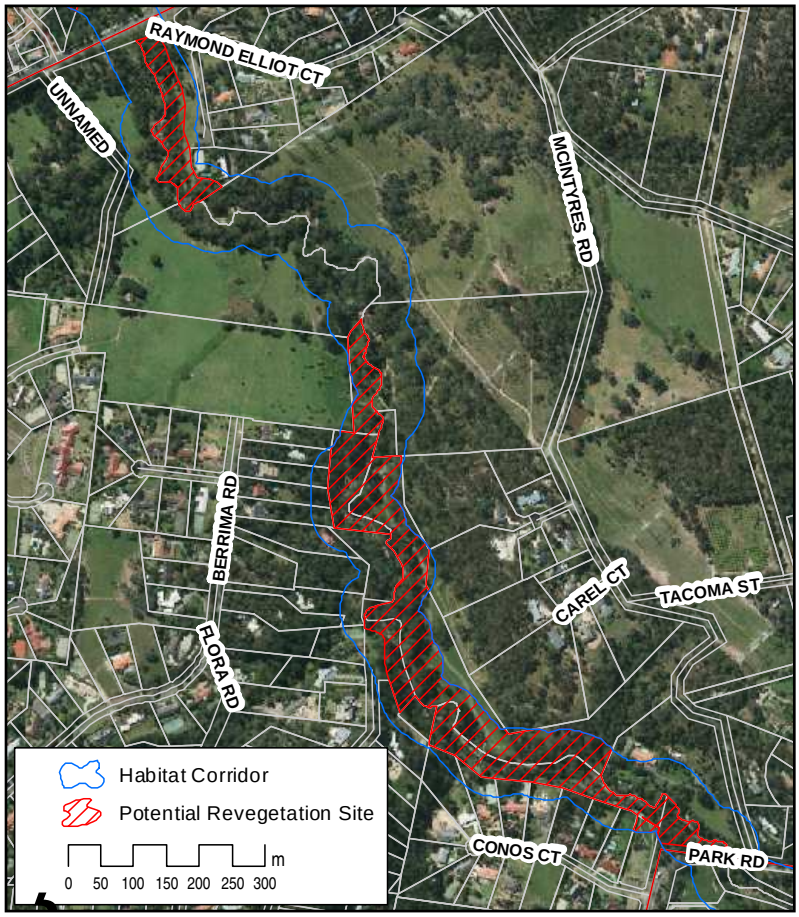
RECOMMENDATION 33

Record current, past (and future) plantings/revegetation on GIS to permanently record the location, date, species and purpose of plantings. Ensure all future planting of indigenous plants are local provenance sourced from an indigenous nursery that is approved by the BMO. Ensure species that hybridise or genetically swamp local taxa are not used in any future plantings.

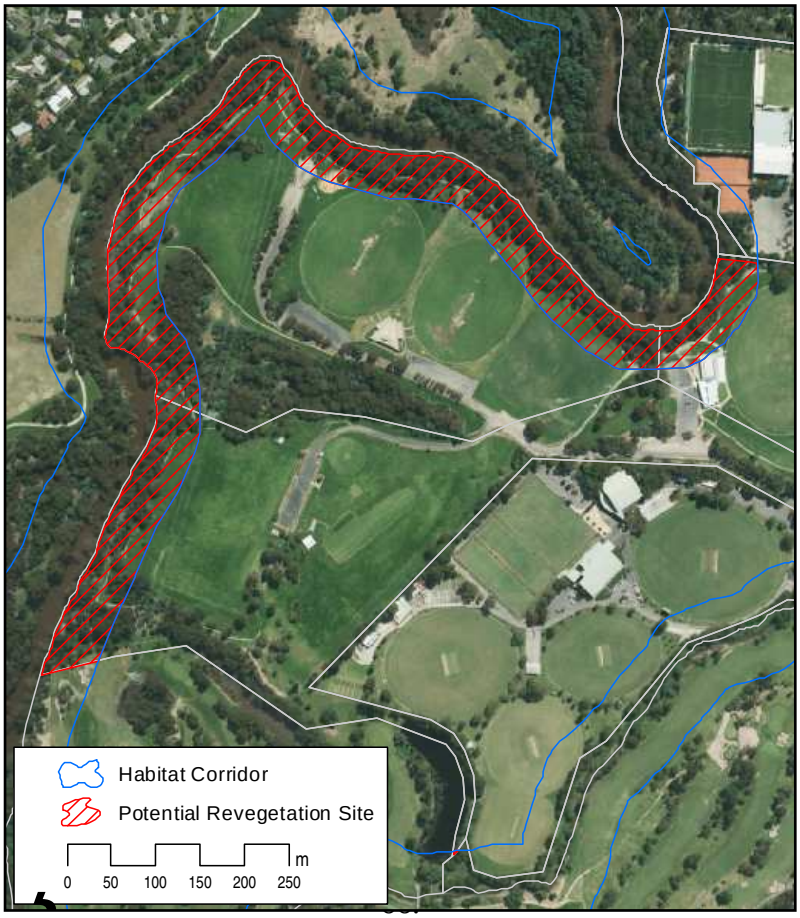
In order to identify strategic gaps in habitat corridors, all land 50m either side of a major waterway/habitat corridor was overlaid with Council open space reserves, to locate 'bottlenecks' as above and open areas that could be planted. The following figures display those locations.

Note that each location is proposed for investigation only and may not be suitable for revegetation/planting due to other potentially conflicting open space values.

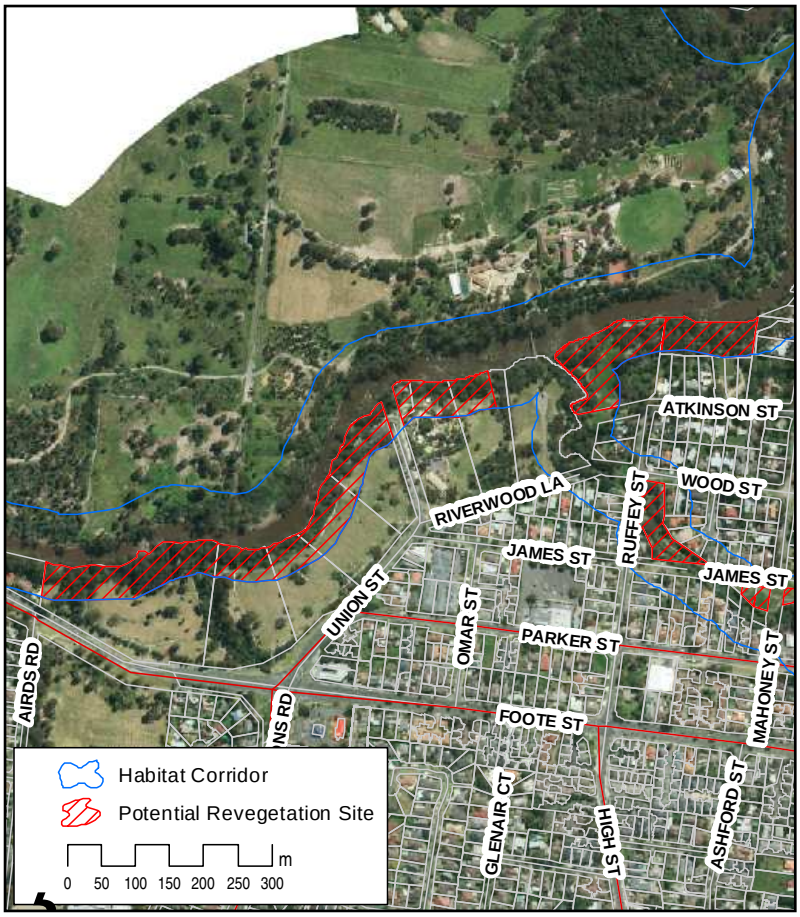
Site 1: Mullum Mullum Creek Linear Park - Mathews



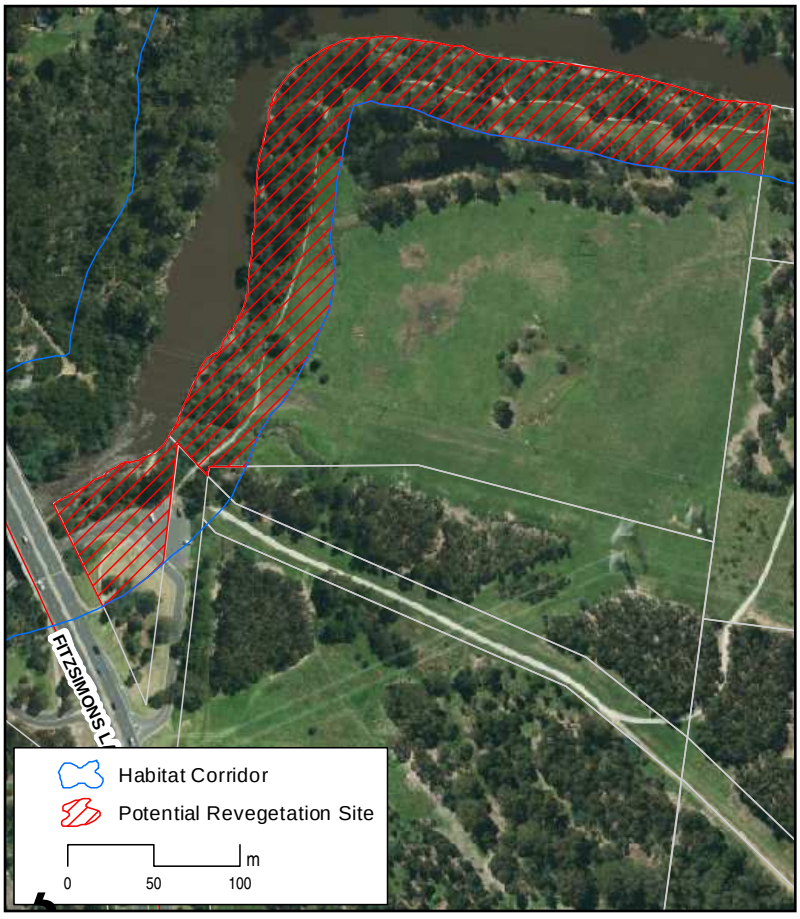
Site 2: Bulleen Reserve –Yarra River



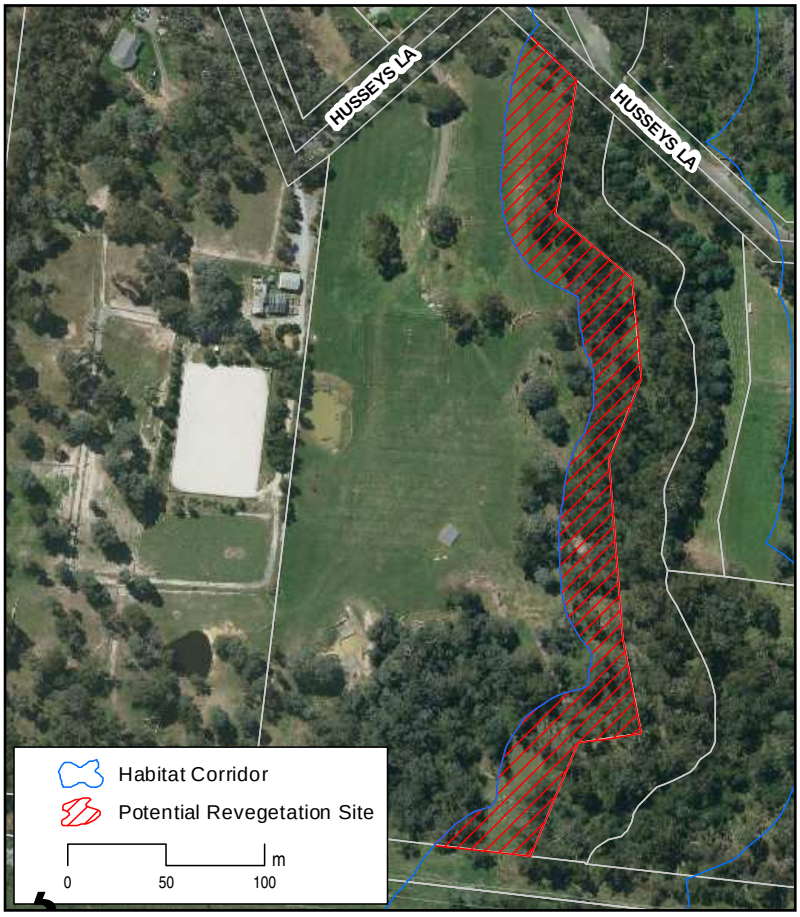
Site 3: Finns Reserve –Yarra River



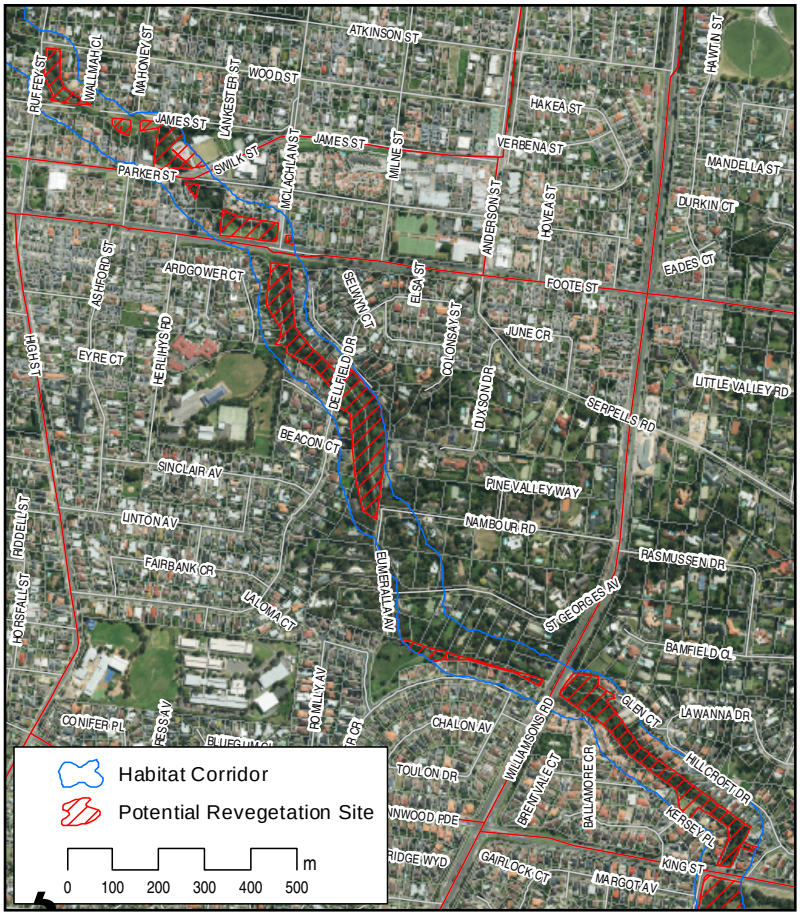
Site 4: Fitzsimons Reserve –Yarra River



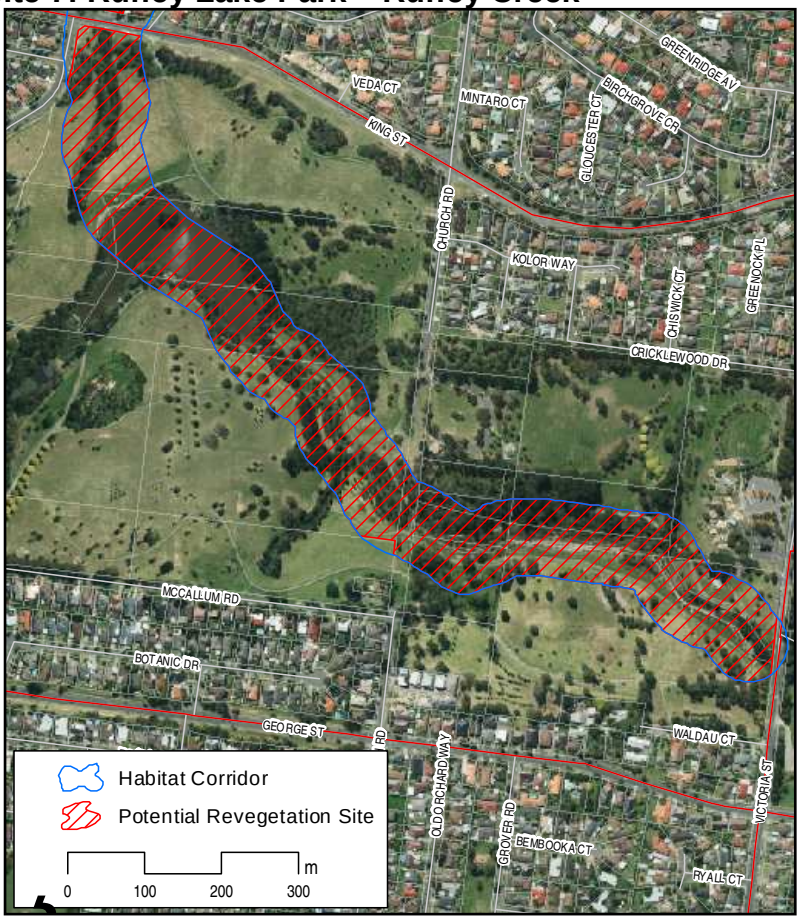
Site 5: Husseys Reserve –Andersons Creek



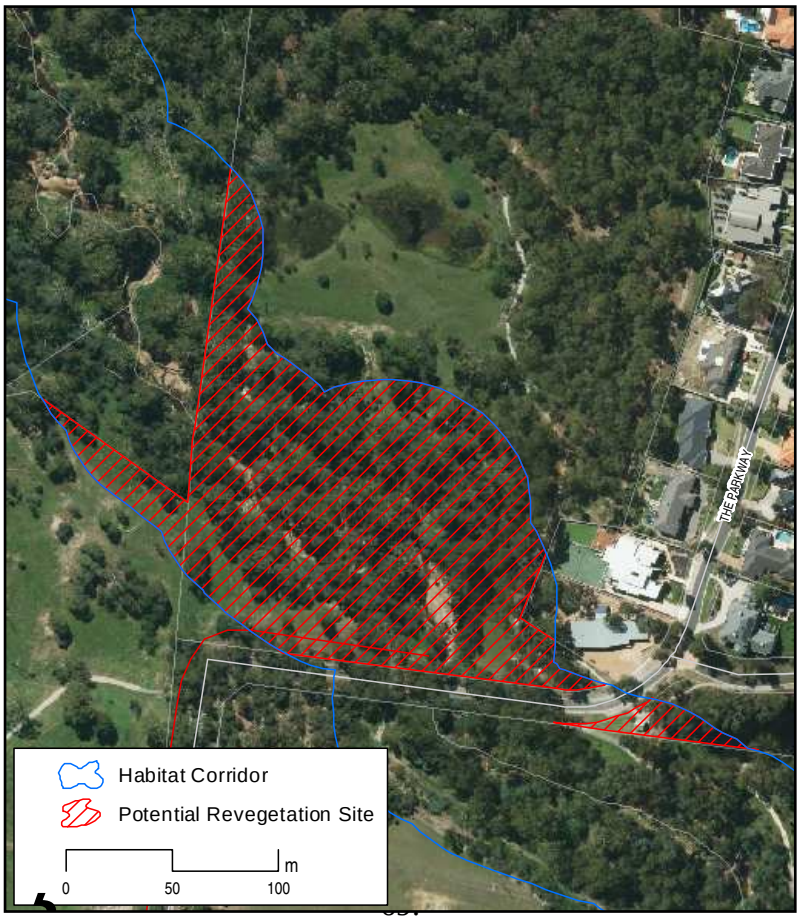
Site 6: Ruffey Linear Park – Ruffey Creek



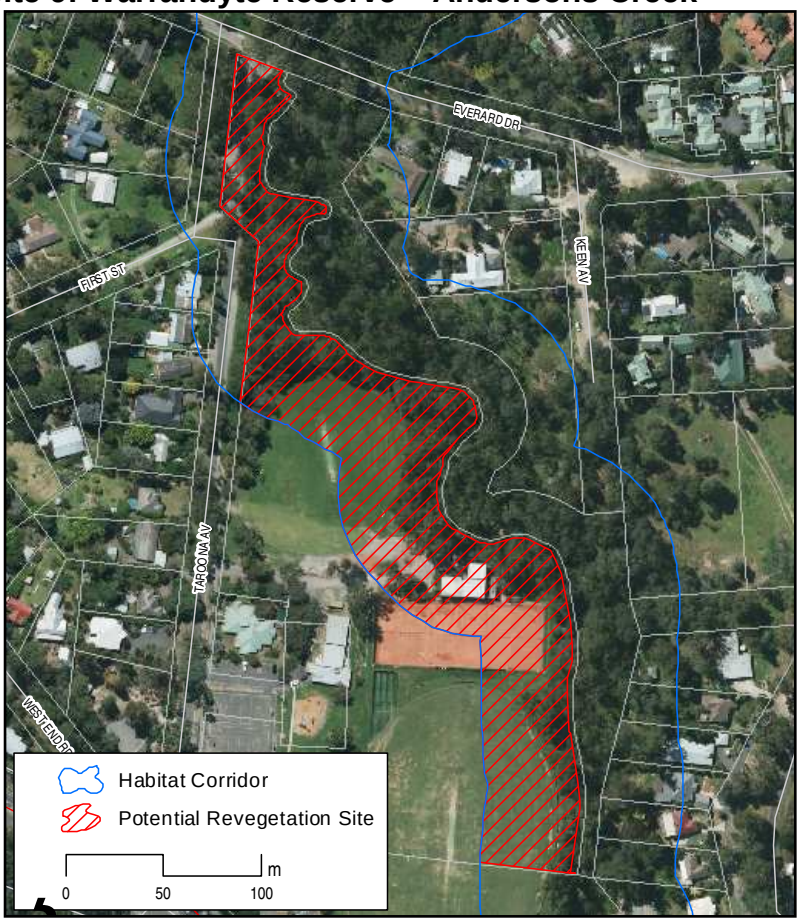
Site 7: Ruffey Lake Park – Ruffey Creek



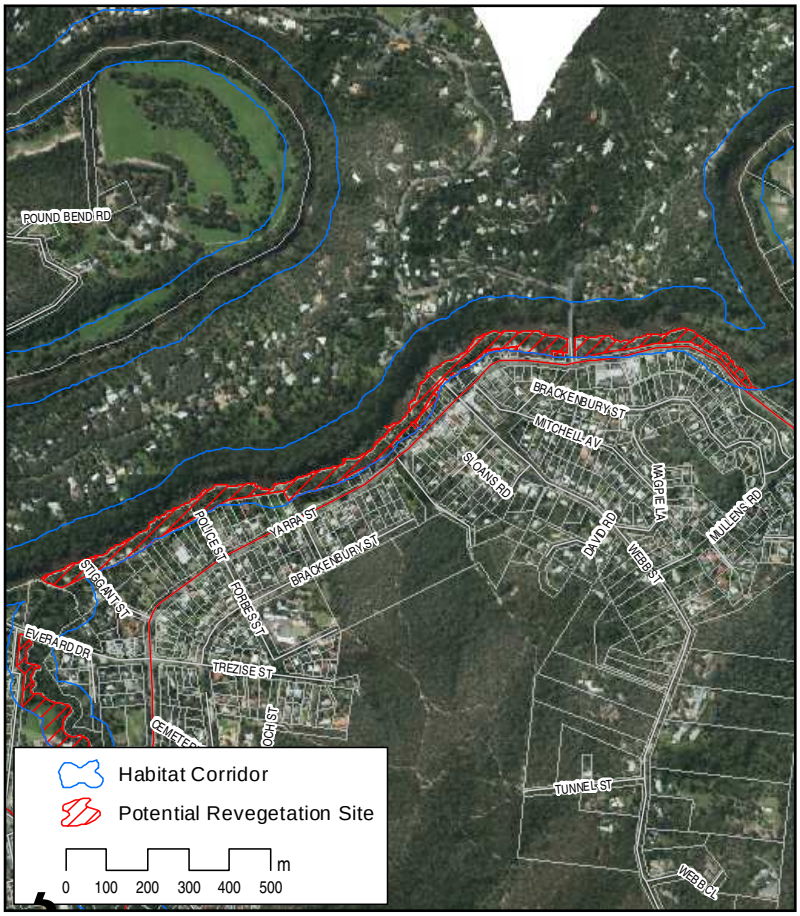
Site 8: Mullum Mullum Creek Linear Park - Tikilara



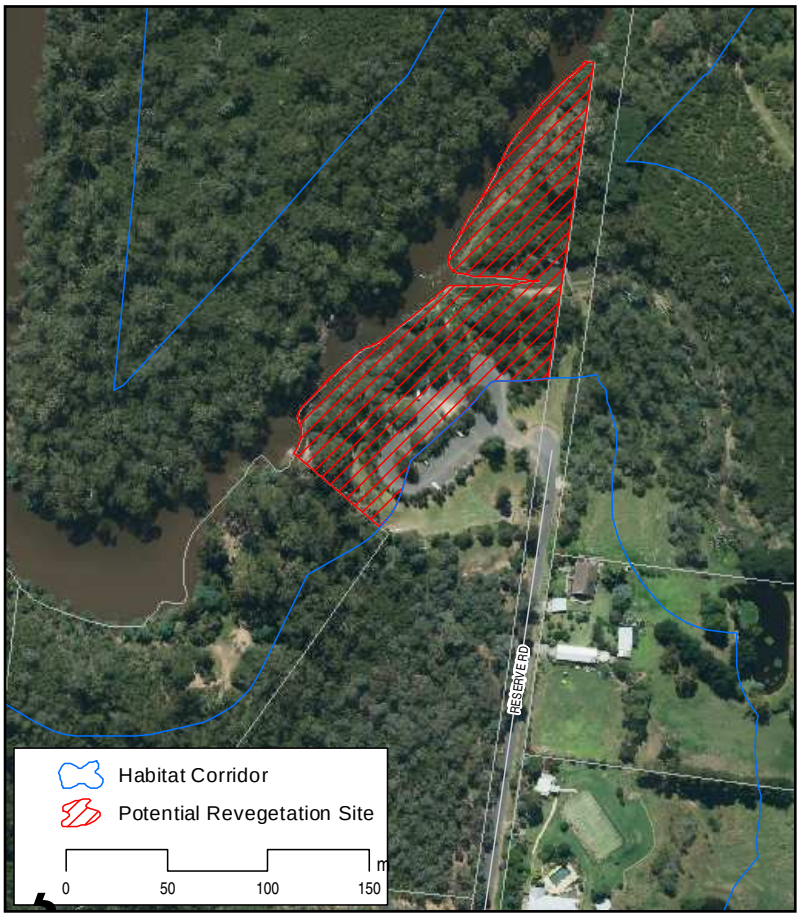
Site 9: Warrandyte Reserve – Andersons Creek



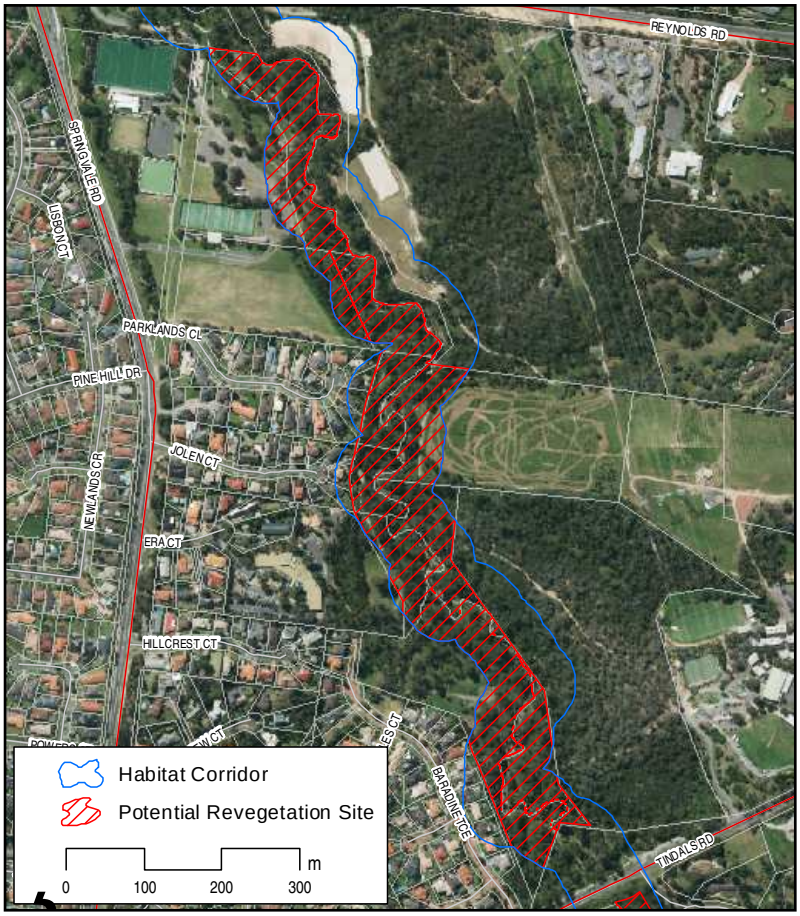
Site 10: Warrandyte River Reserve – Yarra River



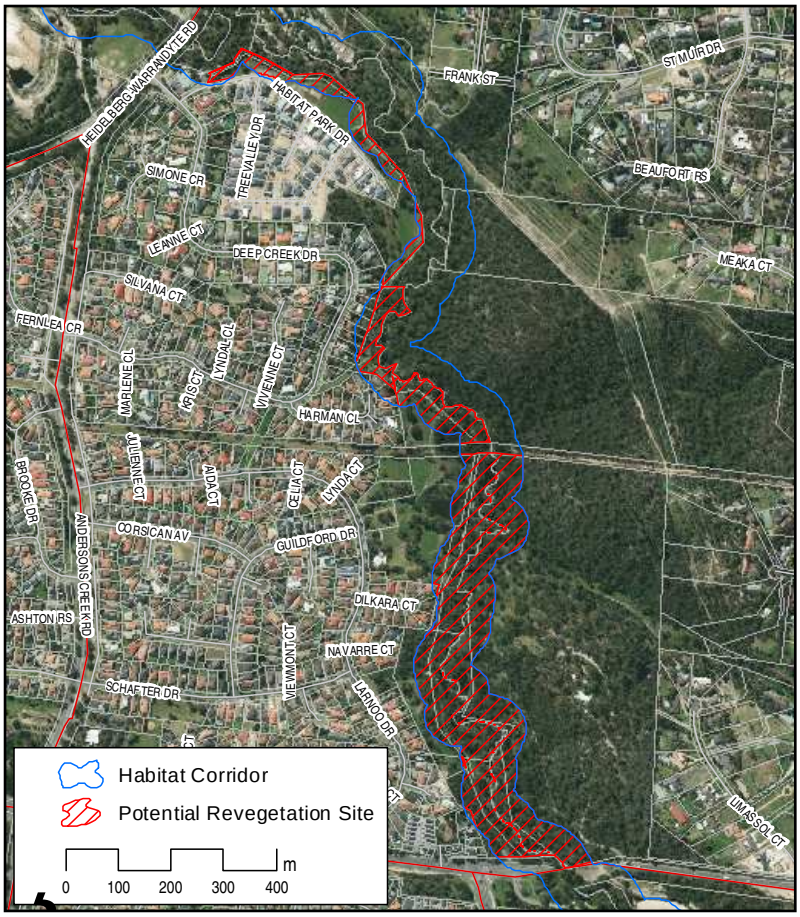
Site 11: Wittons Reserve – Yarra River



Site 12: Mullum Mullum Creek Linear Park - Buck



Site 13: Mullum Mullum Creek Linear Park - Currawong



RECOMMENDATION 34

Investigate whether gaps in waterway and land habitat corridors are suitable for revegetation and habitat restoration to broaden and connect corridor vegetation and maximise connectivity and minimise fragmentation of bushland remnants.

3.8 Dieback & Disease

3.8.1 CINNAMON FUNGUS PHYTOPHTHORA CINNAMOMI

Phytophthora is latin for 'Plant Destroyer'. *Phytophthora cinnamomi* is an introduced microscopic soil-borne organism (water mould) that attacks the root system of susceptible plants, leading to their death. Depending upon environmental conditions and plant susceptibility, it can destroy whole vegetation communities leading to the loss of dependent wildlife. The most susceptible plant families are the Proteaceae (e.g. *Grevillea* spp., *Hakea* spp.), Fabaceae (peas), Dilleniaceae (e.g. *Hibbertia* spp.) and Epacridaceae (heaths)[59]. Most notably our iconic 'Grass Trees' *Xanthorrhoea* spp. are very vulnerable. The small grass tree *Xanthorrhoea minor* occurs in Manningham and is a locally endangered species.

[59] Department of Sustainability and Environment (2008). *Victoria's Public Land Phytophthora cinnamomi Management Strategy.* Department of Sustainability and Environment, Melbourne.

Humans are the main cause of its continued spread across the landscape. First detected in Australia in 1935[60], it has since spread across the Australian continent. It has infested many hundreds of thousands of hectares in Victoria and all other states. Once introduced to an area it may spread extensively by itself, and there are no known practical ways to eradicate it.

The impacts of *P. cinnamomi* have been formally recognised under both State and Federal legislation and the State government has developed a Strategy[61] which sets out the objectives, management principles, priorities, legislation and proposed management approaches for protecting biodiversity from this significant threat.

Phytophthora cinnamomi has been listed twice as a 'potentially threatening process' under the FFG Act:

- *'Use of Phytophthora-infected gravel in construction of roads, bridges and reservoirs';* and
- *'The spread of Phytophthora cinnamomi from infected sites into parks or reserves, including roadsides, under the control of a state or government authority'.*

RECOMMENDATION 35

Implement actions to minimise the spread of Cinnamon Fungus in Manningham's bushland areas, including:

- ensure vehicles plant, machinery and hand tools entering bushland sites are free of dirt and soil – permit conditions for works should specify thorough washdown;
- minimise soil/gravel importation and use in bushland reserves; and
- no fill to be used or brought onto a bushland site without testing and certification that the fill is free of *Phytophthora*.

3.8.2 MYRTLE RUST[62]

Myrtle rust (*Uredo rangelii*) has only recently been found in Victoria and is a serious fungal disease affecting the plant family Myrtaceae, which includes many Australian natives commonly found in Victorian gardens and parklands, including:

- gum trees *(Eucalyptus* spp.);
- bottlebrush *(Callistemon* spp.*, Melaleuca* spp.);
- tea tree *(Leptospermum* spp.);
- lilly pilly *(Syzygium* spp.*, Acmena* spp.*, Waterhousea* spp.);
- paperbark *(Melaleuca* spp.); and
- myrtle *(Backhousia* spp.).

[60] ibid.
[61] ibid.
[62] information in this section taken from DPI Myrtle Rust Fact Sheet, October 2011 and emailed correspondence, February 2012.

Myrtle rust is widespread on the eastern seaboard of New South Wales (NSW) and in south-east Queensland. Locations range from commercial plant nurseries, public gardens, parks and streetscapes to large areas of bushland. Under the right conditions, myrtle rust may slow regeneration of native forests after harvesting or bushfire and could, in extreme circumstances, change forest biodiversity. Myrtle rust poses no threat to human or animal health.

Myrtle rust attacks young, soft, actively growing leaves, shoot tips and young stems, as well as fruits and flower parts of susceptible plants. The first signs of myrtle rust infection are tiny raised spots that are brown to grey, often with red-purple haloes. Up to 14 days after infection, the spots produce masses of distinctive yellow/orange spores (Figure 4).

Figure 4: Myrtle Rust Lesions on Messmate (Eucalyptus obliqua).
Source: DPI Myrtle Rust Fact Sheet, October 2011

Under Victorian legislation the Department of Primary Industry (DPI) must be notified immediately of all plants suspected of being infected with myrtle rust via the Exotic Plant Pest Hotline 1800 084 881 (toll-free). Alternatively, photos of the suspect material, together with a contact phone number and the plant's location can be emailed to plant.protection@dpi.vic.gov.au.

In order to effectively manage Myrtle Rust the DPI needs the voluntary input from a range of land managers including local councils. In the first instance DPI needs to detect its presence. If an incursion of Myrtle rust is to be contained or eradicated, it must be detected early, before the spores have had the opportunity to disperse. Hence DPI needs Government agencies, local councils and other environmental groups (e.g. Landcare) to set up and monitor high risk sites for surveillance. These sites will enable early detection of the pathogen in new areas of Victoria. Such sites are referred to as sentinel sites.

RECOMMENDATION 36

Organise workshops to inform staff and the community about Myrtle Rust and work with the DPI to monitor the outbreak and establish one or more 'sentinel sites' within Manningham.

3.9 Dumping, Firewood Collection & Vandalism

The continuing problem of preventing and responding to rubbish dumping, firewood collection and general vandalism in bushland reserves can be assisted by an increase in the public perception that our bushland areas are actively valued and managed. As has been found with graffiti removal, it helps to remove dumped rubbish and repair vandalism as quickly as possible.

RECOMMENDATION 37

Bushland reserves should be adequately signed to highlight the consequences of offending and mitigate the *'I didn't know...'* excuse. Where appropriate, gates can be installed to prevent damage and dumping occurring 'out-of-hours'. A *'Dob-in-a-Dumper'* campaign should be considered from time to time and/or for those areas where rubbish dumping is a regular occurrence. An education campaign should be implemented to increase public awareness of the value of fallen timber and to discourage firewood collection.

3.10 Public Perception, Awareness and Support

The need to protect and conserve our bushland is increasingly accepted in the community. This community acceptance and understanding is important in supporting and resourcing bushland management works and should be actively encouraged. Ways in which community support can be continued and enhanced may include the following.

3.10.1 VOLUNTEERS & 'FRIENDS OF …'/COMMUNITY GROUPS

Volunteer work by groups and/or individuals is a common way of enabling the community to participate and learn about the management of their local area. Volunteers usually get together regularly (e.g. monthly, annually or several times a year) to work on improving a local park or reserve. The following groups are currently active in Manningham

- Friends of 100 Acres
- Friends of Ruffey Lake Park
- Middle Yarra Landcare Network (including Friends of Warrandyte State Park, Anderson's Creek Catchment Area Landcare, Jumping Creek Catchment Landcare and Wonga Park Environment Group)

More active participation might be encouraged and sustained if dedicated staff resources were available to assist and coordinate additional volunteer groups and individuals over the long term. Without adequate resourcing though, the interest and success of these volunteer groups wanes. This is particularly so when a long term volunteer group leader moves away or no longer wants the responsibility of

planning, organising and leading activities. This is the current situation with several of these groups.

There is a genuine community desire for and benefit from this type of activity and, if adequately planned and resourced, such groups and individuals can usefully assist the Bushland Management Team. However, adequate staff resources need to be invested in assisting them; so that the time required to organise their activities results in a beneficial outcome.

RECOMMENDATION 38

Investigate ways to better facilitate and support 'Friends of' groups working in Council reserves.

3.10.2 INFORMATION PROVISION

Periodically the Bushland Management Team contributes to existing community group newsletters to provide information on their recent activities and other items of interest. It is considered that this is a useful way of keeping the community informed about native vegetation management and should continue to occur.

Providing information in the form of well designed signage and/or brochures can also assist in protecting and understanding the value of bushland areas. Environmental interpretive and information signs are provided at the following bushland reserves;

- 100 Acres Reserve
- Currawong Bush Park
- Ruffey Lake Park

Interpretive signage and/or brochures may be considered as appropriate at other bushland reserves including Tindals Wildflower Reserve, Wonga Park Reserve and along the Mullum Mullum Creek Linear Park. 'Standard' park signs highlighting that a reserve contains actively managed bushland and drawing attention to the values of that bushland could be considered for the entry points all of Manningham's main bushland reserves.

The design and placement of signs should always be carefully considered so that the result is not the 'littering' of our bushland areas with intrusive and unnecessary signs that are well intentioned but simply not effective in their intent.

3.10.3 EDUCATIONAL ACTIVITIES

The Bushland Management Officer works regularly with a number of schools and school groups in Manningham. This work includes tree planting, weed and rabbit control and environmental education activities with schools at the following sites;

- Mullum Mullum Creek Linear Park - Buck: Carey Baptist Grammar & Donvale Christian College
- Andersons Creek: Anderson Creek Primary School
- Doncaster East Secondary College

Other Council Staff also regularly present to and work with school and community groups about environmental issues.

3.10.4 OTHER OPPORTUNITIES

There is potential to utilize Community Correctional Services and corporate 'community service day' groups to assist with some straightforward activities. This would be appropriate in situations where a particular weed species could be targeted in a reserve, for example Boneseed in the Amersham block at Currawong Bush Park. Also, opportunities to access external funding opportunities and sponsorship by the corporate sector should be fully investigated and monitored. Advocacy to State and Federal Government also will be required to lobby for additional funding and resources.

RECOMMENDATION 39

Investigate potential sites where Community Correctional Services work groups and corporate community service day groups could contribute to bushland management activities. This would be limited to sites and tasks where specialist knowledge was not required of all workers. Investigate and monitor opportunities to access external funding opportunities and sponsorship by the corporate sector as well as advocating for additional funding from State and Federal Government.

Many other opportunities exist to harness support and awareness for bushland. The following are highlighted:

- *Nightwalks:* spotlight tours of bushland reserves have long been undertaken and are still very popular.
- *Guided walks*: group walks of a specific area or on a specific topic by a knowledgeable guide are also very popular. Council and The Friends of Warrandyte State Park have a popular program of guided walks.
- *Festivals/events:* a number of Manningham events and festivals provide opportunities for dissemination of information and harnessing community support for bushland (e.g. Warrandyte Festival).
- *Educational and social events* : eg special interest group activities and BBQs
- *Tree plantings:* tree plantings are a popular and time honoured way of getting the community involved either for a specific reserve or for a special event such as World Environment Day or National Tree Day.
- *Specialised programming:* a range of participatory programs aimed at stimulating environmental awareness and behavioural change is possible. Such programming can be conceived and delivered by external contractors and is limited only by the resources available and the imagination of the provider. School holiday programs are an ideal time for such programs with families looking for opportunities and excursions.
- *Environment Seminars:* Council and the community run a popular monthly environmental seminar program.

It is recommended that a 'Manningham Bushland Interpretation and Education Plan' be developed for Council's 'higher profile' bushland conservation reserves, including (but not necessarily limited to):

- Mullum Mullum Creek Linear Park;
- Currawong Bush Park; and
- 100 Acres Reserve.

The aim of the plan would be to identify the main themes and specific environmental programming, interpretive and signage opportunities that could be developed at each reserve. It is recognised that a major constraint to the wider use of implementation of such opportunities is the lack of time and resourcing available - in particular the lack of staff resources available or responsible for community issues, involvement and programming.

RECOMMENDATION 40

Develop a 'Manningham Bushland Interpretation and Education Plan' for Council's 'higher profile' bushland conservation reserves.

3.10.5 COMMUNITY BUILDING AND SOCIAL CAPITAL

Increasingly it is identified that a major indirect benefit of bringing people together to 'care for the environment', is the social benefit such interaction creates by helping to reduce the impact of issues such as depression, suburban isolation and loss of 'community identity'. Programmes and activities bring neighbours together (who may otherwise not meet) and often the establishment of lasting relationships throughout the community can be facilitated.

3.11 Recreation

Whilst our bushland reserves can sustain a variety of passive recreational activities (for example: walking, environmental interpretation, bird watching, plant identification, art, music, tai chi, yoga), some of the more 'active' pursuits have a damaging impact that means barring those activates or managing them in a way that limits the impact e.g. confining to a certain (usually more degraded) area.

3.11.1 HORSE RIDING

Because of their weight and small area in contact with the ground, horses have a relatively high potential for doing environmental damage compared with other park users. Indeed it has been shown that horse traffic causes more damage on established trails than motorcycles, off-road bicycles or hikers[63]. Horses also have potential to spread weeds, because pastures and dried stock feeds contain weed seeds that retain high levels of viability in horse manure. The risk of weed establishment is highest when manure is deposited in disturbed, damp sites,

[63] *Horse riding in urban conservation areas: Reviewing scientific evidence to guide management*, Jill Landsberg, Bill Logan & David Shorthouse in Ecological Management & Restoration Vol 2 No 1 April 2001

particularly when riding off-track. Much less weed establishment is apparent when horse riders remain on-track.[64]

Within bushland in Manningham, horse-riding is generally not permitted except within or adjacent to the following reserves:

- Mullum Mullum Creek Linear Park – Buck (Donvale Pony & Adult Riders Clubs);
- Mullum Mullum Creek Linear Park – Currawong & some areas of Buck;
- Husseys Lane Reserve;
- Colman Park (Wyena Pony & Adult Riding Clubs);
- Wonga Park Reserve;
- 100 Acres Reserve; and
- a number of roadsides.

The impact of horse riding needs to be monitored at these sites and Management Plans developed to manage and mitigate any impacts. Actions may include:

- construction of proper trails, circuits and entry/exit points outside areas supporting native vegetation;
- fencing off protected areas of remnant vegetation;
- signage; and
- developing a 'Manningham Code of Conduct for Horse Riding'.

RECOMMENDATION 41

Monitor impact of horses at

- Bucks Reserve/White's Orchard
- Hussey's Lane
- Wyena
- 100 Acres

RECOMMENDATION 42

Work with Horse Riding Clubs to undertake environmental improvement works and develop Council-approved Land Management Plans, including with Horse Riding Groups at Colman Park/Wyena and Bucks Reserve/White's Orchard.

RECOMMENDATION 43

Work with Manningham Horse Riders Working Group to develop a 'Horse Riding Code of Conduct'.

3.11.2 CYCLING

Recreational cycling, particularly off-road mountain biking and 'BMX-ing' has the potential to damage tracks and habitat in bushland reserves. Large groups of

[64] ibid.

organized riders in particular have been a problem, as have BMX riders at Currawong Bush Park, 100 Acres Buck Reserve and Warrandyte State Park. Even one or two riders can cause damage by building ramps or jumps and riding at speeds on and off tracks.

RECOMMENDATION 44

Access for riding should be confined to vehicle tracks. Signage and adequate enforcement may help to contain this problem.

RECOMMENDATION 45

The scale and locality of the problem requires monitoring and management actions need to be taken before any extensive damage is done.

RECOMMENDATION 46

Organised cycling events generally should not be permitted in Council managed bushland reserves.

3.11.3 ORIENTEERING/ORGANISED RUNNING GROUPS

It is considered that Orienteering and group fun runs are not appropriate activities for Council managed bushland reserves. Whilst individual runners or small 'informal' groups are acceptable, larger groups create the risk of doing too much damage and habitat disturbance. These groups should be encouraged to use larger, more recreational parks such as Westerfolds/Yarra Valley Parklands (Parks Victoria) or Ruffey Lake Park.

RECOMMENDATION 47

The scale and locality of the problem requires monitoring and management actions need to be taken before any extensive damage is done.

RECOMMENDATION 48

Organised orienteering/fun run events generally should not be permitted in Council managed bushland reserves.

3.12 Infrastructure/Utility Works

The impact of infrastructure/utility works by other Council units, Statutory Authorities and contractors in or near bushland areas has been identified as an issue. These works include, for example, grading, track and road maintenance, drainage works, and lighting.

Some of the issues associated with these works include the:

- need to determine if a planning permit is required;
- need to apply and abide by appropriate permit conditions;
- impact of works on flora and fauna;
- impact on hydrology;

- need for contractors to be adequately supervised; and
- need for follow up remediation works (if required) to be adequately planned for and implemented.

RECOMMENDATION 49

Ensure relevant staff and contractors are appropriately trained in 'Environmental Awareness' and environmental impacts associated with their work via creation of a project-specific induction programme for contractors working in and/or around bushland reserves. Induction should include training on appropriate mowing regimes to protect biodiversity values and infrastructure.

RECOMMENDATION 50

Implement an agreed *'Process For Council Works With Potential/Actual Native Vegetation Impacts'* so that all units are aware of their roles and responsibilities.

RECOMMENDATION 51

Review, adapt and update the Roadside Management Strategy Guidelines [65] and handbook so that they can apply to all Council managed bushland areas including roadsides.

[65] *Roadside Environmental Management Strategy*, Manningham City Council, 2004.

4 Section Four: Implementation

4.1 Summary Table of Actions & Priorities

No.	Action	Budget	Year				
			1	2	3	4	5
	The Planning Process						
1	All Council-managed 'open space' reserves with an 'Indigenous Bushland' function have Management Plans prepared for them as part of the Manningham Reserve Management Plan process, which ensures at least the indigenous bushland component of those reserves have developed Management Plans. This process generally is in accordance with the Bushland Reserves Priority Table	existing resources	✓	✓	✓	✓	✓
2	The current structure for bushland management is considered appropriate and it is recommended that no changes are required, beyond reviewing the EEP Environmental Planner's role in the management of bushland areas after two years implementation of this strategy.	existing resources			✓		
3	Adopt the proposed Management Plan Template (Fig. 1) as a standard for Management Plans, acknowledging the need for site-specific adaptations.	existing resources					
4	According to the Bushland Reserves Priority Table (Table 1) apply the Victorian Habitat Hectare methodology to determine the extent, condition and conservation significance of indigenous vegetation on each site.	$15,000 p.a.	✓	✓	✓	✓	✓
5	Collect data on threatened flora/fauna species for each reserve, and adjust the Bushland Sites Prioritisation Matrix accordingly to account for the presence absence of significant or threatened species.	existing resources		✓	✓	✓	✓
6	Review and update the Roadside Quality and Significance Mapping Study 2002. Promote the existence of roadside mapping on the GIS system to internal staff in relevant units so they are aware of roadside values and utilise the mapping.	$15,000		✓	✓		
7	Adapt/adopt as appropriate the Bushland Reserves Prioritisation Matrix and apply it to rank and prioritise Council managed roadsides.	existing resources	✓	✓	✓	✓	✓
	Resourcing and Benchmarking						
8	Expenditure should be increased to the minimum management and expenditure targets across Manningham's bushland reserves.	undetermined	✓	✓	✓	✓	✓
9	Additional funds should be made available for a strategic, weed-led approach across the reserve system (e.g. problem gullies) to respond to critical	undetermined	✓	✓	✓	✓	✓

No.	Action	Budget	Year				
			1	2	3	4	5
	weeds that threaten biodiversity values but which could be managed if funds were available.						
10	Capital works funding for improvements to Council's bushland assets should not be expended on 'routine' ongoing or operational bushland management works but on those activities not routinely undertaken as part of bushland management work and, in most cases, require specialist knowledge.	existing resources - reallocated	✓	✓	✓	✓	✓
11	Additional funding should be allocated to bushland management to implement post-fire related activities on Council land.	$50,000	✓	✓	✓	✓	✓
	Management of New Reserves						
12	An appropriate bushland management budget increase ($$/ha) must be provided whenever any land with a bushland component/liability comes into Council ownership.	undetermined	✓	✓	✓	✓	✓
13	Policies and processes should be established whereby a portion of revenue realised by Council as part of an income-generating development that also increases Council's bushland areas is allocated to these areas, to ensure adequate management of these new bushland sites.	existing resources	✓	✓			
	Implementing Net Gain and Offsetting						
14	Produce a Business and Operations Plan to investigate and implement a Manningham 'Over-The Counter' offset scheme.	existing resources	✓				
15	Investigate the need for, and appropriateness of, purchasing potential offset sites. This includes actively seeking appropriate private property that meets DSE and Council offset criteria and is for sale (or potentially for sale).	existing resources		✓	✓	✓	✓
	Weeds						
16	Support, in principle, the findings of the June 2011 Report of the DSE/DPI Roadside Weeds & Pests Working Party and the goal to clarify responsibilities and formalise a cost sharing arrangement for managing Invasive Plants and Animals on roadsides.	existing resources	✓				
	Fire						
17	Endorse and adopt the objectives of the Victorian Code of Practice for Fire Management on Public Land (draft for consultation), specifically: *'To reduce the impact of major and catastrophic bushfires on human life, communities, essential and community infrastructure, industries, the economy and the environment.* *To enhance the resilience of our natural ecosystems and their ability to deliver services such as biodiversity, water, carbon and forest products'*	existing resources	✓				

No.	Action	Budget	Year				
			1	2	3	4	5
18	Continue to undertake burns in Council bushland reserves whenever possible to achieve community safety and ecological objectives. For this to occur regular liaison and discussion is required between the Parks & Recreation, EEP and Local Laws units and fire agencies i.e. CFA/MFB/Parks Victoria/DSE, with a view to addressing issues such as resourcing, planning, community notification and communication and risk management.	existing resources	✓	✓	✓	✓	✓
19	Continue EEP representation on the MFMPC in addition to Local Laws and Parks and Recreation representation.	existing resources	✓	✓	✓	✓	✓
20	Ensure that the existing WPPPs are regularly updated as Management Plans are reviewed and completed for each reserve. Also, in line with the Municipal Fire Prevention Plan, ensure WPPPs/Bushfire Management Plans are produced for other bushland reserves as appropriate, including for the following reserves: • Yangaii Baring; • Mullum Mullum Creek Linear Park – Whitefriars and Mathews; and • 51 Reserve Road.	undetermined	✓	✓	✓	✓	✓
	Burgan						
21	Investigate the issue of Burgan further by: • commissioning a study to investigate and report on the ecological role of Burgan and the location, extent and nature of any increased bushfire risk it may pose (including recommendations to manage and mitigate that risk); • monitoring existing stands to measure their impact and or 'spread'; • establishing 'trial plots' where various techniques for Burgan management can be trialled and researched; • identifying 'priority areas' where Burgan is considered a threat to the ecology and/or community assets; • liaising with Parks Victoria (Warrandyte State Park) to share information on Burgan management; and • investigating the appropriateness or otherwise of a planning scheme amendment to exempt specific Burgan management techniques (removal) from requiring a planning permit.	undetermined	✓	✓			
	Fauna						
22	Ensure actions to conserve and enhance bushland prescribed in this strategy are implemented with the	existing resources	✓	✓	✓	✓	✓

No.	Action	Budget	Year				
			1	2	3	4	5
	dual objective of enhancing and conserving habitat for fauna.						
	Invasive Animals						
23	Monitor and investigate any reports/sightings of invasive animals, particularly Sambar and other deer. Continue to work with the DPI/DSE to monitor and investigate any reports /sightings of Red-eared Slider Turtles.	existing resources	✓	✓	✓	✓	✓
24	Continue to implement integrated rabbit control programs in conjunction with other Authorities (Melbourne Water & Parks Victoria/DSE/DPI) and with residents and Landholder groups.	existing resources	✓	✓	✓	✓	✓
25	Establish and enforce rules relating to dogs in reserves: in fenced and various other bushland areas, dogs should be prohibited; on trails and tracks in bushland areas where dogs are not prohibited, dogs should always be on lead. Investigate and implement as appropriate methods and techniques to avoid or minimise the negative impacts of domestic animals on Green Wedge natural values, including feasibility and desirability of a cat curfew, that concur with Local Law controls.	existing resources	✓	✓	✓	✓	✓
26	Each summer period search for and destroy European Wasp nests at the high profile parks and reserves including: − Ruffey Lake Park − Currawong Bush Park − Mullum Mullum Creek Linear Park − Wonga Park Reserve − Finns Reserve − Stiggants Reserve/Warrandyte Walk	existing resources	✓	✓	✓	✓	✓
27	Monitor feral bee populations and respond as appropriate.	existing resources	✓	✓	✓	✓	✓
28	Monitor mice and rat populations and respond as appropriate.	existing resources	✓	✓	✓	✓	✓
29	Identify ponds with high habitat values that are still free of Mosquito Fish. Implement signage and monitoring to try to keep them free of this invasive pest. Waterbodies with Mosquito Fish should be ranked based on habitat values; over time, action should be taken to try to eradicate Mosquito Fish prioritising the waterbodies with higher habitat values.	existing resources		✓	✓	✓	✓
30	Monitor Bell Miner, Noisy Miner and Indian Myna populations and respond as appropriate.	existing resources	✓	✓	✓	✓	✓
	Locally Threatened Plants in Manningham						
31	Prepare a Locally Threatened Species Management Plan to determine strategies and specific actions that Council and others can take in response to the	undetermined		✓			

No.	Action	Budget	Year				
			1	2	3	4	5
	unprecedented declines that are affecting Manningham's flora.						
32	Establish a GIS based database recording the presence and locality of threatened species on Council land and where permission is obtained, on private land. Procedures and records for collecting this data will need to be established.	existing resources	✓				
	Habitat Corridors & Revegetation Sites						
33	Record current, past (and future) plantings/revegetation on GIS to permanently record the location, date, species and purpose of plantings. Ensure all future planting of indigenous plants are local provenance sourced from an indigenous nursery that is approved by the BMO. Ensure species that hybridise or genetically swamp local taxa are not used in any future plantings.	existing resources		✓	✓	✓	✓
34	Investigate whether gaps in waterway and land habitat corridors are suitable for revegetation and habitat restoration to broaden and connect corridor vegetation and maximise connectivity and minimise fragmentation of bushland remnants.	existing resources	✓	✓	✓	✓	✓
	Dieback & Disease						
35	Implement actions to minimise the spread of Cinnamon Fungus in Manningham's bushland areas, including: • ensure vehicles plant, machinery and hand tools entering bushland sites are free of dirt and soil – permit conditions for works should specify thorough washdown; • minimise soil/gravel importation and use in bushland reserves; and • no fill to be used or brought onto a bushland site without testing and certification that the fill is free of Phytophthora.	existing resources	✓	✓	✓	✓	✓
36	Organise workshops to inform staff and the community about Myrtle Rust and work with the DPI to monitor the outbreak and establish one or more 'sentinel sites' within Manningham.	existing resources	✓	✓	✓	✓	✓
	Dumping, Firewood Collection and Vandalism						
37	Bushland reserves should be adequately signed to highlight the consequences of offending and mitigate the 'I didn't know...' excuse. Where appropriate, gates can be installed to prevent damage and dumping occurring 'out-of-hours'. A 'Dob-in-a-Dumper' campaign should be considered from time to time and/or for those areas where rubbish dumping is a regular occurrence. An education campaign should be implemented to increase public awareness of the value of fallen timber and to discourage firewood collection.	undetermined	✓	✓	✓	✓	✓

No.	Action	Budget	Year				
			1	2	3	4	5
	Public Perception, Awareness & Support						
38	Investigate ways to better facilitate and support 'Friends of' groups working in Council reserves.	$5000 pa	✓	✓	✓	✓	✓
39	Investigate potential sites where Community Correctional Services work groups and corporate community service day groups could contribute to bushland management activities. This would be limited to sites and tasks where specialist knowledge was not required of all workers. Investigate and monitor opportunities to access external funding opportunities and sponsorship by the corporate sector, as well as advocating for additional funding from State and Federal Government.	$2000 pa	✓	✓	✓	✓	✓
40	Develop a 'Manningham Bushland Interpretation and Education Plan' for Council's 'higher profile' bushland conservation reserves.	undetermined			✓		
	Recreation						
41	Monitor impact of horses at Bucks Reserve/White's Orchard, Hussey's Lane, Wyena, 100 Acres	existing resources	✓	✓	✓	✓	✓
42	Work with Horse Riding Clubs to undertake environmental improvement works and develop Council-approved Land Management Plans, including with Horse Riding Groups at Colman Park/Wyena and Bucks Reserve/White's Orchard.	existing resources		✓			
43	Work with Manningham Horse Riders Working Group to develop a 'Horse Riding Code of Conduct'.	existing resources		✓			
44	Access for riding should be confined to vehicle tracks. Signage and adequate enforcement may help to contain this problem.	undetermined		✓	✓		
45	The scale and locality of the problem requires monitoring and management actions need to be taken before any extensive damage is done.	undetermined	✓	✓			
46	Organised cycling events generally should not be permitted in Council managed bushland reserves.	existing resources	✓	✓	✓	✓	✓
47	The scale and locality of the problem requires monitoring and management actions need to be taken before any extensive damage is done.	undetermined	✓	✓			
48	Organised orienteering/fun run events generally should not be permitted in Council managed bushland reserves.	existing resources	✓	✓	✓	✓	✓
	Infrastructure/Utility Works						
49	Ensure relevant staff and contractors are appropriately trained in 'Environmental Awareness' and environmental impacts associated with their work via creation of a project-specific induction programme for contractors working in and/or around bushland reserves. . Induction should include training on appropriate mowing regimes to protect biodiversity values and infrastructure.	undetermined	✓	✓	✓	✓	✓

No.	Action	Budget	Year				
			1	2	3	4	5
50	Implement an agreed 'Process For Council Works With Potential/Actual Native Vegetation Impacts' so that all units are aware of their roles and responsibilities.	existing resources	✓				
51	Review, adapt and update the Roadside Management Strategy Guidelines and handbook so that they can apply to all Council managed bushland areas including roadsides.	undetermined		✓			

4.2 Resourcing the Strategy's Implementation

Many of the actions above are identified as being able to be implemented using existing budgets and resources. Where possible an estimate of the additional cost is provided. In some cases the additional cost of an action is unable to be determined until the timing, method and cost of implementation is finalised e.g. engagement of a consultant or undertaken 'in-house'. Where possible, an estimate of the additional cost is provided.

Current Capital works funding allocated to bushland management is being exhausted by post-fire related activities. Allocation of additional funding (approximately $50,000) for post-fire related activities would mean that bushland management funds could be redirected to priority actions and implementation of this Strategy. This would provide an annual increased budget of approximately $50,000 each year for implementation of this Strategy over the proposed five year life span i.e. $250,000 in total. The major costs and priorities for this expenditure are identified as being:

- approximately $15,000/yr for Habitat Hectare assessments to determine/audit the extent, condition and conservation significance of indigenous vegetation on each site;
- a one-off estimated cost of $15,000 to review and update the Roadside Quality and Significance Mapping study 2002;
- expenditure should be increased to the minimum management and expenditure targets across Manningham's bushland reserves;
- additional funds should be made available for a strategic, weed-led approach across the reserve system (e.g. problem gullies);
- funds to assist management of new bushland reserves. Funding should cover establishment of policies and processes that ensure a proportional increase of bushland management funding when new areas of bushland are acquired.
- establishment costs associated with setting up a Manningham 'Over the Counter' offset scheme;
- ensure that the existing Wildfire Prevention and Preparedness Plans (WPPPs) are regularly updated as Management plans are reviewed and completed for each Reserve and that in line with the Municipal Fire Prevention Plan, WPPPs/Bushfire Management Plans are also be produced for other bushland reserves as appropriate.
- investigate the issue of Burgan as a bushfire risk in the municipality;
- prepare a 'Locally Threatened Species Management Plan' to determine strategies and specific actions that Council and others can take in response to the unprecedented declines that are affecting Manningham's flora;

- bushland reserves should be adequately signed to highlight the consequences of offending and mitigate the 'I didn't know...' excuse. Where appropriate, gates can be installed to prevent damage and dumping occurring 'out-of-hours'. A 'Dob-in-a-Dumper' campaign should be considered from time to time and/or for those areas where rubbish dumping is a regular occurrence;
- costs associated with increasing public perception, awareness and support for Manningham's bushland reserves;
- additional funding for ensuring recreational activities in bushland reserves do not contribute to a decline in bushland quality and/or significance;
- review and update the Roadside Management Strategy Guidelines and handbook that it can apply to all Council managed bushland areas including roadsides; and
- funds for infrastructure and utility works.

Based on data presented in *Section 2.4 Resourcing and Benchmarking*, Council currently spends $421,816 p.a. (based on 11/12 FY) on bushland management. This current level of resourcing equates to an expenditure of $1031/ha – below the minimum 2002 target level of $1,420, well below the 2010 industry median of $3,014/ha[66] and at the lower end of the funding range of other urban and peri-urban Councils[67] - that range is $600-$6000/ha. Importantly, it is well below the amount required to adequately maintain our bushland areas and (at least) slow the decline.

Calculations to determine the cost of managing eight Very High Priority reserves of varying size to a minimum standard revealed that an average increase of $2322/ha is required per annum, over 10 years. The addition of these funds to the current funding of $1031/ha would result in a total spend of $3353/ha per annum over 10 years. To reach this figure, a budget increase of $350,774 per annum is sought for bushland management. A business case will need to be developed to motivate for any additional resources.

[66] based on 2010 data from 16 Councils participating in the 'Integrated Open Space Services' annual benchmarking exercise.

[67] based on 2010 data from 16 Councils participating in the 'Integrated Open Space Services' annual benchmarking exercise.

5 APPENDICES

Appendix 1: State Prohibited Weeds

Common Name	Scientific Name
Alligator Weed	*Alternanthera philoxeroides*
Bear-Skin Fescue	*Festuca gautieri*
Black Knapweed	*Centaurea nigra*
Branched Broomrape	*Orobanche ramosa*
Camel Thorn	*Alhagi maurorum*
Giant Knotweed	*Fallopia sachalinensis*
Giraffe Thorn	*Vachellia erioloba*
Hawkweed	*Hieracium spp.*
Horsetail	*Equisetum spp.*
Ivy-Leaf Sida	*Malvella leprosa*
Japanese Knotweed	*Fallopia japonica*
Japanese Knotweed Hybrid	*Fallopia x bohemica*
Karoo Thorn	*Vachellia karroo*
Lagarosiphon	*Lagarosiphon major*
Lobed Needle Grass	*Nassella charruana*
Marijuana	*Cannabis sativa*
Mesquite	*Prosopis spp.*
Mexican Feather Grass	*Nassella tenuissima*
Nodding Thistle	*Carduus nutans*
Parthenium Weed	*Parthenium hysterophorus*
Perennial Ragweed	*Ambrosia psilostachya*
Poverty Weed	*Iva axillaris*
Salvinia	*Salvinia molesta*
Tangled Hypericum	*Hypericum triquetrifolium*
Water Hyacinth	*Eichhornia crassipes*

Appendix 2: Restricted Weeds

Common Name	Scientific Name
Wild Garlic	*Allium vineale*
Prickly Acacia	*Acacia nilotica*
Angled Onion	*Allium triquetrum*
Pond Apple	*Annona glabra*
Bridal Creeper	*Asparagus asparagoides*
Onion Weed	*Asphodelus fistulosus*
Cabomba	*Cabomba caroliniana*
Rubber Vine	*Cryptostegia grandiflora*
Fennel	*Foeniculum vulgare*
Hymenachne	*Hymenachne amplexicaulis*
Topped Lavendar	*Lavandula stoechas*
Mimosa	*Mimosa pigra*
Chilean Needle Grass	*Nassella neesiana*
Lantana	*Lantana camara*
Soursob	*Oxalis pes-caprae*
Parkinsonia	*Parkinsonia aculeata*
Willows	*Salix spp. (except Salix alba var. caerulea, Salix alba x matsudana, Salix babylonica, Salix X calodendron, Salix caprea 'Pendula', Salix matsudana 'Aurea', Salix matsudana 'Tortuosa'., Salix myrsinifolia and Salix X reichardtii)*
Wild Mignonette	*Reseda luteola*
Athel Pine	*Tamarix aphylla*
Great Mullein	*Verbascum thapsus*

Appendix 3: PPWCMA Regionally Controlled Weeds

Common Name	Scientific Name
African Daisy	*Senecio pterophorus*
Amsinckia	*Amsinckia spp.*
Apple Of Sodom	*Solanum linnaeanum*
Artichoke Thistle	*Cynara cardunculus*
Bindweed	*Convolvulus arvensis*
Boneseed	*Chrysanthemoides monilifera*
Cape Tulip (One-Leaf)	*Moraea flaccida*
Cape Tulip (Two-Leaf)	*Moraea miniata*
Dodder	*Cuscuta spp.*
English Broom	*Cytisus scoparius*
Flax-Leaved Broom	*Genista linifolia*
Golden Thistle	*Scolymus hispanicus*
Gorse	*Ulex europaeus*
Hoary Cress	*Lepidium draba*
Noogoora Burr	*Xanthium strumariam*
Pampas Lily-Of-The-Valley	*Salpichroa origanifolia*
Perennial Thistle	*Cirsium arvense*
Prairie Ground Cherry	*Physalis hederifolia*
Prickly Pear (Drooping)	*Opuntia monacantha*
Prickly Pear (Erect)	*Opuntia stricta*
Ragwort	*Senecio jacobaea*
Serrated Tussock	*Nassella trichotoma*
Tree Of Heaven	*Ailanthus altissima*
Slender Thistle	*Carduus tenuiflorus*
Saffron Thistle	*Carthamus lanatus*
Spear Thistle	*Cirsium vulgare*

Common Name	Scientific Name
Hemlock	*Conium maculatum*
Hawthorn	*Crataegus monogyna*
Thorn Apple (Long-Spine)	*Datura ferox*
Thorn Apple (Common)	*Datura stramonium*
Sand Rocket	*Diplotaxis tenuifolia*
Wild Teasel	*Dipsacus fullonum*
Stinkwort	*Dittrichia graveolens*
Paterson's Curse Viper's Bugloss	*Echium plantagineum* *Echium vulgare*
African Love-Grass	*Eragrostis curvula*
Cape Broom	*Genista monspessulana*
Tutsan	*Hypericum androsaemum*
St. John's Wort	*Hypericum perforatum*
St. Peter's Wort	*Hypericum tetrapterum*
Spiny Rush	*Juncus acutus*
Ox-Eye Daisy	*Leucanthemum vulgare*
African Boxthorn	*Lycium ferocissimum*
Horehound	*Marrubium vulgare*
Tufted Honeyflower	*Melianthus comosus*
Sweet Briar	*Rosa rubiginosa*
Blackberry	*Rubus fruticosus*
Variegated Thistle	*Sylibum marianum*
Wild Watsonia	*Watsonia meriana*
Bathurst Burr	*Xanthium strumariam*

Appendix 4: PPWCMA Regionally Prohibited Weeds

Common Name	Scientific Name
African Feather Grass	*Pennisetum macrourum*
Buffalo Burr	*Solanum rostratum*
Caltrop	*Tribulus terrestris*
Chilean Cestrum	*Cestrum parqui*
Devil's Claw (Purple Flower)	*Proboscidea louisianica*
Devil's Claw (Yellow Flower)	*Proboscidea lutea*
Hardheads	*Rhaponticum repens*
Illyrian Thistle	*Onopordum illyricum*
Khaki Weed	*Alternanthera pungens*
Scotch Thistle	*Onopordum acanthium*
Silverleaf Nightshade	*Solanum elaeagnifolium*
Skeleton Weed	*Chondrilla juncea*
Soldier Thistle	*Picnomon acarna*
Spiny Broom	*Calicotome spinosa*
Spiny Burr Grass	*Cenchrus longispinus*
Spiny Emex	*Emex australis*
St Barnaby's Thistle	*Centaurea solstitialis*
Star Thistle	*Centaurea calcitrapa*
Stemless Thistle	*Onopordum acaulon*
Thorn Apple (Recurved)	*Datura iNoxiousia*
Wheel Cactus	*Opuntia robusta*

Appendix 5: Weed legislation, policy and strategy

FEDERAL JURISDICTION

Australian Weeds Strategy

The Australian Weeds Strategy (AWS) was endorsed by the Natural Resource Management Ministerial Council (NRMMC) in 2006 following drafting by the Australian Weeds Committee (a subcommittee of the Council) and public consultation with the input of key stakeholders. The AWS vision is that Australia's economic, environmental and social assets are secure from the impacts of weeds. The AWS mission is to provide guidance for national leadership so all Australians can work together against the serious impact of weeds[68].

Weeds of National Significance (WONS)

In 1998, Australian governments endorsed a framework to identify which weed species could be considered WONS within an agricultural, forestry and environmental context. Twenty WONS were identified through this process based on:

- the invasiveness of a weed species;
- a weed's impacts;
- the potential for spread of a weed; and
- socio-economic and environmental values.

This was the first attempt to prioritise weeds over a range of land uses at the national level. Whilst ultimately the responsible Land Manager is responsible for managing WONs, listed species are subject to coordinated national action as described in the strategies prepared for each species. These strategies are endorsed by the NRMMC and the Australian Weeds Committee oversees the implementation. Each program has a national coordinator hosted by a state government department and is managed by a national committee.

National Environmental Alert List

The Alert List complements the WONS list, which includes weeds already causing significant agricultural, forestry and environmental damage. Species were identified for the Alert List based on three criteria:

- posing a high or serious potential threat to the environment;
- having limited distribution within Australia at present; and
- being amenable to successful eradication or containment programs.

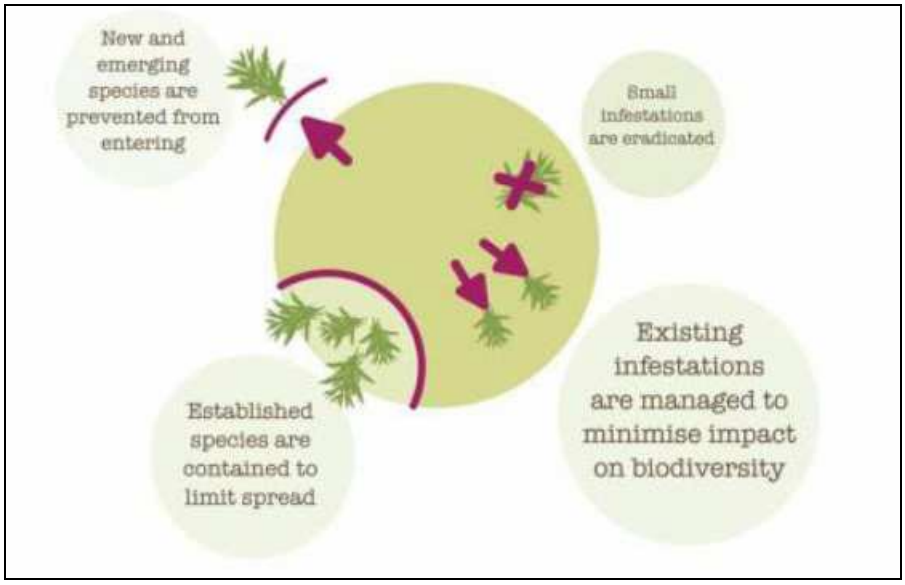
The list identifies 28 plant species that are in the early stages of establishment and have the potential to become a significant threat to biodiversity if they are not managed.

Additionally the federal level recognises 'sleeper weeds', which are plants from overseas that currently have established only small wild populations but have the potential to spread widely. There are six species targeted for national eradication under the NRMMC's National Cost-sharing Eradication Programme. Some additional weeds also are listed as target species for biological control through a government program that allows for research on biological controls for particular weed species.

[68] Natural Resource Management Ministerial Council 2006, *'Australian Weeds Strategy – A national strategy for weed management in Australia'*, Australian Government Department of the Environment and Water Resources, Canberra.

STATE JURISDICTION

The Invasive Plants and Animals Policy Framework (IPAPF) represents the Victorian Government's approach to managing existing and potential invasive species across the whole of Victoria:



Biosecurity Approach (Source: UFWMI Operational Plan 2011)

The Victorian IPAPF supports Councils' role in weed control recognising that local governments can add value by:

- addressing local weed issues in whatever manner it sees fit, including local laws, provided that they do not duplicate or conflict with the *Catchment and Land Protection Act* 1994 (CaLP Act) or other relevant legislation;
- ensuring that planning decisions do not exacerbate weed and pest problems; and
- providing education and incentives to improve land management in the municipality and being an advocate for effective IPA management.69

Whilst the Victorian Government provides legislative and policy direction for tackling weeds, responsibility for their management resides primarily with the relevant land manager. On Council-managed land, legislated responsibilities are principally according to the CaLP Act. Under the Act, all land managers have a duty of care to ensure that'*…weeds do not impact on land health, productivity and biodiversity, and that their activities do not damage the land and water resources they manage nor those of their neighbours nor wider environmental or community values."*[70]

The CaLP Act declares certain species as 'noxious' weeds (or pest animals) and assigns each species to one of four categories:

State Prohibited Weeds

These species either: do not occur in Victoria but pose a significant threat if they invade *or* if present, pose a serious threat and can reasonably be expected to be eradicated. If present, infestations of a State prohibited weed are relatively small. They are to be

[69] Victorian Government (2010) *Weeds and Vertebrate Pests. Module 1 within the Invasive Plants and Animals Policy Framework*, DPI Victoria, Melbourne

[70] Source: *Regional Weed Action Plan*, Port Philip & Westernport Catchment Management Authority, 2003.

eradicated from Victoria if possible or excluded from the State. The Victorian Government is responsible for their eradication, but may direct land owners to prevent their growth and spread.

Regionally Prohibited Weeds

Regionally prohibited weeds are not widely distributed in a region but are capable of spreading further. It is reasonable to expect that they can be eradicated from a region and they must be managed with that goal. Land owners, including public authorities responsible for crown land management, must take all reasonable steps to eradicate regionally prohibited weeds on their land.

Private landholders are responsible for control on private land but not on roadsides adjoining their property, which are the responsibility of VicRoads, municipalities or DSE, depending on the class of road (currently under review).

Regionally Controlled Weeds

These weeds are usually widespread and are considered important in a particular Region. To prevent their spread, *continuing control measures* are required. Land owners have the responsibility to take all reasonable steps to control and prevent the spread and growth of Regionally Controlled weeds on their land and the roadsides that adjoin their land (*certain roadsides are exempt*).

Restricted Weeds

This category includes plants that pose a serious threat to primary production, Crown land, the environment or community health in another State or Territory; and if sold or traded in Victoria there would be an unacceptable risk of it spreading within Victoria and to other States or Territories. Trade in these species and their propagules, either as plants, seeds or contaminants in other materials is prohibited. There are no legal requirements to eradicate or control restricted weeds growing on land.

Noxious Aquatic Weeds

The *Fisheries Act* 1995 has also declared some species as noxious aquatic plants. It is an offence to bring them into Victoria or posses, sell, transport or release them as they pose a serious threat to fisheries, the aquatic environment or human health.

Note:
Council's Environment and Bushland Management teams are diligent with remaining alert to new weed threats and priorities via DSE/DPI advisory lists, neighbouring Council weed booklets, lists and weed alerts, and through regular consultation with officers, ecologists and other professionals involved in land management and weed control.

PORT PHILLIP AND WESTERNPORT CATCHMENT MANAGEMENT AUTHORITY (PPWCMA) JURISTICTION

Under the CaLP Act, the PPWCMA's responsibilities include:

- preparing a regional catchment strategy, coordinating and monitoring its implementation and making recommendations to the Minister about funding for the strategy; and
- advising the Minister on any matter referred to it by the Minister, including advice on any proposal to declare or revoke a pest plant.

Catchment management authorities also are responsible for:

- developing regional invasive plant and animal strategies to address Invasive Plants and Animals(IPA) in private and public lands in accordance with the regional catchment strategy and any relevant state policy, framework, strategy, plan or guideline; and
- prioritising action needed to address IPA and monitoring, evaluating and reporting (to the extent achievable given available resources) on delivery of these actions by relevant agencies; and
- manage IPA associated with waterways (provided by Melbourne Water in the Port Philip and Westernport region).

The Port Phillip & Westernport Catchment Management Authority (PPWCMA) - Invasive Plants & Animals Strategy was released in July 2011. This strategy addresses Invasive Plant and Animal (IPA) management in the Port Phillip and Western Port region. It lays out the principles and logic that government agencies, industry and the community can use to take a strategic and co-ordinated approach. The strategy establishes five regional objectives for IPA: To achieve these objectives, the Strategy describes 15 actions to achieve these objectives (for example, the design and implementation of integrated, place-based programs for management of invasive plants and animals). It also lists weed species in the region that are gazetted under the CaLP Act, their noxious weed category (i.e. State Prohibited, Regionally Prohibited, Regionally Controlled or Regionally Restricted) and identifies them as a very high risk environmental weed and/or Weed of National Significance where appropriate. It defines the following five key objectives for IPA in the region[71]:

Invasive Plant & Animal Objectives for PPWCMA Region

Objective 1	Implement coordinated, cooperative and effective management of invasive plants and animals across the region.
Objective 2	Prevent the introduction and establishment of new high risk invasive plants and animals.
Objective 3	Eradicate, contain or prevent further spread of established infestations of high risk invasive plants and animals.
Objective 4	Address the risks of impacts of invasive plants and animals on the priority environmental and agricultural assets.
Objective 5	Improve management of invasive plants and animals through effective monitoring, evaluation and reporting.

[71] Port Phillip and Western Port Invasive Plant and Animal Strategy July 2011. Published by Port Phillip and Westernport Catchment Management Authority, Frankston.

Appendix 6: New and emerging weeds & control and prevent weeds in Manningham

Weed-led approach weeds:
The list of 'new and emerging' weeds in Manningham includes (but is not limited to) the following eight species, and may be expanded in the future as necessary, or if additional funding becomes available.

- Chilean-, Lobed- and Texan Needle-grasses and Serrated Tussock *Nassella* spp.
- St Peters Wort *Hypericum tetrapterum*
- Tutsan *Hypericum androsaemum*
- Parrots Feather *Myriophyllum aquaticum*
- Alligator Weed *Alternanthera philoxeroides*

Contain and prevent approach weeds:
These include but are not limited to:

- Blackberry *Rubus* spp.
- Boneseed *Chrysanthemoides monilifera* ssp. *monilifera*
- Bridal Creeper *Asparagus asparagoides*
- Watsonia *Watsonia meriana* var.*bulbillifera*
- St Johns Wort *Hypericum gramineum*

Biosites in Public Open Space

Core Biosites
Unspecified Buffer
Main Roads
Main Rivers/Creeks

N

Scale 1:50,000

0 200 400 800 1,200 1,600 2,000

Meters

Map Grid of Australia - Zone 55

Produced by MANNINGHAM GIS/GPS
Date: 14/02/2013

Bushland Reserve Priority

- 0-24 Very High Priority
- 25-37 High Priority
- 38-53 Moderate Priority
- 54-61 Moderate-Low Priority
- 62-72 Low Priority

- Bushland Priority Reserves
- Open Space
- Manningham Boundary
- Main Rivers/Creeks
- Main Roads

* Refer to Bushland Priority Table for list of Reserves

N

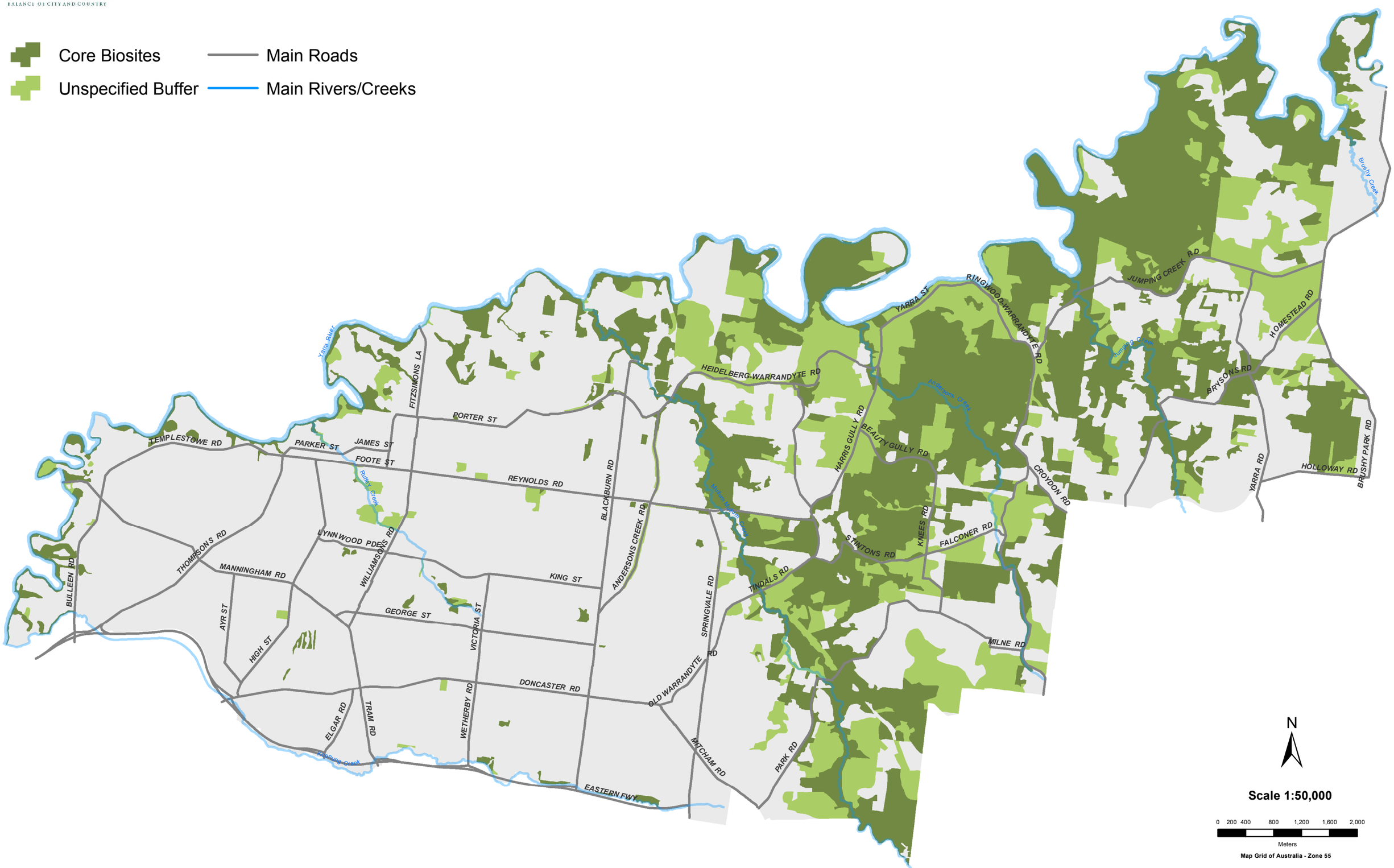
Scale 1:50,000

Map Grid of Australia - Zone 55

Produced by MANNINGHAM GIS/GPS
Date: 14/02/2013

Sites of Significance (Biosites)

Core Biosites
Unspecified Buffer
Main Roads
Main Rivers/Creeks



N

Scale 1:50,000

0 200 400 800 1,200 1,600 2,000
Meters

Map Grid of Australia - Zone 55

Produced by MANNINGHAM GIS/GPS
Date: 14/02/2013