



# Tindals Wildflower Reserve

## Management Plan



September 2012  
Manningham City Council



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## EXECUTIVE SUMMARY

The Tindals Wildflower Reserve is a special remnant of significant bushland with native orchids the most notable feature. The Reserve is located close to the middle of the City of Manningham on a ridgeline between the Mullum Mullum and Andersons Creeks at the intersection of the Heidelberg-Warrandyte Road and Tindals Road. Tindals Wildflower Reserve study area includes adjacent areas of bushland comprising Crown and Council land and a small parcel of freehold land owned by VicRoads.

The Tindals Wildflower Reserve Management Plan outlines recommendations for the future use, development, management and maintenance of the reserve and associated bushland areas based on an analysis of the Study area and feedback from user groups and the local community. The Management Plan provides the basis for new capital works funding to maintain and improve the Reserve and associated bushland over the next five to ten years.

Manningham's Public Open Space Strategy (currently under review) identifies Tindals Wildflower Reserve's flora and fauna function catering to a Regional catchment as it attracts visitors beyond the local area. It is identified as being of State conservation significance in the Manningham Biosites Sites of (Biological) Significance Review (2004). In the *Bushland Management Strategy for Council Managed Land (2012)* it is assigned a very high (VH) management priority.

Council's vision for Tindals Wildflower Reserve is to preserve the natural habitat and biodiversity values as an intact unit for nature appreciation, passive relaxation, environmental education and research and to ensure the long term integrity of the area is protected.

A set of objectives has been developed to achieve the vision for Tindals Wildflower Reserve, which provide a basis for the implementation plan.

The objectives of the Tindals Wildflower Reserve and associated bushland areas are:

### **Objective 1: Management Partnerships**

Rationalize land tenure and co-ordinate management by adopting a holistic approach to environment, weed, pest and fire management through unified and integrated management with other agencies and the local community.

### **Objective 2: Natural Environment**

Protect and enhance the biodiversity and conservation values of vegetation communities and flora and fauna species and extend the remnant vegetation communities providing a habitat link between areas of high conservation value.

### **Objective 3: Cultural Heritage**

Recognise and protect archaeological sensitive areas

#### **Objective 4: Landscape Values**

Maintain and enhance landscape values.

#### **Objective 5: Visitor Experiences and Recreation**

Provide low key sustainable and managed access for visitors to appreciate the significant values, learn about natural environment and experience the tranquillity in a natural setting, and to monitor recreational use to ensure the natural, cultural and landscape values are protected.

#### **Objective 6: Infrastructure and Facilities**

Limit additional infrastructure to path upgrades, fencing where necessary and signage and ensure that any future planning of the Main Yarra Trail extension to Warrandyte takes into account the natural, environmental and cultural values of the area.

#### **Objective 7: Community Awareness and Involvement**

Encourage community awareness of the significant natural features and foster ongoing partnerships in relation to environmental management, protection and restoration of the Tindals Wildflower Reserve and associated bushland areas.

The following key actions recommended in the Management Plan include:

- Continue to improve the ecological integrity of the Tindals Hill Biosite habitat with integrated environmental management, weed and pest control programs;
- Maintain the low impact bushland walking paths within the reserve and provide managed access for visitors to appreciate the significant natural values and experience tranquillity in a natural setting;
- Provide new signage and seating to enhance visitor amenity;
- Continue to prohibit dogs within the Tindals Wildflower Reserve and prohibit dogs within the Diane Court bushland;
- Develop co-operative arrangements with the local community and other agencies including Department of Sustainability and Environment and VicRoads; and
- Investigate undergrounding power lines in the southern part of the reserve.

# **PART ONE**

## **Management Plan Report**

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# 1 BACKGROUND

## 1.1 Introduction

The Manningham open space network covers 19.8 km<sup>2</sup> and represents 17 per cent of the area of the municipality. It comprises over 300 parks and reserves and includes an extensive trail network. The City has one of the largest networks of parks and open space in Metropolitan Melbourne.

The Tindals Wildflower Reserve study area is situated 22 kilometers from Melbourne and is a special remnant of significant bushland with its orchid populations the most notable feature. It is situated approximately three kilometers southwest of Warrandyte Township and is located close to the middle of the municipality on a ridgeline between the Mullum Mullum and Andersons Creeks at the intersection of the Heidelberg-Warrandyte Road and Tindals Road in Warrandyte. Refer Figure 1 for location of study area within Manningham.

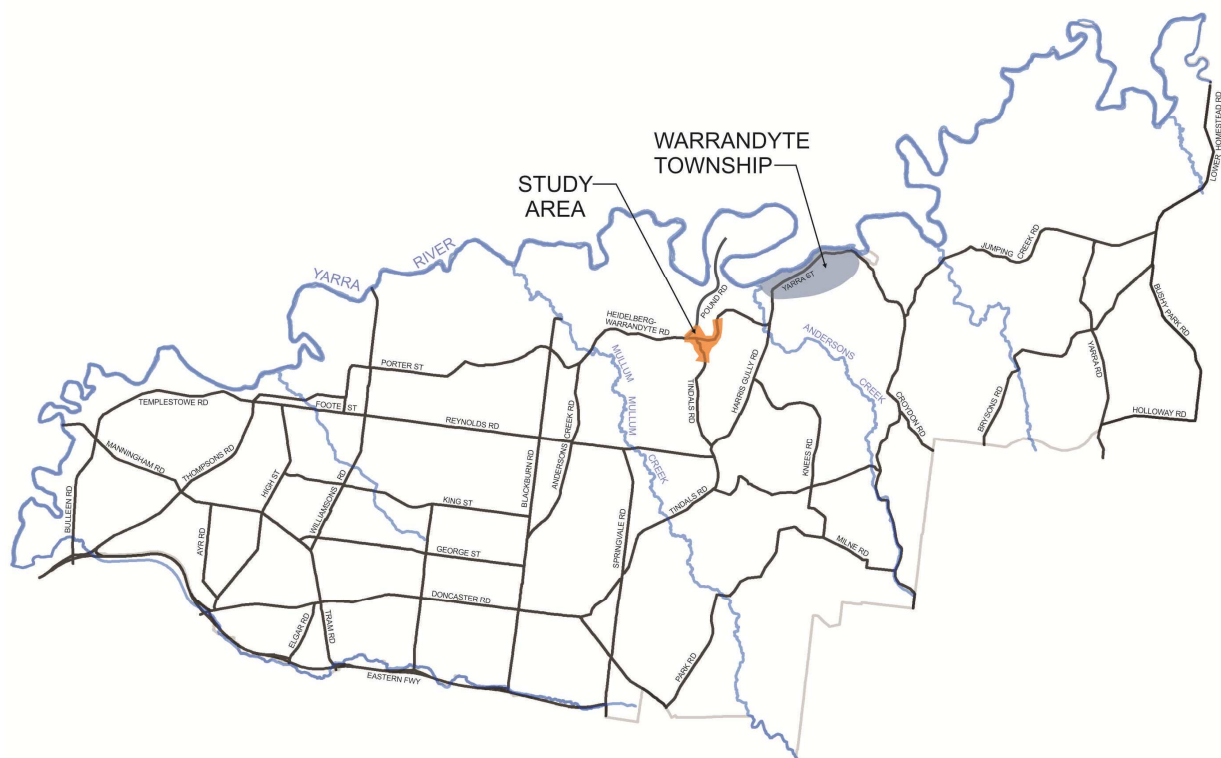


Figure 1: Locality Map

*Manningham's Public Open Space Strategy* (currently under review) identifies Tindals Wildflower Reserve's flora and fauna function catering to Regional catchment as it attracts visitors beyond the local area. It is classified as being of State Conservation significance in the *Manningham City Council Sites of (Biological) Significance Review (2004)*. In the *Bushland Management Strategy (2012)* it is assigned a very high (VH) management priority.



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Particular interest in the Reserve arose in the early 1950s when naturalist Jean Galbraith and Francis Wordell declared it the prime site for wildflowers between Springvale and Warrandyte Roads. Twenty pounds was raised to have the reserve fenced to keep stock out and to limit its use as a short cut between Tindals and Melbourne Hill Roads. The northeast section of the reserve comprising the road reserve was annexed to the Reserve in 1976, well after the original gazettal in 1910.

The Reserve is of long standing value and interest to plant specialty groups, photographers, naturalists, artists and the general public with an interest in nature appreciation and environmental education and is still used in research projects on flora.

The Tindals Wildflower Reserve Management Plan is structured in two parts. Part One provides the background and vision for the Tindals Wildflower Reserve and includes a set of objectives and recommendations on how to protect and enhance the Reserve. Part Two provides the detailed information and research which has informed the Management Plan.

## **1.2 Purpose**

The purpose of Tindals Wildflower Reserve Management Plan is to provide a preferred future vision for the use and management of the Reserve and the associated bushland areas. It will be used as a basis to rationalise the land management arrangements and for new capital works funding to protect and improve the natural and biodiversity values of the area for community benefit over the next five to ten years.

During the life of this plan, the Tindals Wildflower Reserve and associated bushland areas will be managed to enhance their natural, cultural and landscape values and encourage ongoing community connections and involvement in management.

## **1.3 Land Tenure and Management Responsibilities**

The total area of the Tindals Wildflower Reserve study area is 6.87 hectares and is held in various land tenures and is split in two main sections by Heidelberg-Warrandyte Road. Currently Council maintains all of Tindals Wildflower Reserve and associated bushland areas; however, there is no formal agreement for Council to manage the unreserved Crown land and VicRoads freehold land parts of the study area.

A primary aim of this Management Plan is to rationalise land tenure to enable co-ordinated management to ensure that Tindals Wildflower Reserve and associated bushland areas are formally managed as one unit by Council.

The Tindals Wildflower study area is shown in Figure 2.

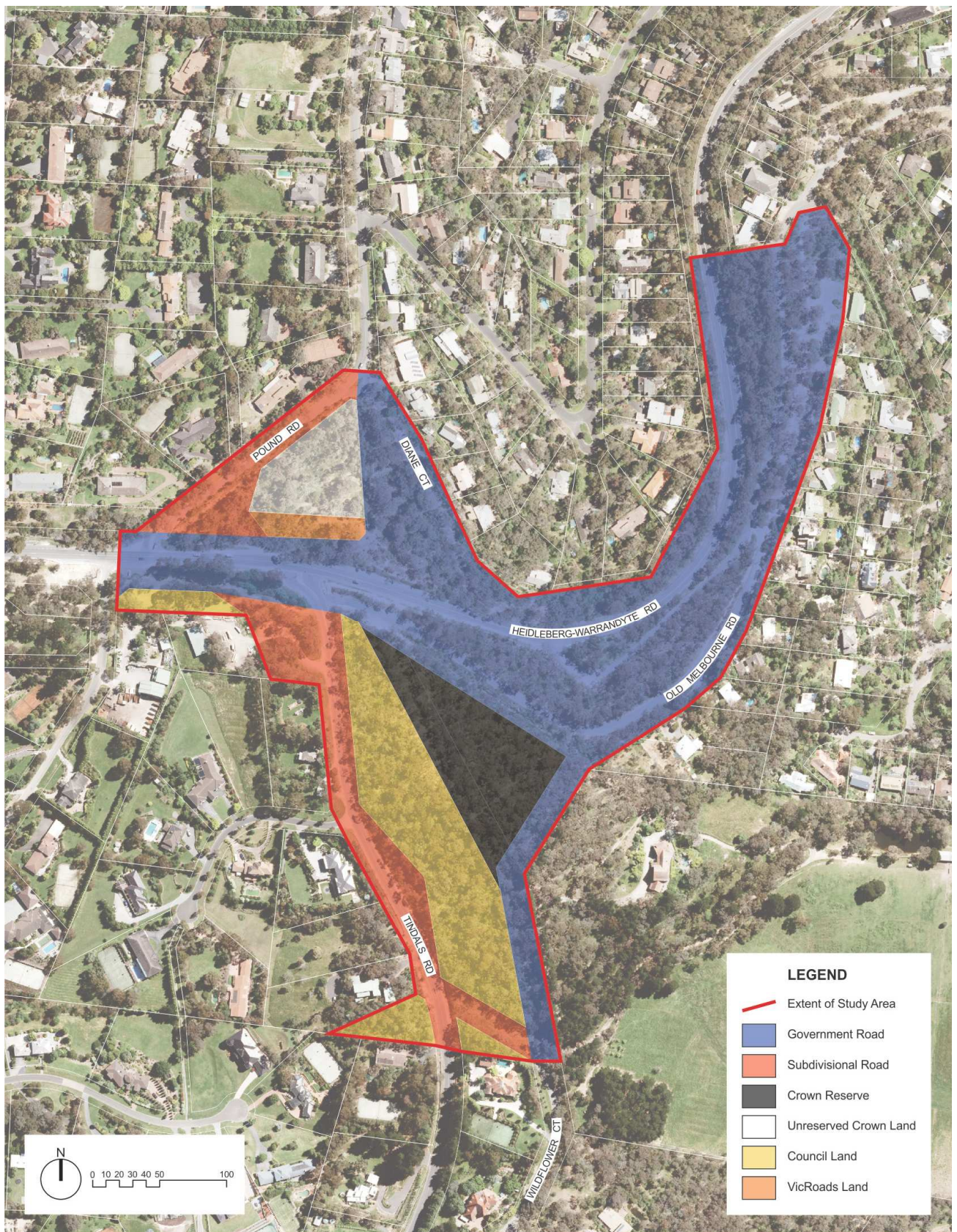


Figure 2: Study Area and Land Tenure

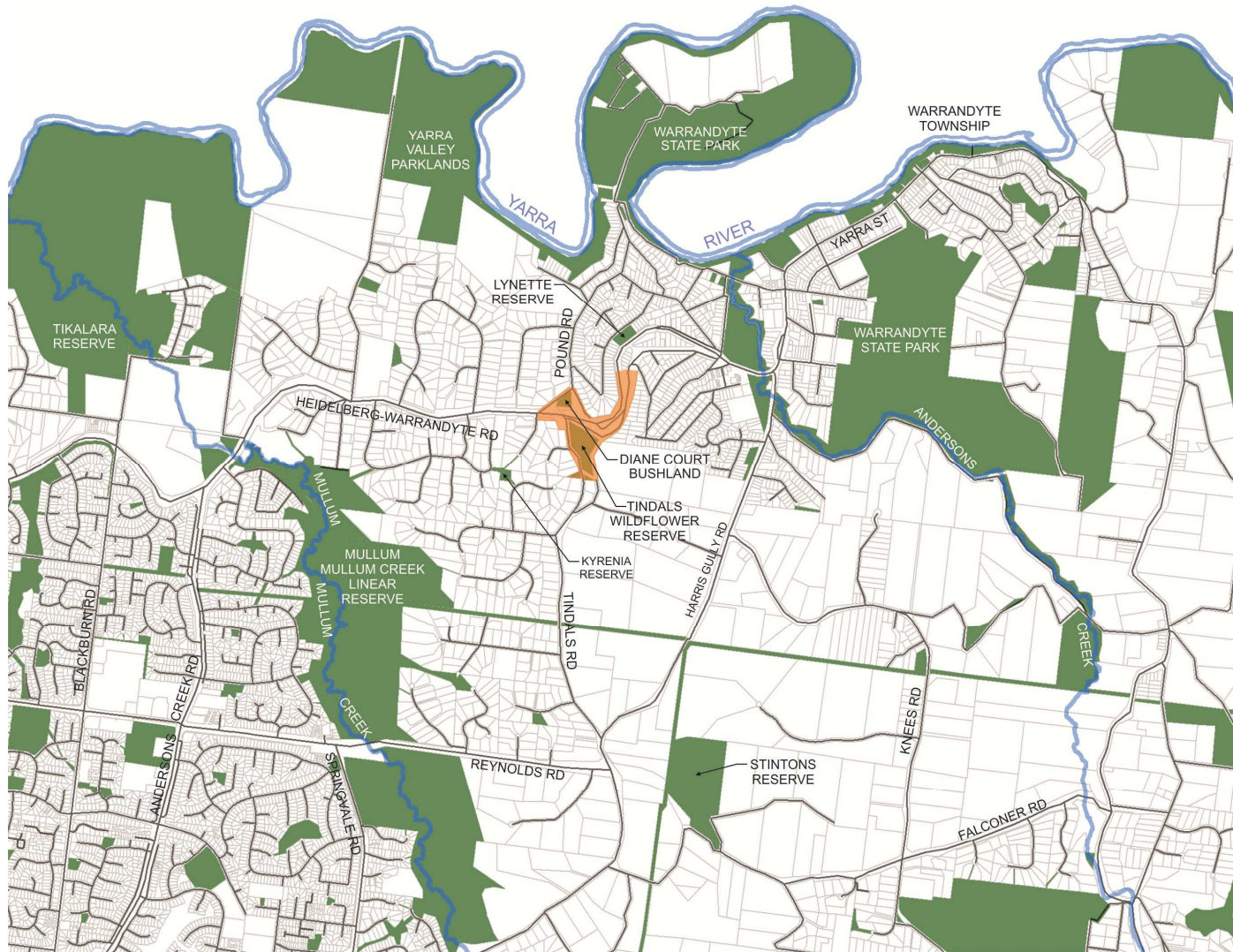


Figure 3: Regional Context Map

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## 1.4 Regional Context

Tindals Wildflower Reserve is part of the broader public open space network within Manningham. The Warrandyte area has substantial parkland and bushland areas which are valuable biodiversity assets, providing ecosystem services and landscape amenity as well as many opportunities for nature based recreation in a natural setting.

Major open space areas include Yarra Valley Parklands and Warrandyte State Park, which are situated along the Yarra River, approximately 400 metres away and to the west is Mullum Mullum Creek Linear Park. Smaller reserves include Lynette Reserve located within the residential area north of the Study area, which is a designated dog off-lead reserve well used by the local community and Kyrenia Court Reserve east of the study area, which provides important pedestrian access within the low density subdivision to Tindals Wildflower Reserve.

Open space areas near to Tindals Wildflower Reserve and associated bushland areas are shown in Figure 3.

## 1.5 Surrounding Community

The City of Manningham is expected to experience small to moderate population growth (an annual average of 0.8%) in the period to 2026, mainly associated with infill and medium density residential development. Overall an increase in the retirement years is forecast. However, younger population profiles are likely in areas of new and renewed residential development.

Until the 1970s and 1980s, Warrandyte remained a small township. Development commenced when large areas were released for low density residential development, with some areas of Warrandyte remaining as rural and rural residential. Closer to the Warrandyte Township the area contains houses in semi-rural bush settings. The area has substantial parkland including bushland, which contributes to the unique character of Warrandyte attracting families seeking a rural residential lifestyle.

Warrandyte is a relatively affluent suburb, where more than a quarter of all households comprise five or more people. In 2006, the combined resident population of the Warrandyte Low Density, the Warrandyte Township and surrounding Green Wedge was 6,284 with a low population density of 3.49 people and 2.67 people per hectare respectively, well below the Manningham average of 9.52 people per hectare.

The age profile reflects a mature family profile with families with older children dominant. Warrandyte is expected to have a stable population over the next 20 years with only a marginal increase 0.24% per annum. By 2031, the population aged 60+ is expected to rise to 19.9%. Even though small decreases in the younger population are expected Warrandyte will retain a typical family pattern of parents in their 40s and 50s with teenage children.

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Open space considerations in Warrandyte are likely to be driven by the needs of mature families with teenagers and retirees, but also the sparse nature of settlement, and hilly terrain requiring a car to get to most places.

## **1.6 Identity and Landscape Character**

Tindals Wildflower Reserve study area is set in the urban-bush interface. It is characterised by an enclosed bushland setting surrounded by rural landscapes with large rural residential properties, remnant agricultural properties and residential bush blocks. The hill top bushland of Tindals Wildflower Reserve and the opposite Diane Court bushland connect to bushland along the winding descent of Heidelberg-Warrandyte Road into Warrandyte Township. The landscape setting provided by Tindals Wildflower Reserve bushland area is an essential component of the character of Warrandyte.

Immediately north to northeast of the study area are established environmentally significant residential areas along Lynette Ave and Karen Court located north of Heidelberg and Warrandyte Road and to the south around Melbourne Hill and Houghton Roads. These areas contain indigenous vegetation which provide an additional buffer habitat that supports the ecological integrity of Tindals Hill Biosite core habitat.

## **1.7 Methodology**

The process for developing the Management Plan included the following stages:

- Stakeholder consultation;
- Determine land ownership and management;
- Consideration of all relevant policies, strategies and guidelines;
- Community Voice questionnaire;
- Review and analysis of existing use and management; and
- Internal meetings with officers from the Council units, including Parks and Recreation, Engineering and Technical Services, Health and Local Laws and Community Planning and Engagement.

On the 26 June 2012 the draft Management Plan was placed on public exhibition for six weeks which included:

- Circulation of the draft Management Plan to people who responded to the initial questionnaire and key park user groups;
- Advertisement of the public exhibition in the local newspapers and on Council's web site;
- A call for submissions;
- On site meeting on 20 August 2012 with owners of 3 Wildflower Court to discuss the formal closure of the section of Government Road; and
- On site meeting on 14 September 2012 with a botanist to discuss the impact of planned burns in the reserve.

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On 25 September 2012 Council endorsed the final Tindals Wildflower Management Plan following consideration of four submissions. Recommendations in the Management Plan will be implemented through Council's capital works program and other Council processes.

## **2 Vision and Objectives**

The following vision and objectives have been developed for Tindals Wildflower Reserve Management Plan.

### **Vision**

Council's vision for the Tindals Wildflower Reserve is to preserve the natural habitat and biodiversity values as an intact unit for nature appreciation, passive recreation, environmental education and research to ensure the long term integrity of the area is protected. Seven objectives have been developed to guide the management of the Reserve.

### **Objective 1: Management Partnerships**

Rationalize land tenure and co-ordinate management by adopting a holistic approach to environment, weed, pest and fire management through unified and integrated management with other fire and land management agencies and the local community.

### **Objective 2: Natural Environment**

Protect and enhance the biodiversity and conservation values of vegetation communities and flora and fauna species and extend the remnant vegetation communities providing a habitat link between areas of high conservation value.

### **Objective 3: Cultural Heritage**

Recognise and protect archaeological sensitive areas

### **Objective 4: Landscape values**

Maintain and enhance landscape values.

### **Objective 5 Visitor Experiences and Recreation**

Provide low key sustainable and managed access for visitors to appreciate the significant values, learn about natural values and experience the tranquillity in a natural setting and monitor recreational use to ensure the natural, cultural and landscape values are protected.

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## **Objective 6: Infrastructure and Facilities**

Limit additional infrastructure to path upgrades, fencing where necessary and signage, and ensure that future planning of the Main Yarra Trail takes into account the natural, environmental and cultural values of the area.

## **Objective 7: Community Awareness and Involvement**

Encourage community awareness of the significant natural features and foster ongoing partnerships in relation to environmental management, protection and restoration of the Tindals Wildflower Reserve and associated bushland areas.

## **3 Recommendations**

### **3.1 Implementation Plan**

Table 1 provides a summary of all actions contained in the Tindals Wildflower Reserve Management Plan. They have been grouped under the objectives and include a priority rating and list the Council Unit responsible for implementation. For those recommendations which have a capital and operational annual cost this is included.

The proposed development works are to be undertaken in 3 stages which reflect the priority of works. The cost of Stage 1 and 2 are contained within the current five year Capital Works Program, however Stage 3 is beyond the funding in the Capital Works program for the next five years and therefore the works could take a considerable time to implement unless external funds become available.

Refer to Figure 4 Tindals Wildflower Reserve Management Plan Overview.

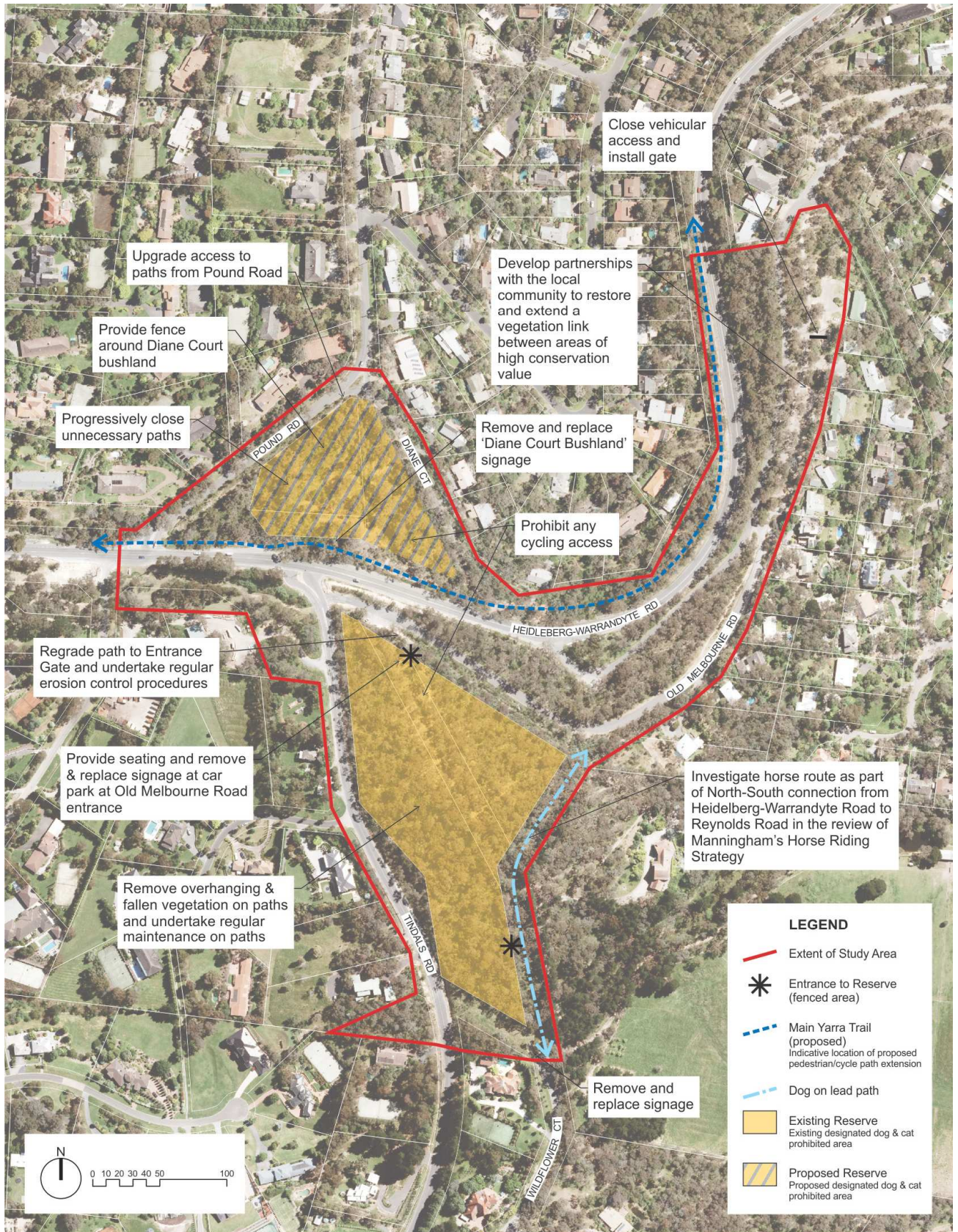


Figure 4: Tindals Wildflower Reserve - Overview



Table 1 Recommendations and Resource Implications

PR: Parks and Recreation Unit  
HLL: Health and Local Laws Unit

EEP: Economic and Environmental Planning Unit  
STP; Strategic Planning

Rec. No.	Recommendation	MCC Unit	Stage 1 (\$)	Stage 2 (\$)	Stage 3 (\$)	Operational (\$ per annum)
<b>Objective 1: Management Partnerships</b> Rationalize land tenure and co-ordinate management by adopting a holistic approach to environment, weed, pest and fire management through unified and integrated management with other agencies and the local community.						
1	All Council land, Crown land, Government and subdivision roads and Vic Roads freehold land within the Tindals Wildflower Reserve study area be managed as one bushland area by Manningham City Council.	PR				
2	Council, in consultation with Department of Sustainability and Environment (DSE), commence the process to formally close the bushland area of the Diane Court road reserve (as shown on Figure 5) and incorporate this land into the adjoining Crown land parcel (Crown Allotment 7A2 Parish of Warrandyte).	EEP				
3	Council, in consultation with the Department of Sustainability and Environment, commence the process to formally close the northern section of the unmade Government Road (on the east side of the Crown land component of Tindals Wildflower Reserve) from the existing southwest gateway entrance from Lot 217374K and incorporate this land into the adjoining Crown land parcel.(Refer Figure 5).	EEP				

Rec. No.	Recommendation	MCC Unit	Stage 1 (\$)	Stage 2 (\$)	Stage 3 (\$)	Operational (\$ per annum)
4	Council write to DSE to request becoming Committee of Management for the unreserved Crown land described as Crown Allotment 7A2 Parish of Warrandyte, the discontinued sections of Government Road as described in recommendations 2 and 3, and that this land be incorporated into Tindals Wildflower Reserve.	EEP				
5	Council close the section of disused subdivision road at the southern end of Tindals Wildflower Reserve, with provision for utility easements (as shown on Figure 5) and include this parcel of land in the adjoining Council reserve.	EEP, ETS				
6	Continue to liaise with VicRoads to ensure co-ordinated management of the road reserve designated in the Manningham Planning Scheme as Road Zone and enter into an agreement with VicRoads for the Council management of 2-10 Pound Road.	EEP, PR				
7	To ensure consistency all existing or new Council freehold land or existing or new reserved Crown reserves within the Tindals Wildflower Reserve be included in the Public Conservation and Resource Zone.	EEP				

Rec. No.	Recommendation	MCC Unit	Stage 1 (\$)	Stage 2 (\$)	Stage 3 (\$)	Operational (\$ per annum)
8	To ensure consistency any remaining road reserves that are currently zoned Public Conservation and Resource Zone should be rezoned to the most appropriate land use zone.	EEP				
9	Plan effective and integrated fire management planning for the reserve and associated bushland areas and progressively implement proposed actions and treatments, where appropriate, in the Bushfire Prevention and Preparedness Plan (2009) for Tindals Wildflower Reserve as shown in Figure 8 and outlined in Appendix 6.	PR	ongoing			8,000
<p>Objective 2: Natural Environment</p> <p>Protect and enhance the biodiversity and conservation values of vegetation communities and flora and fauna species and extend the remnant vegetation communities providing a habitat link between areas of high conservation value.</p>						
10	Continue to improve the ecological integrity of the Tindals Hill biosite habitat with integrated environmental management, weed and pest control programs.	PR				
11	Ensure all removal of dead material (dead shrubs and logs) for wildfire prevention and preparedness and for the safety of path users does not go beyond what is necessary so that the environmental values of the area are protected.	PR				
12	Maintain, rehabilitate and, where necessary, enhance bushland areas in accordance with the management zones as identified in Section 4.4 and	PR	\$14,370	\$14,370	\$14, 370	\$\$14,370

Rec. No.	Recommendation	MCC Unit	Stage 1 (\$)	Stage 2 (\$)	Stage 3 (\$)	Operational (\$ per annum)
	shown on Figure 6.					
13	Undertake a habitat hectare assessment in accordance with the Bushland Management Strategy (2012) implementation.	EEP				
14	Manage the Reserve through an adaptive management process, informed by monitoring and evaluation of fauna and flora habitat, which would deploy a suite of management tools, that may include fire. The application of fire would be responsive to and appropriate for local conditions and applied at the time, frequency and intensity required to maximise biodiversity.	PR, EEP				
15	Notify cat owners whose cats are found in the Reserve of the need to contain them to their properties at all times.	PR, HLL	ongoing			
Objective 3: Cultural Heritage Recognise and protect archaeologically sensitive areas.						
16	Any proposed development, including construction of a walking trail, within the area of cultural heritage sensitivity will require a Cultural Heritage Management Plan.	EEP				
Objective 4: Landscape Values Maintain and enhance landscape values.						
17	Advocate for minimizing the visual impact of adjoining development on significant landscape, environmental and cultural values of Tindals	EEP, SP				

Rec. No.	Recommendation	MCC Unit	Stage 1 (\$)	Stage 2 (\$)	Stage 3 (\$)	Operational (\$ per annum)
	Wildflower Reserve.					
18	Ensure seating and the size and design of signage complement the natural bushland character of the Reserve.	EEP				
19	Investigate undergrounding power lines along Melbourne Hill Road immediately north of existing fenced Tindals Wildflower Reserve and in the disused subdivision road at the southern end of Tindals Wildflower Reserve.	EEP, ETS				
20	Investigate removal or undergrounding power lines in the Diane Court bushland.	ETS		500		
<p>Objective 5: Visitor Experiences and Recreation            Continue to provide low key sustainable and managed access for visitors to appreciate the significant values. Learn about natural values and experience the tranquility in a natural setting and monitor recreational use to ensure the natural, cultural and landscape values are protected.</p>						
21	Manage the impact of sustainable low key recreational activities on Tindals Wildflower Reserve for safe and enjoyable visitor use to ensure and landscape, cultural and environmental values of the area are protected.	EEP, PR				
22	Prohibit recreational activities which utilise the bushland areas, such as BMX bike riding and mountain bike riding in Tindals Wildflower Reserve to prevent negative environmental impacts on vulnerable significant vegetation.	PR, HLL				
23	To protect high conservation areas, Tindals Wildflower Reserve will remain a <i>Designated Dogs and Cats Prohibited Area</i> and will be extended to	HLL				

Rec. No.	Recommendation	MCC Unit	Stage 1 (\$)	Stage 2 (\$)	Stage 3 (\$)	Operational (\$ per annum)
	include Diane Court Bushland as shown on Figure 4 as a <i>Designated Dogs and Cats Prohibited Area</i> . Notwithstanding dogs on lead will be allowed along the eastern boundary of the reserve on the path outside the fenced areas shown on Figure 4.					
24	Prepare an amendment to the Council Order under the Domestic Animals Strategy section (2) of the <i>Domestic Feral and Nuisance Animals Act 1994</i> to implement dog controls for Tindals Wildflower Reserve.	HLL				
25	Investigate horse route on the eastern boundary of Tindals Wildflower Reserve located outside the fenced area from Wildflower Court to Melbourne Hill Road as part of a north-south connection from Heidelberg - Warrandyte Road to Reynolds Road in the review of Manningham's Horse Riding Strategy.	EEP				
<p><b>Objective 6: Infrastructure and Facilities</b>  Limit additional infrastructure to path upgrades, fencing, where necessary, and signage, and ensure that any future planning of the Main Yarra Trail extension to Warrandyte takes into account the natural, environmental and cultural values of the area.</p>						
26	Maintain existing low impact bushland paths within the fenced area of the Reserve and undertake minimal clearing and the removal of overhanging eye level branches on paths under the supervision of Council's Bushland Co-ordinator. Monitor incremental path widening and undertake erosion control measures where appropriate.	EO, PR				
27	Upgrade steep and eroding sections of the eastern	EO, PR	7,000			

Rec. No.	Recommendation	MCC Unit	Stage 1 (\$)	Stage 2 (\$)	Stage 3 (\$)	Operational (\$ per annum)
	path alongside Tindals Wildflower Reserve.					
28	Upgrade existing steep path at the corner of Pound Road and Diane Court including steps and a handrail.	EO, PR	4,000			
29	Upgrade the path at the existing Melbourne Hill Road entrance to Tindals Wildflower Reserve.	EO, PR	1,000			
30	Progressively close unwanted paths within the Diane Court bushland, having regard to retaining paths which provide direct community access to public transport such as bus stops.	PR				
31	Provide seating outside the fenced area of Tindals Wildflower Reserve at the carpark entrance on Melbourne Hill Road.	EEP, PR		3,200		
32	Remove and replace old signage with new signs at major entrances to the Reserve as shown in Figure 4, which provide directional and regulatory information, including dog and horse controls and explain the need to protect the significant vegetation from the effect of concentrated foot traffic, particularly on plants which grow along the edge of paths.	EEP		9,000		
33	Install a vehicular barrier including a gate on the unmade section of Melbourne Road (near 30 Melbourne Hill Road) as shown on Figure 4 to prevent vehicular access north along this section to the sealed section of Melbourne Hill Road.	EEP, PR	3,500			
34	Provide a new gate with adjoining bollards at the southern end of Tindals Wildflower Reserve.	EEP, PR	4,000			

Rec. No.	Recommendation	MCC Unit	Stage 1 (\$)	Stage 2 (\$)	Stage 3 (\$)	Operational (\$ per annum)
35	Provide a fence around the Diane Court bushland including a vehicle gate and three pedestrian gates.	EEP, PR			23,000	
36	Only permit rural style or maximum 1.8m chain mesh open fencing of residential boundaries.	PR	EEP			
37	Following completion of capital works development, allocate additional Council resources each year from Council's operational budget for path maintenance.					
38	Any future detailed design of the Main Yarra Trail extension to Warrandyte will need to consider the landscape, environmental and cultural values of the study area.	EEP, ETS (Parks Vic)				
<b>Objective 7: Community Awareness and Involvement</b> Encourage community awareness of the significant natural features and foster ongoing partnerships.						
39	Develop collaborative partnerships with the adjoining residents and the local community in relation to ongoing management of Tindals Wildflower Reserve.	EEP				
40	Improve remnant bushland habitat in areas along Old Melbourne Road by working with adjoining residents to discuss fire management measures and reducing vehicular traffic areas.					
41	Liaise with user groups and local schools to improve awareness and appreciation of park values and management leading to increased opportunities for environmental education and ongoing community involvement associated with Tindals Wildflower Reserve.	EEP, PR				



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Rec. No.	Recommendation	MCC Unit	Stage 1 (\$)	Stage 2 (\$)	Stage 3 (\$)	Operational (\$ per annum)
42	Investigate in co-operation with the local community to form a Friends group for Tindals Wildflower Reserve.	EEP, PR				
	<b>TOTAL MANAGEMENT PLAN COST</b>		\$33,870	\$27,070	\$37,370	\$22,300



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## **PART TWO**

# **Detailed Information and Research**

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## 4 Detailed Information and Research

### 4.1 Policy context

Tindals Wildflower Reserve Management Plan has been developed in the context of State Government and Council policies and strategies. The key policies are discussed below and other relevant planning strategies and policies considered as part of this Management Plan are listed in Appendix 1.

The Tindals Wildflower Reserve and associated bushland areas form part of Manningham's Open Space network. The planning and management of the network is guided by Manningham City Council's Public Open Space Strategy (currently being reviewed) which aims to bring social, health, environment, urban liveability, cultural and economic benefits to Manningham's community. As classified in the Strategy Tindals Wildflower Reserve has a flora and fauna function and caters to Regional

Under Manningham's Public Open Space Strategy (POSS), most of the study area is located east of Tindals Road and within the *Warrandyte Township and Green Wedge Precinct*, which includes the eastern part of the suburb of Warrandyte and residential areas in semi-rural bush settings. A small section of the study area is located west of Tindals Road and Dianne Court within the *Currawong Precinct*, which includes the western part of the suburb of Warrandyte typified by low density rural residential housing.

The vision of the POSS is to provide an easily accessible and well connected open space network recognizing that a healthier community is strongly related to a healthier environment. Access to the natural environment improves health and well-being and research has shown that access to green spaces prevent disease and help people recover from illness. Manningham City Council's Active for Life Recreation Strategy 2010-25 (2010) identified that walking was the most popular and accessible recreation activity identified by Manningham residents. Increased participation in walking should be encouraged for all residents for transport and recreation leading to a healthier community.

The State Government's *Linking People and Spaces: A Strategy for Melbourne's Open Space Network (2002)* provides for the long term planning of open space and protection of areas of environmental significance within metropolitan Melbourne. Manningham is located in the eastern region. The key focus is to enhance existing facilities at a range of sites, to protect open space areas of environmental significance from increasing visitor numbers and pressure for recreation facilities and enhance vegetation links, especially along streams. The Strategy identifies the importance of the Main Yarra trail extension to Warrandyte. A longer term action is to 'Extend the Main Yarra Trail from Pettys Orchard to Warrandyte and then onto Watsons Creek'.

There will be a need to balance the protection and enhancement of existing vegetation as a habitat for native fauna in the study area in the future planning of the

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Main Yarra Trail connection to Warrandyte. Planning for the future trail will need to meet the requirements of Victoria's Native Vegetation Management- A framework for Action Strategy for the protection of native vegetation and biodiversity. The framework introduces the concept of 'Net gain' to redress the loss of Indigenous vegetation as is approved through the Victorian Planning Schemes.

The goal of the framework is for the protection of native vegetation and biodiversity and for achieving a reversal across the entire landscape, of the long-term decline in the extent and quality of native vegetation leading to a net gain. Net gain is the outcome for native vegetation and habitat where overall gains are greater than overall losses and individual losses are avoided, where possible. The framework applies when a planning permit is required for the removal of native vegetation and has implication for the shared path alignment. Any works requiring removal of vegetation will be subject to Net Gain assessment.

## **4.2 Land Tenure and Management Responsibilities**

The Tindals Wildflower Reserve study area is held in various land tenures and is split in two main sections by Heidelberg-Warrandyte Road. To the south the study area is transected by Melbourne Hill Road and includes sections of Government Road Reserve and Tindals Wildflower Reserve (fenced area) which comprises Crown and Council land. Tindals Road is the western boundary and a section of Government Road forms the eastern boundary, which extends north from Wildflower Court and extends as part of the road reserve between Heidelberg-Warrandyte and Melbourne Hill Roads, running roughly northeast towards Goldfields Plaza.

The former Tindals Road Reserve is a very small reserve located on the other side of Tindals Road to the Wildflower Reserve at the southern end of the study area and has been included into the study area.

Diane Court bushland north of Heidelberg-Warrandyte Road includes a parcel of Crown Land with a small area of freehold land abutting the Heidelberg-Warrandyte Road owned by VicRoads and several road reserves comprising sections of Government and subdivision roads situated along Pound and Heidelberg-Warrandyte Roads. All these areas are currently formally and informally managed by Manningham City Council as part of the greater Tindals Wildflower Reserve.

The Tindals Wildflower Reserve study area is shown in Figure 2.

Of the total area of public open space to be managed as part of the Tindals Wildflower Reserve complex, is ownership of the 4.42 hectares, comprising:

- 1.65 hectares in three parcels of Council freehold open space land (all on the south side of Heidelberg-Warrandyte Road);
- 0.94 hectares of Crown Land reserved as a site for public purposes (Tindals Wildflower Reserve) under the control of Manningham City Council as Committee of Management;
- 0.48 hectares of unreserved Crown Land under the responsibility of the Department of Sustainability and Environment (Diane Court bushland);

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- 0.32 hectares of Council freehold tree reserve along the Heidelberg-Warrandyte Road;
  - 0.14 hectares VicRoads freehold land forming part of Diane Court bushland;
  - 0.76 hectares of existing unmade Government Road that the Management Plan proposes to be discontinued and become Crown Land reserved for public purposes; and
  - 0.13 hectares of existing unmade Council Road that the Management Plan proposes to be discontinued and become part of the adjoining Council owned Tindals Wildflower Reserve.

In addition the study area includes 2.45 hectares of Council maintained road reserve comprising:

- 1.57 hectares of road reserves along local roads; and
- 0.88 hectares of road reserve within the Road 1 Zone.

The total area of the Tindals Wildflower Reserve study area is 6.87 hectares.

Currently the Council manages Tindals Wildflower Reserve and associated bushland areas. However there is no formal agreement between Council and the Department of Sustainability and Environment to manage the unreserved Crown land and VicRoads freehold land.

A primary aim of this management plan is to rationalise land tenure to enable co-ordinated management to ensure that Tindals Wildflower Reserve and associated bushland areas are formally managed as one unit by Council.

In order to provide some consistency sections of Government Roads and a subdivision road will need to be closed and reclassified as reserved Crown Land as a site for public purposes to enable the appointment of the City of Manningham as Committee of Management.

Refer Figure 5 for proposed Government and Subdivision Road closures.

#### 4.2.1 3 Wildflower Court

The property at 3 Wildflower Court, Warrandyte is adjacent to the Government Road, which is located on the eastern boundary of Tindals Wildflower Reserve. The property comprises two lots and both titles have legal abuttal and access rights to the Government Road, which forms an extension of Wildflower Court and was informally closed to vehicle traffic more than 20 years ago. There is an existing walking track along the Government Road from the end of Wildflower Court to Melbourne Hill Road, which forms part of the Reserve.

The southern lot of 3 Wildflower Court is currently undeveloped and is accessed from Wildflower Court. The northern lot on which the house is located is currently accessed across the southern lot. While the current access to both lots is from the northern end of the constructed Wildflower Court., the only legal road frontage of the

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northern lot is to formally close part of the Government Road. Any construction within a Government Road would need to be undertaken in accordance with Council's requirements, including the possibility of obtaining a 'Road opening permit'.

The issues regarding practicality of access to the north and south along the Government Road were considered in consultation with the owner. Vehicular access to Melbourne Hill Road from the northern lot is heavily constrained by, steep topography, utilities and removal of significant vegetation.

The formal closure of the northern section of Government Road from the existing southwest gateway entrance of the northern lot is preferred. Future access to the northern lot would then extend south along the Government Road connecting to Wildflower Court, rather than the more difficult connection to Melbourne Hill Road.

### Recommendations

1. All Council land, Crown Land, Government and subdivision roads and VicRoads freehold land within the Tindals Wildflower Reserve study area be managed as one bushland area by Manningham City Council.
2. Council, in consultation with the Department of Sustainability & Environment (DSE), commence the process to formally close the bushland area of the Diane Court road reserve (as shown on Figure 5) and incorporate this land into the adjoining Crown Land parcel (Crown Allotment 7A2 Parish of Warrandyte).
3. Council, in consultation with the Department of Sustainability and Environment, commence the process to formally close the northern section of the unmade Government Road (on the east side of the Crown land component of Tindals Wildflower Reserve) from the existing southwest gateway entrance from Lot 217374K and incorporate this land into the adjoining Crown land parcel. (Refer Figure 5).
4. Council write to the Department of Sustainability and Environment to request becoming Committee of Management for the unreserved Crown Land described as Crown Allotment 7A2 Parish of Warrandyte, the discontinued sections of Government Road as described in recommendations 2 and 3, and that this land be incorporated into Tindals Wildflower Reserve.
5. Council close the section of disused subdivision road at the southern end of Tindals Wildflower Reserve, with provision for utility easements (as shown on Figure 5) and include this parcel of land in the adjoining Council reserve.
6. Continue to liaise with VicRoads to ensure co-ordinated management of the road reserve designated in the Manningham Planning Scheme as Road Zone and enter into an agreement with VicRoads for the Council management of 2-10 Pound Road.

### 4.3 Manningham Planning Scheme

The Manningham Planning Scheme provides a policy framework for the implementation of state and local policies affecting land use and development within

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the City of Manningham. Tindals Wildflower Reserve study area is contained within five Zones, seven Overlays and an area of Cultural Heritage Sensitivity in the Planning Scheme.

#### 4.3.1 Cultural Heritage Sensitivity

Dianne Court bushland, which comprises Crown Land and part of VicRoads freehold land north of the Heidelberg-Warrandyte Road falls within an area of Cultural Heritage Sensitivity for archaeological significance.

Areas of cultural heritage sensitivity are landforms and land categories that are generally regarded as more likely to contain Aboriginal cultural heritage. Cultural Heritage Management Plans are mandatory for listed impact activities such as shared paths as defined in the *Aboriginal Heritage Regulations 2007*.

#### 4.3.2 Planning Zones within the Study Area

Planning Zones within the study area are described below.

*Low Density Residential Zone (LDRZ)*. The purpose of this zone is to provide low density residential development on lots which, in the absence of reticulated sewerage, can treat and retain all waste water. This zone covers seven areas within the Study area, including:

- Three land parcels of Council land which should be rezoned from LDRZ to PCRZ;
- One land parcel of Crown land which should be rezoned from LDRZ to PCRZ
- One land parcel of VicRoads freehold land;
- Two sections of subdivision road, vested in Council under the Local Government Act. The area covered by the subdivision road at the southern end of the study area should be closed and ultimately rezoned from LDRZ to PCRZ; and
- A small section of Government Road managed by the Manningham City Council under the Local Government Act. The area is located on the eastern boundary of Crown Land within the Diane Court bushland, which should be closed and reclassified as reserved Crown Land as a site for public purposes and ultimately rezoned from Rural conservation Zone (RCZ) to PCRZ.

To ensure consistency all Council freehold land and any existing or new Crown reserves should be zoned from LDRZ to PCRZ.

*Road Zone Category 1 (RDZ1)*. This zone identifies significant existing roads and identifies land which has been acquired for a significant proposed road. The zone generally covers the road and road reserve along the Heidelberg-Warrandyte Road.

*Public Conservation and Resource Zone (PCRZ)*. The purpose of this zone is to protect and conserve the natural environment and natural processes for their historic, scientific, landscape, habitat or cultural values.



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The zone applies to:

- Most of Tindals Wildflower Reserve (fenced area);
- A small section of the road reserve within the Dianne Court bushland, which is part of a Government Road managed by Manningham City Council under the Local Government Act; and
- A small area of Government Road managed by Manningham City Council located Heidelberg-Warrandyte Road and between Melbourne Hill Road, which should be rezoned from PCRZ to R1Z.

*Rural Conservation Zone (RCZ).* The purpose of this zone is to protect the biodiversity of the area, including the natural environment and natural processes for their historic, archaeological and scientific interest, landscape, faunal habitat and cultural values. It also provides for agricultural uses consistent with the conservation of environmental and landscape values of the areas. The zone covers three small areas within the Study area including:

- Part of Melbourne Hill Road from Tindals Road to the northeast corner of Tindals Wildflower Reserve (fenced area);
- A small section of Crown land within the Tindals Wildflower Reserve (fenced area) which should ultimately be rezoned from RCZ to PCRZ; and
- The northern section of Government Road on the eastern boundary of Tindals Wildflower Reserve, which should be closed and reclassified as reserved Crown Land as a site for public purposes and ultimately rezoned from RCZ to PCRZ.

*Residential 1 Zone.* The purpose of this zone is to provide residential development at a range of densities with a variety of dwellings to meet the housing needs of all households. The zone covers a large section of Government Road managed by Manningham City Council between Tindals Wildflower Reserve and Houghton Road in the northeastern part of the study area.

#### 4.3.3 Planning Overlays within the Study Area

*Environmental Significance Overlay 2 (ESO2).* This overlay protects botanical and zoological significance, and maintains ecological processes and genetic diversity. The protection and enhancement of environmentally significant sites and strengthening of connecting habitat links will assist in the maintenance of biodiversity within the municipality and surrounding areas. The overlay applies to Council and Crown Land within the Tindals Wildflower Reserve (fenced area) and Crown Land and VicRoads freehold land with a small section of the subdivision road along Pound Road within the Diane Court bushland.

*Significant Landscape Overlay 1 (SLO1) Significant Landscape Areas.* The purpose of the overlay is to ensure that the visual impact of development is minimised and that the development of land and the removal of vegetation are not detrimental to the natural environment, character of the area, heritage values or any other environmental features or identified values. This overlay covers four land parcels

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generally located in the western part of the study area, including two parcels of Council land, one Crown land allotment and a parcel of VicRoads freehold land.

*Significant Landscape Overlay 2 (SLO2) Yarra Valley Backdrop.* The purpose of this Overlay is to protect along the Yarra River and nearby parkland from visual intrusion caused by inappropriate siting or appearance of buildings and works; protect and enhance the vista from the river, its banks and nearby parkland; and protect a sense of remoteness in the Yarra Valley. The overlay covers the road reserve bushland areas which are part of the Government Road located in the northeastern part of the study area and areas along the Heidelberg-Warrandyte Road.

*Significant Landscape Overlay 3. Environmental Residential Significant Landscape Areas.* The purpose of this overlay is to maintain and enhance the special bushland pine tree character of the environmental residential areas; ensure that development responds to the area's environmental characteristics; and protect and enhance the pattern of vegetation, landscape quality and ecosystems. The overlay covers most of the road reserve bushland areas within the Government Road along Melbourne Hill Road and Heidelberg-Warrandyte Road in the northeast section of the Study area.

*Significant Landscape Overlay 4 Non Urban Significant Landscape Area.* The purpose of this overlay is to ensure that the visual impact of development in non-urban area is minimised; and ensure that development of land and the removal of vegetation is not detrimental to the natural environment, non-urban character, heritage values or other environmental features or identified values within the area. The overlay covers sections the Government Road along Melbourne Hill Road located on the northern and eastern boundaries of Tindal Wildflower Reserve and part of the Crown Land within the Tindals Wildflower Reserve.

*Design and Development Overlay DDO3 Warrandyte Environmental Residential Overlay.* The purpose of this overlay is to maintain and enhance the special bushland and low-density character of the Warrandyte Township; maintain the vegetation dominated vistas and bushland character; and protect and enhance the pattern of vegetation, landscape quality and ecosystems. The overlay covers most of the bushland road reserves within the Government Road along Heidelberg- Warrandyte and Melbourne Hill Roads northeast of Tindal Wildflower Reserve.

*Bushfire Management Overlay.* The purpose of this overlay is to assist to strengthen community resilience to bushfire; ensure that the location design and construction of development considers the need to implement bushfire protection measures; and ensure development does not proceed unless the risk to life and property from bushfire can be reduced to an acceptable level. The overlay covers all of the study area except a small parcel of Council land located west of Tindals Road in the southern part of the study area.

#### 4.3.4 Proposed Planning Controls

The City of Manningham has prepared Amendment C54 which applies to all land in the municipality with identified environmental and landscape values. The purpose of

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the amendment is to protect Manningham's biodiversity and landscape area and rationalise the number of overlay controls applying to a particular property and to ensure that the provisions provide greater certainty and clarity leading to more consistent decision making. The amendment proposes to implement the findings and recommendations of key strategies that have been approved by Council being Manningham Biosites: Site of (Biological) Significance Review 2004; Manningham Monterey Pine and Cypress Tree Assessment 2003 and the Habitat Corridor Study and Threatened Species Study.

The proposed overlays which apply to Tindals Wildflower Reserve Study area include:

*Environmental Significant Overlay 2 (ESO2)* The amendment proposes to replace Schedule 2 (Areas of Botanical or Zoological Significance) to the Environmental Significance Overlay with a new Schedule 2 (Sites of Biological Significance) to the Environmental Significance Overlay. The proposed overlay applies to most of the study area south of Heidelberg-Warrandyte Road including Tindals Wildflower Reserve (fenced area) and sections of the Government Road on the northern and eastern boundaries of the reserve.

*Environmental Significant Overlay 3 (ESO3)* The amendment proposes to introduce a new Schedule 3 (Buffer Conservation Areas Supporting Sites of Biological Significance) to the Environmental Significance Overlay. The proposed overlay applies to all the land located on the north side of Heidelberg-Warrandyte Road. On the southern side the overlay covers small sections of the Government and subdivision roads located at the corner of Heidelberg-Warrandyte Road west of and including Tindals Road.

*Environment Significant Overlay 5 Environmentally Significant Urban Areas*  
The purpose of this overlay is to protect core habitat and buffer conservation areas and to conserve where possible enhance habitat for flora and fauna species recognised as threatened at the municipal, regional, state and federal level. The overlay applies to most of the road reserve bushland areas within the Government Road along Melbourne Hill Road east of Tindals Wildflower Reserve.

#### Recommendations

7. To ensure consistency, all existing or new Council freehold land or existing or new reserved Crown reserves within the Tindals Wildflower Reserve be included in the Public Conservation and Resource Zone.
8. To ensure consistency, any remaining road reserves that are currently zoned Public Conservation and Resource Zone should be rezoned to the most appropriate land use zone.

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## 4.4 Fire and Emergency Management

The management of fire is complex involving fire risk, fire behavior and ecological considerations. Fire management planning and response in the general area involves an integrated approach between Council and several agencies including the Country Fire Authority.

The majority of the Tindal Wildflower Reserve appears long unburnt by wildfire. However, a number of small controlled burns have been undertaken for the purpose of weed management and maintaining ecological health. The most recent planned burn was conducted at Diane Court bushland in April 2012

Vegetation management that contributes either directly or indirectly to fire management is undertaken by several sections within Council including the bushland crew, tree felling crew and mowing crew. Any hazard management needs to be sensitive to the ecological values of Tindals Wildflower Reserve and associated bushland areas.

Fire management was highlighted as an issue raised in the Tindals Wildflower Reserve Community Survey (2011). Several residents adjoining the reserve expressed concern of the proposed fire risk by the reserve.

*The City of Manningham Bushfire Prevention and Preparedness Plans (BPPPs) for Bushland Reserves, Context and Methodology (2009)* and its companion document, *Tindals Wildflower Reserve BPPP (2009)* have assessed six major areas of Council bushland Reserves/open space which pose a wildfire risk .

The BPPP prepared for Tindals Wildflower Reserve recommends fire management strategies, objectives and actions for the Reserve based on environmental considerations, risk analysis modelled on fire behaviour and scientific fuel based assessment considerate of asset protection and sound management practice. The Tindal's Wildfire Reserve BPPP has been prepared to inform the Tindals Wildflower Reserve Management Plan.

It is important to recognise that although bushland reserves such as Tindals Wildflower Reserve can be managed to limit the detrimental impacts of fire within and immediately surrounding them, the fire risk of bushland reserves cannot be eliminated. Management of bushland is only one determinant of wildfire outcomes in the wider community. A number of higher level treatments support fire management in reserves, including land use planning and building approval controls, generic community education, emergency response planning and arrangements and provision of recovery services.

### 4.4.1 Current Management

Some clearing and pruning of elevated fuel and trees occurs under the power lines along Pound Road and near Melbourne Hill Road, and there is a slashed power line

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easement adjacent to the southern boundary of the reserve between Wildflower Court and Tindals Road.

A section along the eastern Government Road reserve had elevated fuel removed in 2007 in response to a request by a neighbour. There appeared to be no other fuel management within the reserve aimed at moderating fire behaviour or protecting assets.

Blackberry, woody weed and *Smilax sp* control is conducted as required for ecological management purposes. A number of small controlled burns have been undertaken for the purpose of weed management and maintaining ecological health.

Road reserves adjacent to the reserve and residential properties are all subject to mowing with a tractor sidearm (approximately two metres in width) twice per year, once before the fire season and once during the season. Council is keen to work with the local community to undertake fire prevention works to ensure the ecological values of the bushland are protected.

Limited vehicle access, suitable for a small 4WD, is provided to the top of the hill via a walking track from the end of Wildflower Court. The reserve has good access around the perimeter via the public road network and the driveway to properties north of Wildflower Court, and through the centre of the reserve via Heidelberg-Warrandyte Road and Melbourne Hill Road. Vehicle access to Diane Court bushland is from the surrounding road network including Diane Court, Pound and Heidelberg-Warrandyte Roads.

The area surrounding Tindals Wildflower Reserve is reticulated with street hydrants at regular intervals. There is no static water supply within the reserve itself.

Figure 7 shows current Fire Management Works.

#### 4.4.2 Fire Management objectives

Fire management objectives and for Tindals Wildflower Reserve are:

- No person should suffer injury or lose their life from wildfire within the Reserve;
- 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.

#### 4.4.3 Principles

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Bushland fire management in the City of Manningham is underpinned by a set of fire management principles that articulate how fire risk is managed. These principles complement those which govern fire management on adjacent public land and are consistent with the Manningham City Council vision and values.

The principles are:

- Fire management planning must address the threat of wildfire and provide for the achievement of integrated land management objectives;
- Fire management planning must satisfy Council's legal requirements;
- Fire management activities will be undertaken within a risk management framework;
- Fire management will be based on sound data, evidence and analysis and consultation with key stakeholders;
- Fire management planning and activities must be undertaken in a participative manner where the responsibility for reducing the likelihood and consequence of wildfire is appropriately shared between Council and private landholders and managers in recognition that outcomes are maximised when Council and citizens work co-operatively to solve problems;
- Council's fire management planning will identify, assess and, as far as practical, mitigate potential environmental, social and economic risks associated with fire management on Council land. Fire management will aim to minimise impacts on natural and cultural values, where protection of human life and property is not compromised; and
- Council's fire management planning and activities will be monitored for effectiveness and efficiency, and reported to the community through normal Council procedures.

There are a number of strategies and actions to achieve the fire management objectives of Tindals Wildflower Reserve Bushfire Prevention and Preparedness Plan (2009), which are outlined in Appendix 6. Each strategy comprises a number of proposed actions that are progressively being implemented by Manningham City Council, other land management agencies and the community. Recommended fire management works which are progressively being implemented are shown in Figure 8.

#### 4.4.4 Fire Hazard

The reserve is set in the urban-forest interface with 37 buildings located adjacent to the reserve boundary. Fire behaviour was modelled across the reserve for extreme fire weather conditions of high temperature, dry air, an extended drought and strong northerly winds with a possible shift in the wind direction to the southwest. These conditions are thought to occur on average once in fifty years.

The modelling used the vegetation type, fuel hazard and topography of the site and the Grassy Dry Forest within the reserve was sampled to assess the amount of fine fuel. The test fires were modeled using conditions in relation to the fires of Ash Wednesday - 16 February 1983 and Black Saturday - 7 February 2009, like conditions, which represented historical worst cases for Victoria.

The directions of fire spread in the scenarios used to calculate fire intensity are shown in Table 1

Scenario			
Run	Direction of fire spread	Spread from	FFDI
1	East	North of Heidelberg-Warrandyte Rd	120 165
2	South	South of Heidelberg-Warrandyte Rd	120 165
3	East	Western boundary	120 165
4	South east	North eastern boundary	120 165

Table 1 – Scenarios used to calculate fire intensity

In all fire scenarios fire intensity was sufficient to initiate a crown fire, which is not surprising given the extreme Forest Fire Density Index selected, the potential for spread up the hill and low canopy height.

The longest run of fire through the reserve would be from northwest corner near Pound Road to the southeast boundary near Wildflower Court. The steepest slopes are the northerly aspect between Heidelberg-Warrandyte Road and Melbourne Hill Road although the fuel is fragmented by the road network.

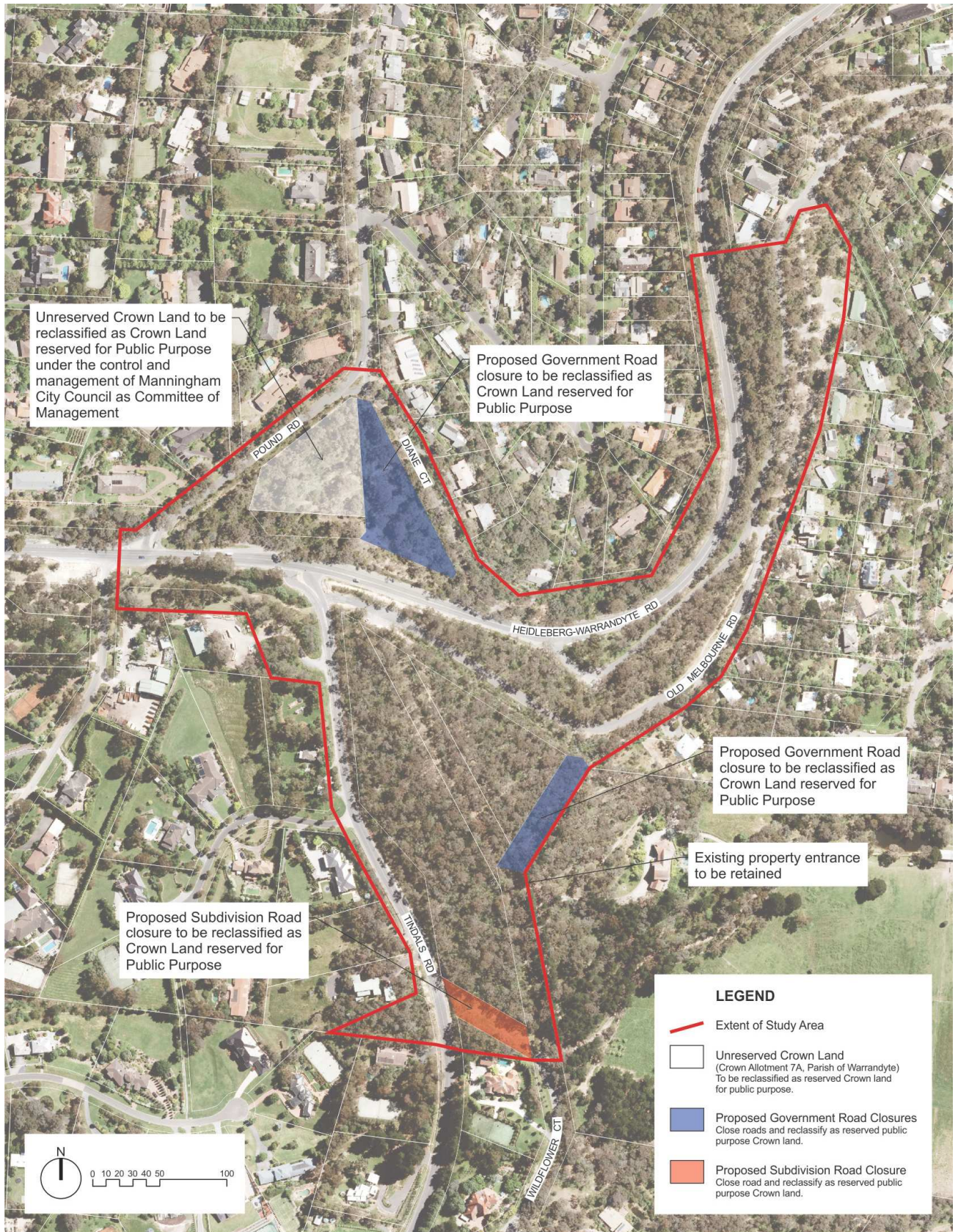


Figure 5: Proposed Government/Subdivision Roads to be reclassified





Figure 6: Bushland Management Zones



Figure 7: Current Fire Management Works

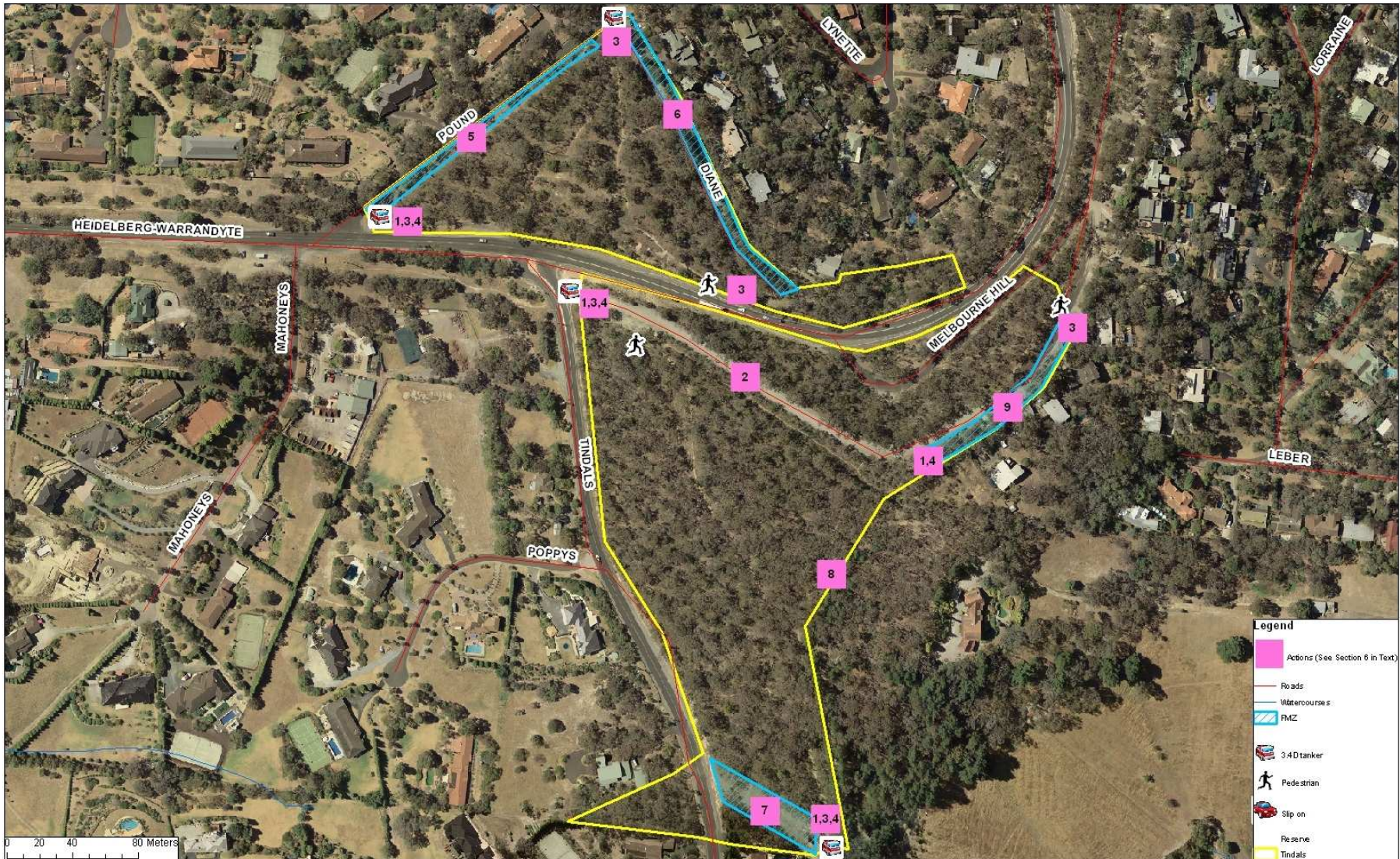


Figure 8: Recommended Fire Management

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The high-very high bark hazard can be expected to generate a significant amount of embers, although the nature of the bark precludes long distance spotting. Ember attack on surrounding properties could be substantial especially as the fire crests the hill top.

#### 4.4.5 Exposure and vulnerability

The values exposed to bushfire in Tindals Wildflower Reserve and residents living adjacent to the reserve include lives of users of the reserve and immediate neighbours, buildings and infrastructure immediately adjacent to the reserve and biodiversity values.

#### 4.4.6 People

The level of risk to visitors within the reserve is influenced by the potential severity of fire behaviour and ease with which they can reach a safer area. There is limited risk to reserve users from a fire starting in the reserve. This is due to the small patch size of the flammable vegetation that greatly assists safe retreat out of the reserve altogether before the fire becomes established.

However, the reserve is part of a flammable landscape and an established fire may spread rapidly into, through and away from the reserve. In this scenario being on foot or in a vehicle in the vicinity of the reserve could be dangerous.

#### 4.4.7 Buildings

The likelihood of flame and radiant heat ignition can be reduced by managing vegetation in the approaches to the building, with the width of the fuel management Zone (FMZ) determined by the characteristics of the site.

Two models were used to assess the threat and likely impact of the scenario test fire on adjacent housing and its occupants, which included the Wildfire Management Overlay and the Wilson House Survival metre. The required setbacks were calculated for *Grassy Dry Forest* vegetation type using fuel load and topography of Tindals Wildflower Reserve.

The analysis of setback distances showed the maximum setback required to prevent radiant heat ignition of wooden elements of the building was 20 metres. The Country Fire Authority advised that this setback should comprise a 10 metre wide inner zone with minimal fuel and the remainder managed as outer zone. The outer zone is designed to prevent direct flame or radiant heat ignition of the dwelling from the forest. The inner zone is designed to minimize the chance of dwelling ignition from fuel burning in the outer zone.

The ratings assume the fuel on private property or a Fuel Management Zone within the reserve as required has been maintained to minimize fire intensity in the

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immediate vicinity of the house. If houses are subjected to higher intensity fire then survival ratings would decrease significantly.

The rating shows a relatively low survival rating for most houses around the reserve, if undefended, due to the pitched roofs, flammable objects within 10 meters of the houses and the height and proximity of garden vegetation. These objects can be easily ignited by embers and in turn, if on fire, can be difficult to extinguish. The ratings also show the increase in probability of house survival if actively defended. It should be noted; however, that staying to defend a house during a bushfire is inherently dangerous and requires comprehensive planning and preparedness.

#### 4.4.8 Biodiversity Values

*The Bushfire Prevention and Preparedness Plan for Tindals Wildflower Reserve* states that the *Grassy Dry Forest* vegetation type is a fire dependent Ecological Vegetation Class and it is unlikely that an unplanned fire would do significant damage to biodiversity values on site. Ongoing exclusion of fire may have ecological impacts. A planned burn in a small urban reserve such as Tindals Wildflower Reserve can be a complex undertaking and is discussed in more detail in the Environment section of the Management Plan.

#### Recommendations

9. Plan effective and integrated fire management planning for the reserve and associated bushland areas and progressively implement proposed actions and treatments, where appropriate, in the Bushfire Prevention and Preparedness Plan (2009) for Tindals Wildflower Reserve as shown in Figure 8 and outlined in Appendix 6.

### 4.5 Environment

Tindals Wildflower Reserve study area falls within the Highlands-Southern fall Biogeographic Region. It contains the Tindals Hill (Biosite 24) which is described and shown in Appendix 2, and comprises 9.98 hectares of the Ecological Vegetation Class (EVC), *Grassy Dry Forest*. It is one of the smallest Biosites in Manningham. It is classified as State Significance and has as known habitat for one nationally listed threatened species. (*Vas: Sharp Midge-orchid, K*). The Diane Court bushland area north of Heidelberg-Warrandyte Road appears considerably more disturbed than the main section south of the road.

A description of the vegetation type *Grassy Dry Forest* is provided in Appendix 3.

A vegetation survey conducted in 1990- identified nine regionally significant flora species. *Manningham City Council Sites of Botanical Significance (2004)* identified that a total of 18 vertebrate fauna species and 154 vascular flora species have been recorded for this Biosite. For complete lists refer Appendix 4 and 5 respectively.

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Pound Bend Biosite 19 is within a kilometre of the Tindals Wildflower Study area. 149 vertebrate fauna species have been recorded for this site and it can be assumed that many of the birds recorded would probably at times use the Tindals Wildflower Reserve and surrounding bushland. In addition 24 vertebrate species have been recorded in The Department of Sustainability and Environment fauna records

#### 4.5.1 Bushland Management

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. 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. 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.

There are 409 hectares of bushland managed by Council across 72 Council open space reserves (322 hectares) and higher quality/significance roadsides (87ha). The overall goal of Manningham's *Bushland Strategy for Council Managed Land (2012)* is to protect and enhance biodiversity in Manningham. Four key objectives are outlined in the Strategy to assist in setting priorities and guiding achievement of the goal which include:

- Maintain and where possible, restore ecological processes;
- Manage and minimize threatening processes;
- Improve habitat; and
- Protect threatened species.

The Bushland Management Strategy prescribes planning and management principles which include:

- A Management Plan template with defined management zones/treatments to be consistently applied for incorporating bushland management into Council's reserve management plans;
- A prioritization matrix that strategically assess all 72 bushland sites, to guide resource allocation and prioritise management actions across those sites;
- Development of a 'over- the- counter' offset scheme to locate and achieve native vegetation offsets arising from internal ( i.e. Council) and external planning permits;
- 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 the strategy over the next five years.

The Strategy recommends that 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

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indigenous bushland component of those reserves have developed Management Plans. Tindals Wildflower Reserve is assigned a very high (VH) management priority.

Defined management treatments ('zones') are applied to each bushland site. Each zone has a management objective and specific prescriptions and 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.

There are three management zones (Zones 1, 3 and 5 as prescribed in the Strategy) within the Tindals Wildflower Reserve study area which are shown on Figure 6 and are described below:

### **Zone 1 'Comprehensive' Weed Management Zone**

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 not controlled unless present in only small numbers, Hair Grass *Aira* spp. or Fesque *Vulpia* spp. 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 3 'Minimal' Weed Management Zone**

Areas that generally consist 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.

**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 5 'Conservation' Mowing Zone**

These are areas of open space with a component of indigenous groundstorey species (e.g. grasses, wildflowers and 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

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Grass *Microleana 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 and frequency) and other techniques for these areas.

#### 4.5.2 Ecological Burns

The main objective of a planned burning program in Tindals Wildflower reserve would be to achieve ecological outcomes. However, planned burning in small urban reserves can be a complex undertaking and warrants serious consideration. A planned burn is a contentious issue in Tindals Wildflower Reserve, particularly on the impact on orchid species. Research evidence (refer Appendix 1) undertaken has revealed there has been a major decline in orchid density and flowering in the past fifteen years in comparison with the 35 species listed in the study of 1967-1990 *Vegetative Management of Tindals Wildflower Reserve, Warrandyte ( Ecological Horticulture 1990)*. The decline in orchid populations could be due to a number of



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factors one of which may be the practice of planned burns within the reserve on a rotational basis.

To ensure a balanced and sensitive approach to this issue Council is open to best science and monitoring including further information, research and adaptation regarding the ecological management of the reserve. The reserve should be managed through an adaptive management process, informed by monitoring and evaluating flora and fauna habitat in the reserve which could deploy a suite of management tools that may include fire.

### Recommendations

10. Continue to improve the ecological integrity of the Tindals Hill biosite habitat with integrated environmental management, weed and pest control programs.
11. Ensure that all removal of dead material (dead shrubs and logs) for wildfire prevention and preparedness and for the safety of path users does not go beyond what is necessary so that the environmental values of the area are protected.
12. Maintain, rehabilitate and, where necessary, enhance bushland areas in accordance with the management zones as shown on Figure 6.
13. Undertake a habitat hectare assessment as part of the implementation of the Bushland Management Strategy for Council Managed Land (2012).
14. Manage the Reserve through an adaptive management process, informed by monitoring and evaluation of fauna and flora habitat, which would deploy a suite of management tools, that may include fire. The application of fire would be responsive to and appropriate for local conditions and applied at the time, frequency and intensity required to maximise biodiversity.
15. Notify cat owners whose cats are found in the Reserve of the need to contain them to their properties at all times.

## 4.6 Cultural Heritage

The Warrandyte area is within the traditional territory of Indigenous people from the *Woi wurrung* language group. From early accounts there were large aboriginal gatherings at Pound Bend, Warrandyte cricket ground and on the slopes north of the corner of Pound Bend and Warrandyte Roads. In 1841, 1,998 acres of land at Pound Bend were gazetted as an Aboriginal reserve with a large corroboree held in 1852. Many Aboriginal archaeological sites have been discovered near Tindals Reserve study area particularly along the Mullum Mullum Creek and Yarra River.

European settlement of the general region commenced around 1850 with the discovery of gold at Andersons Creek (now Warrandyte). The development of orchards largely defined the region's character throughout the late nineteenth and twentieth centuries.

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The study area north of Heidelberg-Warrandyte Road comprising Crown Land and part of the freehold land between Pound Road and Diane Court is designated an area of Cultural Heritage Sensitivity. The Aboriginal Heritage Regulations require that a Cultural Heritage Management Plan be prepared for any development proposed in an area of cultural sensitivity.

## Recommendations

16. Any proposed development, including construction of a walking trail, within the area of cultural heritage sensitivity will require a Cultural Heritage Management Plan.

### **4.7 Identity and Landscape Character**

Tindals Wildflower Reserve study area is set in the urban-forest interface. It is characterized by an enclosed bushland setting surrounded by rural landscapes with large rural residential properties, remnant agricultural properties and residential bush blocks.

Immediately north to northeast of the study area are established environmentally significant residential areas along Lynette Ave and Karen Court located north of Heidelberg-Warrandyte Road and to the south around Melbourne Hill and Houghton Roads. These areas contain indigenous vegetation which provides an additional buffer habitat that supports the ecological integrity of Tindals Hill Biosite core habitat which is within the study area.

To the west are larger residential properties which extend to the Mullum Mullum Creek Linear Park. To the south and east are larger rural residential areas and agricultural properties providing a mosaic of bushland, pasture and orchards.

Tindals Wildflower Reserve study area is transected by Melbourne Hill Road, which runs roughly northwest to southwest and the Heidelberg-Warrandyte Road which runs west to east. Electricity distribution power lines run through the reserve and underground telecommunications infrastructure is present.

The roadside vegetation within the study area is designated as an area as being of highest conservation value. Characteristics include very good to excellent vegetation quality on relatively undisturbed sites with a diverse range of indigenous species, excellent ground cover and middle storey habitat. The roadside vegetation which extends along the Heidelberg-Warrandyte Road to Goldfields Plaza contributes to the landscape amenity and unique character of the area providing an important natural bushland entrance to Warrandyte Township and surrounds.

The Tindals hilltop has a thin skeletal soil over mudstones and is very sensitive to minimal disturbance and erosion after heavy rain. Its integrity is wholly reliant on undisturbed leaf litter layers and minimal visitation of foot traffic.

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Access to the Tindals Wildflower Reserve in the southern part of the study area is from Melbourne Hill Road and Wildflower Court. The fenced area along Tindals Road is reasonably well preserved with some small degraded areas caused by erosion, introduced weeds, fire, feral animal activity and rubbish dumping.

Unmade vehicular access through the road reserve to adjoining properties on Melbourne Hill Road has impacted on the surrounding bushland. An opportunity exists to work with local residents to rationalise vehicular movements with the aim to extend the remnant vegetation communities providing a habitat link between areas of high conservation value.

The unfenced part to the north of Heidelberg-Warrandyte Road is bounded by Diane Court and Pound Road, which is one of the main access roads to Pound Bend located on the Yarra River. There is no formal pedestrian access to the Diane Court bushland and even though uncontrolled pedestrian access has led to erosive paths and weeds, especially along the margins, the vegetation is generally well preserved. However there are some degraded areas due to past rubbish dumping and the use as a holding area for road metal and clearance of some native species.

#### Recommendations

17. Advocate for minimizing the visual impact of adjoining development on significant landscape, environmental and cultural values of Tindals Wildflower Reserve.
18. Ensure seating and the size and design of signage complement the natural bushland character of the reserve.
19. Investigate undergrounding power lines along Melbourne Hill Road immediately north of existing fenced Tindals Wildflower Reserve and in the disused subdivision road at the southern end of Tindals Wildflower Reserve.
20. Investigate removal or undergrounding powerlines in the Diane Court bushland.

## **4.8 Visitor Experiences and Recreation Opportunities**

### **4.8.1 Community Survey**

The Tindals Wildflower Reserve Questionnaire 'Our Community Voice' was a self-completion questionnaire mailed to 446 households on 9 November 2011 in the area surrounding the Tindals Wildflower Reserve.

Major interest groups within Manningham were also notified about the Management Plan including and Friends of Manningham Dogs and Cats.

An article about the project inviting comments was also placed in the Warrandyte Diary in the December 2011 edition and the project was advertised in the Manningham Leader in November 2011 and on Council's website.

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The questionnaire was designed to inform the community about the preparation the Tindals Wildflower Reserve Management Plan and ascertain how it is used by the local community, what park attributes are valued by the community and ideas and issues which should be addressed in the Management Plan. Respondents were also given an opportunity to indicate if they wished to be involved in future consultation.

A total of 53 responses to the questionnaire were received which represented a 12 per cent response rate. Three written submissions were also received and 25 respondents indicated that they would like to be involved in further consultation regarding the preparation of the Draft Management Plan.

## **Survey Findings**

The results of the survey are shown in Appendix 7. Key findings are outlined below.

The results highlighted that the local community value the reserve for its environmental and natural attributes which provide a bushland experience for relaxation, walking, nature appreciation and wildlife observation.

Even though Tindals Wildflower Reserve is a relatively small area of open space compared to the larger areas in Warrandyte such as the Warrandyte State Park and the Yarra Valley Parklands, it is a popular place to visit on a regular basis with the local community. Almost half of the respondents (44.5%) indicated that they visit the park either everyday (9.3%), two to three times per week (16.7%) or once a week (18.5%) with almost a quarter (22.2%) who visit the reserve twice a month.

The majority of respondents (85.7%) walk/run to the reserve, which is considered unusual in Warrandyte as it is in a car dependant area where the sparse nature of settlement and hilly terrain often requires a car to get to most places. The survey results indicate the importance of safe accessible and walkable catchments to green open spaces, even in low density areas with larger properties. Efforts must be made to improve the quality of local neighbourhoods by increasing walkability and access to natural environments where possible.

The range of psychological benefits for people who visit green open spaces includes:

- A place to escape to away from home/school or workspace;
- Changes in scenery;
- Improvements in mood;
- Lower levels of anxiety, stress and depression; and
- Increased physical activity.

Respondents were asked to indicate up to three reasons why they visited the reserve. Approximately three-quarters of the respondents cited 'place to walk' (71.4%) as the main reason they visited the reserve followed by 'close to home' (55.1%), 'fauna and flora' (46.9%), and 'quiet and relaxing' (34.7%).

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The reserve's significant flora is of long standing value and interest to the wider community, including plant specialist groups, international visitors (naturalists, biologists, tourists and the general public interested in the natural environment, as it represents a good example of the original Yarra Valley flora within easy reach of the city and the airport.

The growing community awareness about biodiversity and conservation is likely to increase the demand for the protection of natural areas, while also increasing the attraction of such areas to people as they continue to seek natural environments as settings for leisure and recreation activity. Tindals Wildflower Reserve is a wonderful resource in the education of local children which is even more important with so much development having occurred in the area. Continued and improved provision of sustainable nature-based recreation for the community and recognition of their attachment to natural areas will be important objectives of the Management Plan provided these activities do not compromise the long term environmental integrity and management of the reserve.

Key areas identified by respondents which would improve the amenity of the reserve include:

- Weed management (64.6%);
- Paths/ pedestrian access (54.2%);
- Native flora and fauna management (39.6%);and
- Seating (29.2%).

Many respondents supported the need to continue to maintain and protect the significant environmental qualities of the area for future generations to enjoy including weed management (64.6 %) and native flora and fauna management (39.6%). General maintenance of the reserve including path clearances (54.2%) with some additional seating would add to the amenity of the reserve.

The survey findings revealed that two broad demographic groups responded to the questionnaire. The first group comprised over half the respondents (51%) represented 'families with children at home'. The second group comprised over a third of the respondents (39.2%) which represented 'a 'mature' household composition with 'couple with no children at home'.

Over two thirds of the respondents (69.2%) indicated that they supported the extension of the main Yarra Trail to Warrandyte along the north side of Heidelberg-Warrandyte Road within the reserve, as the trail would provide the local community with safe cycling/walking access to Warrandyte. 9.6% of respondents did not support the trail extension and 21.25% indicated that they were neutral about the trail extension which could be attributed to concern over potential loss of significant vegetation and habitat and the lack of information about the designated route. The Main Yarra Trail to Warrandyte is a State Government policy, however it not a high priority with Parks Victoria in the current climate.

40 % of households surveyed represent young and growing families. Almost a third of the respondents surveyed represented families with older children. Tindals

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Wildflower Reserve should provide for an ageing population as well as for young families with opportunities for nature appreciation, relaxation, education and research. Enjoyment of the area for the local and wider community with a special interest in the flora of the reserve will enable people of all ages to engage in physical activity leading to increased health and well being balanced with the need to protect the natural assets of this sensitive reserve.

#### 4.8.2 Walking and Nature Appreciation Opportunities

Walking is an inexpensive exercise that can be undertaken by the majority of the population in a variety of settings. Walking is the most popular activity undertaken in Manningham. It is also the most frequently participated in and appeals to a wide range of people. Walking is an inexpensive exercise that can be undertaken by the majority of the population in a variety of settings. Many walking groups have developed within the municipality particularly over the past six years. Manningham Council hosts many nature walks each year. To foster community participation in walking Council also provides a list of walking groups and walking is further encouraged with the publication of the Walks in Manningham booklet, which is currently being updated.

Activities such as running and large groups of visitors may not be appropriate in a small nature reserve. The reserve has the environmental capacity to cater primarily for local use and should continue to be used for passive relaxation, educational and research purposes. Excessive visitor usage would increase foot traffic, introduce weeds, soil compression and soil disturbance, reducing understorey plants, including orchid, lily and grass populations. The major challenge for management is not 'maximising usage' but restoration and long term survival of this remaining pocket of undisturbed habitat in a very small reserve that is vulnerable to disturbance and has limited capacity for regeneration due to its small size, loss of natural surrounds and fragile surface layers.

Tindals Wildflower Reserve is an important bushland reserve which is enjoyed by the local residents for walking in association with nature appreciation and wildlife observation. However, access for people for limited abilities in the reserve is limited given the steep topography and the crushed rock paths would not be suitable for people in wheelchairs, with prams or who are unsteady on their feet due to the uneven nature of the surface.

#### 4.8.3 Dog Walking

*The Manningham Domestic Animals Strategy (2004)* aims to promote and facilitate responsible ownership of dogs and cats, support animal welfare and promotes the benefits of animal companionship, with an emphasis on the protection and enhancement of community safety and the environment.

Dogs and their owners are significant users of public open space, but some dogs in public places can have an adverse effect on community safety and the environment.

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The Strategy aims to balance the needs of all users of open space through its *Dog in Public Places* policy by providing a network of on lead, off lead and prohibited areas. The principle means of control of dogs in public places is by way of the Council Order in accordance with S26 (2) of the *Domestic (Feral and Nuisance) Animals Act 1994* which is the responsibility of Health and Local Laws Unit, Manningham City Council.

A Domestic Animals Management Plan must be submitted to the Minister for Agriculture every three years and includes the management of dogs throughout Council Reserves.

In accordance with the Council Order under S26 (2) of the *Domestic (Feral and Nuisance) Act (1994)* all dogs in every public area of the municipal district of the Manningham City Council, including those areas set out in Schedule 1, which nominates designated dogs on leash areas, must be restrained by means of a chain, chord or leash except as provided in the Schedules 2 and 3. Schedule 2 nominates designated dogs and cats prohibited areas and Schedule 3 nominates designated dogs off leash areas.

Manningham is well supplied with dog off lead areas. There are 95 off-lead reserves within Manningham with six located in Warrandyte, which provide opportunities for people to exercise their dogs off lead, including Lynette Reserve, Oakland Reserve, Stiggant Reserve, Warrandyte River Reserve (dogs prohibited in Federation Playspace), Warrandyte Reserve and Coleman Park Oval.

Similar to other significant bushland reserves in Manningham, Tindals Wildflower Reserve is designated a Dogs and Cats prohibited area. To ensure a consistent approach to dog controls in this area and protect vulnerable and significant vegetation and fauna habitat, dogs should be prohibited within the Dianne Court bushland area north of the Heidelberg-Warrandyte Road, as shown on Figure 4 with the exception of perimeter paths.

Dogs can displace wildlife and even dogs on lead can displace birds more than humans on their own which decreases opportunities for wildlife observation, particularly birdlife. The presence of dogs can disrupt wildlife feeding and breeding and dog faeces can introduce additional nutrients which promote weed growth. Dogs have a detrimental effect on rare plants not only from scratching when urinating or defecating, but also due to trampling and the chemical effects of urine and faeces on the vegetation. Many of the rarest plants are shallow rooted, such as orchids, and easily destroyed.. The plant's reproduction is already compromised by other factors, and a single footfall on a flower stem can eliminate a whole year's reproductive opportunity for that plant. Significant ecological benefit would be gained by excluding dogs from the most natural high quality conservation areas and dogs should be on lead confined to designated paths.

#### 4.8.4 Horse Riding Access

*The Manningham Horse Riding Strategy (2002)* advocates the progressive assessment and management of identified trail links and circuits to improve the

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quality and safety of trails and to allow a range of environmental management techniques to be implemented. Sustainable riding links require a balance between environmental safety and access concerns based on an assessment of botanical values, existing trail alignment, rider motivations and destinations, soil types, drainage, road safety sight lines and trail surfacing.

Horse riding access is allowed along the Government Road on the eastern boundary outside the fenced area of Tindals Wildflower Reserve. This off road riding link is preferred by horse riders because it offers a safer route, particularly for less experienced riders and horses are more relaxed away from busy roadsides.

#### 4.8.5 Cycling

The reserve is used for nature walking and the unsealed paths are important to continue the bushland experiences valued by the local residents. Activities such as BMX bikes and mountain biking are not appropriate due to the small size and ecological significance and vulnerability of the reserve.

Over two thirds of the respondents (69.2%) in the community survey indicated that they would support any future extension of the Main Yarra Trail to Warrandyte as the trail would provide the local community with safe cycling/walking access to Warrandyte. 9.6% of the respondents did not support the trail extension which could be attributed to concern over potential loss of significant vegetation and habitat.

#### Recommendations

21. Manage the impact of sustainable low key recreational activities on Tindals Wildflower Reserve for safe and enjoyable visitor use to ensure and landscape, cultural and environmental values of the area are protected.
22. Prohibit recreational activities which utilize the bushland areas, such as BMX bike riding and mountain bike riding in Tindals Wildflower Reserve to prevent negative environmental impacts on vulnerable significant vegetation.
23. To protect high conservation areas, Tindals Wildflower Reserve will remain a *Designated Dogs and Cats Prohibited Area* and will be extended to include Diane Court Bushland as shown on Figure 4 as a *Designated Dogs and Cats Prohibited Area*. Notwithstanding dogs on lead will be allowed *along* the eastern boundary of the reserve on the path outside the fenced areas shown on Figure 4.
24. Prepare an amendment to the Council order under the Domestic Animals Strategy section (2) of the Domestic Feral and Nuisance Animals Act 1994 to implement dog controls for Tindals Wildflower Reserve.
25. Investigate horse route on the eastern boundary of Tindals Wildflower Reserve located outside the fenced area from Wildflower Court to Melbourne Hill Road as part of a north-south connection from Heidelberg-Warrandyte Road to Reynolds Road in the review of Manningham's Horse Riding Strategy.



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## 4.9 Infrastructure and Facilities

### 4.9.1 Extension of the Main Yarra Trail

Extension of the Main Yarra Trail to Warrandyte is a State government policy as outlined in the *Linking People and Spaces (2002)*. However it is not a high priority with Parks Victoria in the current climate. Any future planning and determination of the designated path route will be based on the evaluation of the following criteria:

- Recreational value and usability of the path by walkers
- Impact of the path on adjoining residents;
- Public land tenure;
- Impact on archaeological sites;
- Impact on flora and fauna values;
- Engineering feasibility
- Slope/terrain; and
- Cost of construction and maintenance.

### 4.9.2 Principal Pedestrian Network

The footpath network in Manningham is currently well developed in areas west of the Mullum Mullum Creek, with the exception of the Templestowe area, but is limited in areas east of the Mullum Mullum creek, including Warrandyte. In June 2011, Council resolved to develop a Principal Pedestrian Network (PPN) to provide permanent footpath facilities and pedestrian linkages to public transport, activity centres, community facilities and other pedestrian traffic generators.

The routes selected will provide a broad community benefit which outweighs the direct benefit provided to abutting properties. As recommendation of Manningham Council's Walk Plan (2011) to complete the PPN, Council is investigating options to extend the Principal Pedestrian Network along sections of Heidelberg-Warrandyte Road from Mullum Mullum Creek Trail to Warrandyte, which is within the Tindals Wildflower Reserve study area.

### 4.9.3 Path Network

The path network within the Tindals Wildflower Reserve and associated bushland areas range from three metre wide tracks, used as vehicular access to adjoining properties for fire and maintenance purposes, to narrow pedestrian paths in an enclosed bushland setting approximately 0.5-1 metre wide.

Most of the paths within Tindals Wildflower Reserve (fenced area) are unmade which have a predominantly natural appearance. The objective of these paths is to provide an experience that is as 'natural' as possible, while protecting fragile soils and significant flora from the effect of concentrated foot traffic. Whereas the uncontrolled pedestrian use and the taking of 'shortcuts' through the Dianne Court bushland has caused erosion problems and weed invasion. These tracks will be rationalised with a number of tracks that are no longer required to be progressively closed and regenerated with fencing, where appropriate and the laying of brush across the path.

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To improve the amenity of the reserve path maintenance and clearance was a main factor identified from the community survey. Any trimming of vegetation along the paths in the reserve will be overseen by the Council's Bushland Co-ordinator. Lopping and pruning of native vegetation for maintenance within a road reservation will require a planning permit.

#### 4.9.4 Signage

Limited signage will be required and will include botanical, directional and regulatory information. Interpretative information should explain the need to protect significant vegetation from excessive foot traffic, particularly on plants which grow along the edge of paths. Old signs should be replaced and erected at the major entrances point to Tindals Wildflower Reserve and the Dianne Court bushland to provide park information including horse riding and dog controls.

#### 4.9.5 Seating

The provision of new seating within Tindals Wildflower Reserve is seen as an important, way of increasing visitor amenity, particularly providing for nature appreciation. Seating allows people to rest and enjoy the natural and peaceful environment. Due to the senive

#### 4.9.6 Fencing

There may be a need to fence along some sections of the reserve and associated bushland areas to protect native vegetation. Acceptable styles of boundary fencing include open style agricultural fencing or cyclone wire fencing for maintenance purposes and visual amenity.

### Recommendations

26. Maintain existing low impact bushland paths within the fenced area of the Reserve and undertake minimal clearing of overhanging eye level branches on paths under the supervision of Council's Bushland Co-ordinator. Monitor incremental path widening and undertake erosion control measures where appropriate.
27. Upgrade steep and eroding sections of the eastern path alongside Tindals Wildflower Reserve.
28. Upgrade existing steep path at the corner of Pound Road and Diane Court including steps and a handrail.
29. Upgrade the path at the existing Melbourne Hill Road entrance to Tindals Wildflower Reserve.
30. Progressively close unwanted paths within the Diane Court bushland, having regard to retaining paths which provide direct community access to public transport such as bus stops.
31. Provide seating outside the fenced area of Tindals Wildflower Reserve at the carpark entrance on Melbourne Hill Road.
32. Remove and replace old signage with new signs at major entrances to the Reserve as shown in Figure 4, which provide botanical, directional and regulatory

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information, including dog and horse controls and explain the need to protect the significant vegetation from the effect of concentrated foot traffic, particularly on plants which grow along the edge of paths.

33. Install a vehicular barrier including a gate on the unmade section of Melbourne Road (near 30 Melbourne Hill Road) as shown on Figure 4 to prevent vehicular access north along this section to the sealed section of Melbourne Hill Road.
34. Provide a new gate with adjoining bollards at the southern end of Tindals Wildflower Reserve.
35. Provide a fence around the Diane Court bushland including a vehicle gate and three pedestrian gates.
36. Only permit rural style or maximum 1.8m chain mesh open fencing of residential boundaries.
37. Following completion of capital works development, allocate additional Council resources each year from Council's operational budget for path maintenance.
38. Any future detailed design of the Main Yarra Trail extension to Warrandyte will need to consider the landscape, environmental and cultural values of the study area.

#### **4.10 Community Awareness and Involvement**

The management of bushland reserves is often compounded by actions of adjoining landuses. While some problems arise within the reserves others migrate from adjoining properties, for example, 'garden escapes' weed species. Ongoing consultation with adjoining residents and co-operative management requirements will assist in improving the vegetation of the reserve and surrounding bushland areas. The education of local residents about how they can help maintain and improve the significant environmental values of the Linear Park should be fostered.

Community involvement should be encouraged with the possibility of a Friends Group, particularly young children to work with Council and Melbourne Water as part of the implementation of the Management Plan. This is particularly important for children, who are generally experiencing less of nature from one generation to the next.

#### **Recommendations**

39. Develop collaborative partnerships with the adjoining residents and the local community in relation to ongoing management of Tindals Wildflower Reserve.
40. Improve remnant bushland habitat in areas along Melbourne Hill Road by working with adjoining residents to discuss fire management measures and reducing vehicular traffic areas.
41. Liaise with user groups and local schools to improve awareness and appreciation of park values and management leading to increased opportunities for environmental education and ongoing community involvement associated with Tindals Wildflower Reserve.
42. Investigate in co-operation with the local community to form a Friends Group for Tindals Wildflower Reserve.



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## Appendix 1

### Relevant Planning Policies and Strategies

Aboriginal Heritage Act 2006  
Melbourne 2030 (2002) Victorian State Government  
Linking People and Spaces - A Strategy for Melbourne's open space network. Parks Victoria  
Native Vegetation Management – A Framework for Action Strategy (2002) Victorian State Government  
Mullum Mullum Park Draft Strategic Directions Plan (July 2010)  
Manningham Council Plan 2009-2013  
Healthy Living in Manningham- Municipal Public Health Plan (2009-13) Manningham City Council  
Disability Access Policy and Action Plan (2004) Manningham City Council  
'Active for Life' Recreation Strategy (2010) Manningham City Council  
Manningham Horse Riding Strategy (2002)  
Manningham Domestic Animals Strategy (2004)  
Manningham City Council Public Open Space Strategy (2004) (currently being reviewed)  
Manningham Biosites Manningham City Council Sites of (Biological) Significance Review (2004)  
Tindals Wildflower Reserve Bushfire Prevention and Preparedness Plan (November 2009)  
City of Manningham Open Space precincts, Commentary and Analysis ( draft) February 2011. Manningham City Council, Internal document.  
Healthy Habitats Bushland Management Strategy for Council's Managed Land (2012), Manningham City Council

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## Appendix 2

### Tindals Hill Biosite 24; State Significance (1 Sub-Criteria)

#### Description:

Tindals Hill (Biosite 24) comprises 9.98 ha of Grassy Dry Forest (LC) and is one of the smallest Biosites in Manningham. This site is located close to the middle of the municipality on a ridgeline in between the Mullum Mullum and Andersons Creeks right on the intersection of Warrandyte and Tindals Roads in Warrandyte. It is split into two discrete sections: the largest part centred around the Wildflower Reserve and the other to the south-east of the intersection of Wildflower Court and Timbertop Ridge. The core of the first section is comprised partly of public land owned by the State and partly private land owned by Council. The Diane Court Reserve, immediately to the north over Warrandyte Road, is owned by VicRoads along with the road reserve between Warrandyte and Melbourne Hill Roads, running down hill towards Goldfields Plaza. All these areas are managed by Council as part of the greater Tindals Hill Wildflower conservation reserve. One small area of degraded bushland runs off to the west on private land. A total of 18 vertebrate fauna species and 154 vascular flora species have been recorded for this Biosite (For complete lists see Appendices 7.2 and 6.1 respectively).

The Tindals Hill Biosite incorporates all of Sites 7 and 8 in Bedggood *et al.* (1992) which were classified as Regional Zoological and Local Botanical Significance. Using the Biosites criteria Tindals Hill has been effectively elevated to State Significance under one sub-criteria (DNRE 2002b): Sub-criteria 3.1.1. As known habitat for one Nationally listed threatened species (Vas: Sharp Midge-orchid, K). This Biosite is also classified as Regional Significance under one sub-criteria and Local Significance under one sub-criteria.

#### Summary of Biosites Classification:

**Max cited Classification (Bot or Fauna), Regional**  
**Max under current Classification, State**

**Criteria 1, Ecological integrity and viability, Nil**

**Criteria 2, Richness and diversity, Nil**

**Criteria 3, Rarity/Conservation status of assets, State**

Sub-Criteria 3.1.1., **S**, Vas: Sharp Midge-orchid, K

Sub-Criteria 3.2.3., **R**, Grassy Dry Forest (EVC 22)

**Criteria 4, Representativeness of type, Nil,**

**Criteria 5, Scientific and educational value, Local**

Sub-Criteria 5.1.1.4., **L**, Vegetation monitoring management comparisons at Tindals Wildflower Reserve undertaken by Jane Pammer, Rosemary Buxton and Sharon Mason

*Extract from: Manningham City Council Site of (Biological) Significance Review (2004)*

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## Appendix 3

### Ecological Vegetation Class (EVC)

**EVC No:** 22

**EVC Name:** Grassy Dry Forest

#### **MCC Distribution:**

A dominant element of the drier sections of the low hills dominating the eastern portion of the study area from Donvale and Templestowe to Wonga Park. Most abundant EVC in the study area.

#### **Position in landscape:**

Usually on the mid slopes and ridgetops of low hills and occasionally in minor gullies at higher elevations, particularly on northern and westerly aspects.

#### **Ecological Notes:**

Grassy Dry Forest occupies the upper section of a characteristic topo-sequence typical of the region's vegetation patterning on Silurian geology that is widespread throughout the foothills of north-east Melbourne particularly in the Shire of Nillumbik. On a transect from ridgetops to the creek or river valleys, the sequence is: Grassy Dry Forest; Valley Grassy Forest; (Creekline Herb-rich Woodland); Riparian Forest. Often the transition with Valley Grassy Forest involves mixed ecotones that may even represent discrete Floristic Communities or EVCs. The abundance of the ericoid shrubs plus (amongst a range of other morphological, reproductive and physiological features of the plants present) is indicative of adaptation to dry conditions. Although the vegetation can be saturated for long periods during winter and spring, being situated at the very top of the landscape on very shallow well-drained soils, it is also capable of surviving prolonged period of extreme drought over the summer and autumn months. Its occupation of the drier aspects suggests that this EVC was historically frequently burnt and therefore likely to be well adapted to fire. The presence of relatively short-lived shrubs, particularly those well adapted to fire (eg *Fabaceae* and *Mimosaceae*), imply that frequent fire plays some role in the ecology of Grassy Dry Forest.

#### **Structural and floristic description:**

A medium to short forest (10-30m) to woodland of dry environments such as ridgetops and hill slopes of north and west aspects dominated by a canopy of medium to short mixed eucalypts over a large range of tall to prostrate shrubs (< 5m) virtually all of which are indigenous. The ground layer consists of a range of medium to small (<1 m) tussock and non-tussock forming grasses plus some mat-rushes and some sedges interspersed with a range of medium to small herbaceous dicots. Primarily due to its occupation of the least arable, drier portions of the landscape, Grassy Dry Forests supports a limited range of exotics, although in the more degraded sites, these can represent a visually conspicuous element of the vegetation.

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The most frequent and usually dominant eucalypts are Red Box, Red Stringy-bark, Bundy Box with Yellow Box, Narrow-leaf Peppermint and Candlebark often present, but in a lower abundance and then usually at the lower elevations near the ecotone with Valley Grassy Forest or other related EVCs. Cherry Ballart, a range of the larger wattles including Black Wattle, Blackwood, and Lightwood plus Sweet Bursaria comprise the taller shrub layer or can even codominant with the eucalypts where canopy height growth is limited. Radiata Pine and Sweet Pittosporum are the only consistently present larger woody weeds of this EVC.

The typical medium shrubs include broad-leaf, narrow-leaf and some ericoid species such as Drooping and Common Cassinia, Grey Parrot-pea, Spreading Wattle, Common Correa, Burgan and Narrow-leaf Bitter-pea all of which are indigenous. Perhaps with the exception of Common Hovea, the prostrate shrubs are largely heaths such as Honeypots, Cranberry Heath, Thin-leaf Wattle and Common Beard-heath. Once again no exotics feature in this element of the vegetation.

On the ground the most common indigenous graminoids include: Wattle Mat-rush, Weeping Grass, Silvertop Wallaby-grass, Kangaroo-grass, Black-anther Flax-lily and Grey Tussock Grass. At some sites the richness of graminoids, especially the tussock-forming grasses can be extremely high (up to ~ 25% of total species richness). Whilst often in great abundance, it is interesting to note that only two exotic grasses occur frequently in this vegetation: Sweet Vernal-grass and Large Quaking-grass, the former a perennial and the latter an annual most abundant in dry regions such as the Goldfields of Central Victoria.

A great richness of herbaceous dicots are usually found in abundance within the graminoid intertices. Species such as Common Raspwort, Small Poranthera, Kidney-weed, Tall Sundew, Variable Plantain, Blue Pincushion, Button Everlasting are examples. Although this vegetation is often renowned for its orchid richness, the most frequently occurring geophytic or herbaceous monocots are the lilies: Chocolate Lily, Milkmaids, Common Early Nancy and Grass Trigger-plant. Anecdotal evidence suggests orchids were formerly much more abundant and only dropped out of remnants in recent decades as a result of poaching and habitat fragmentation accompanying urban sprawl. Cat's Ear and Common Century are the most commonly encountered exotic herbs, an element of the vegetation that is rarely abundant or ecologically important.

Whilst four climbers/scramblers are frequently present in this EVC (and often appear very abundant when flowering in spring) namely: Purple Coral-pea, Small-leaved Clematis, Common Appleberry and Love Creeper, in contrast, ferns are usually absent or at best restricted to isolated patches that are relatively sheltered and moist.



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## Appendix 4

### Tindals Hill Biosite 24; State Significance ( 1 Sub-Criteria

### List of Vertebrate Fauna Species

### Ref. Manningham City Council Site of (Biological) Significance Review (2004)

ENGLISH	LATIN	GROUP
Australian Magpie	<i>Gymnorhina tibicen</i>	Bird
Common Blue-tongued Lizard	<i>Tiliqua scincoides</i>	Reptile
Common Brushtail Possum	<i>Trichosurus vulpecula</i>	Mammal
Common Froglet	<i>Crinia signifera</i>	Amphibian
Delicate Skink	<i>Lampropholis delicata</i>	Reptile
Eastern Brown Snake	<i>Pseudonaja textilis</i>	Reptile
Eastern Rosella	<i>Platycercus eximius</i>	Bird
Eastern Three-lined Skink	<i>Bassiana duperreyi</i>	Reptile
Garden Skink	<i>Lampropholis guichenoti</i>	Reptile
Grey Butcherbird	<i>Cracticus torquatus</i>	Bird
Grey Currawong	<i>Strepera versicolor</i>	Bird
Grey Shrike-thrush	<i>Colluricincla harmonica</i>	Bird
Little Raven	<i>Corvus mellori</i>	Bird
Red Wattlebird	<i>Anthochaera carunculata</i>	Bird
Short-beaked Echidna	<i>Tachyglossus aculeatus</i>	Mammal
Tiger Snake	<i>Notechis scutatus</i>	Reptile
Weasel Skink	<i>Saproscincus mustelinus</i>	Reptile
White-plumed Honeyeater	<i>Lichenostomus penicillatus</i>	Bird

## Appendix 5

### Tindals Hill Biosite 24; State Significance (1 Sub-Criteria)

#### List of Vascular Flora Species

Ref: Manningham City Council Sites of Botanical Significance Review (2004)

COMMON NAME	NAME
<b>* Weed Species</b>	
Gold-dust Wattle	Acacia acinacea s.l.
Thin-leaf Wattle	Acacia aculeatissima
Spreading Wattle	Acacia genistifolia
Lightwood	Acacia implexa
Cinnamon Wattle	Acacia leprosa
*Sallow Wattle	Acacia longifolia ssp. longifolia
Black Wattle	Acacia mearnsii
Blackwood	Acacia melanoxylon
Narrow-leaf Wattle	Acacia mucronata ssp. longifolia
Hedge Wattle	Acacia paradoxa
Golden Wattle	Acacia pycnantha
Hop Wattle	Acacia stricta
Prickly Moses	Acacia verticillata
Honey-pots	Acrotriche serrulata
*Agapanthus	Agapanthus praecox ssp. orientalis
*Brown-top Bent	Agrostis capillaris s.l.
*Delicate Hair-grass	Aira elegantissima
Drooping Mistletoe	Amyema pendula
Mistletoe	Amyema spp.
*Sweet Vernal-grass	Anthoxanthum odoratum
Common Aotus	Aotus ericoides
Green-comb Spider-orchid	Arachnorchis dilatata s.l.
Pale Vanilla-lily	Arthropodium milleflorum s.l.
Chocolate Lily	Arthropodium strictum s.l.
Cranberry Heath	Astroloma humifusum
Smooth Wallaby-grass	Austrodanthonia laevis
Purplish Wallaby-grass	Austrodanthonia tenuior
Veined Spear-grass	Austrostipa rudis
Spear Grass	Austrostipa spp.
Common Apple-berry	Billardiera scandens
Creeping Bossiaea	Bossiaea prostrata
*Large Quaking-grass	Briza maxima
*Great Brome	Bromus diandrus
Blue Pincushion	Brunonia australis
Bulbine Lily	Bulbine bulbosa
Milkmaids	Burchardia umbellata
Sweet Bursaria	Bursaria spinosa ssp. spinosa
Caladenia s.l.	Caladenia s.l. spp.
Common Cassinia	Cassinia aculeata
Drooping Cassinia	Cassinia arcuata
Shiny Cassinia	Cassinia longifolia
*Common Centaury	Centaureum erythraea
*Common Mouse-ear	Cerastium glomeratum s.l.
Chickweed	
*Boneseed	Chrysanthemoides monilifera

<b>COMMON NAME</b> <b>* Weed Species</b>	<b>NAME</b>
Clustered Everlasting	Chrysocephalum semipapposum
Mountain Clematis	Clematis aristata
Small-leaved Clematis	Clematis microphylla
Love Creeper	Comesperma volubile
Common Correa	Correa reflexa
Sharp Midge-orchid	Corunastylis despectans
*Velvet Cotoneaster	Cotoneaster pannosus
*Cotoneaster	Cotoneaster spp.
Water Buttons	Cotula coronopifolia
Crassula	Crassula spp.
*Hawthorn	Crataegus monogyna
Bear's-ear	Cymbonotus spp.
*Rough Dog's-tail	Cynosurus echinatus
*Cocksfoot	Dactylis glomerata
Wallaby Grass	Danthonia s.l. spp.
Australian Carrot	Daucus glochidiatus
Narrow-leaf Bitter-pea	Daviesia leptophylla
Reed Bent-grass	Deyeuxia quadriseta
Small-flower Flax-lily	Dianella brevicaulis
Pale Flax-lily	Dianella longifolia
Black-anther Flax-lily	Dianella revoluta s.l.
Black-anther Flax-lily	Dianella revoluta s.s.
Kidney-weed	Dichondra repens
Chocolate Lily	Dichopogon spp.
Grey Parrot-pea	Dillwynia cinerascens s.l.
Showy Parrot-pea	Dillwynia sericea s.l.
Leopard Orchid	Diuris pardina
Wedge-leaf Hop-bush	Dodonaea viscosa ssp. cuneata
Forked Sundew	Drosera binata
Tall Sundew	Drosera peltata ssp. auriculata
Scented Sundew	Drosera whittakeri ssp. aberrans
*Panic Veldt-grass	Ehrharta erecta var. erecta
*Annual Veldt-grass	Ehrharta longiflora
Common Heath	Epacris impressa
*Spanish Heath	Erica lusitanica
Silver-leaf Stringybark	Eucalyptus cephalocarpa s.l.
Bundy	Eucalyptus goniocalyx s.l.
Red Stringybark	Eucalyptus macrorhyncha
Yellow Box	Eucalyptus melliodora
Red Box	Eucalyptus polyanthemus
Narrow-leaf Peppermint	Eucalyptus radiata s.l.
Candlebark	Eucalyptus rubida
Creeping Cudweed	Euchiton collinus s.s.
Common Cudweed	Euchiton involucratus s.l.
Cherry Ballart	Exocarpos cupressiformis
*Fumitory	Fumaria spp.
Thatch Saw-sedge	Gahnia radula
*Flax-leaf Broom	Genista linifolia
Grassland Cranesbill	Geranium retrorsum s.l.
Austral Cranesbill	Geranium solanderi s.l.
Austral Cranesbill	Geranium solanderi var. solanderi s.s.
Variable Cranesbill	Geranium sp. 2

<b>COMMON NAME</b> <b>* Weed Species</b>	<b>NAME</b>
Pale-flower Cranesbill	Geranium sp. 3
Crane's Bill	Geranium spp.
Common Raspwort	Gonocarpus tetragynus
Hardenbergia	Hardenbergia spp.
Button Everlasting	Helichrysum scorpioides
*Yorkshire Fog	Holcus lanatus
Common Hovea	Hovea heterophylla
Hairy Pennywort	Hydrocotyle hirta
Stinking Pennywort	Hydrocotyle laxiflora
Small St John's Wort	Hypericum gramineum
*Smooth Cat's-ear	Hypochoeris glabra
*Cat's Ear	Hypochoeris radicata
Yellow star	Hypoxis glabella s.l.
Austral Indigo	Indigofera australis
Silvertop Wallaby-grass	Joycea pallida
Finger Rush	Juncus subsecundus
Burgan	Kunzea ericoides
Common Bottle-daisy	Lagenophora stipitata
Variable Sword-sedge	Lepidosperma laterale var. laterale
Wiry Buttons	Leptorhynchos tenuifolius
Wattle Mat-rush	Lomandra filiformis
Weeping Grass	Microlaena stipoides var. stipoides
Yam Daisy	Microseris scapigera spp. agg.
Common Onion-orchid	Microtis unifolia
Yellow Wood-sorrel	Oxalis corniculata s.l.
Shady/Grassland Wood-sorrel	Oxalis exilis/perennans
Large-flower Wood-sorrel	Oxalis purpurea
Stout-rooted Wood-sorrel	Oxalis radicata
Tree Everlasting	Ozothamnus ferrugineus
Bootlace Bush	Pimelea axiflora
Common Rice-flower	Pimelea humilis
*Radiata Pine	Pinus radiata
*Sweet Pittosporum	Pittosporum undulatum
*Ribwort	Plantago lanceolata
Variable Plantain	Plantago varia
Shrubby Platysace	Platysace lanceolata
Tussock Grass	Poa australis spp. agg.
Soft Tussock-grass	Poa morrisii
Grey Tussock-grass	Poa sieberiana var. sieberiana
Curly Pondweed	Potamogeton crispus
*Cherry Plum	Prunus cerasifera
*Prunus	Prunus spp.
Austral Bracken	Pteridium esculentum
Blunt Greenhood	Pterostylis curta
Tall Greenhood	Pterostylis longifolia s.l.
Dwarf Greenhood	Pterostylis nana
Nodding Greenhood	Pterostylis nutans
Maroonhood	Pterostylis pedunculata
Common Ruddyhood	Pterostylis squamata
Common Bog-sedge	Schoenus apogon
Jagged Fireweed	Senecio biserratus
Annual Fireweed	Senecio glomeratus

<b>COMMON NAME</b> <b>* Weed Species</b>	<b>NAME</b>
Fireweed Groundsel	Senecio linearifolius
Cotton Fireweed	Senecio quadridentatus
*Groundsel	Senecio spp.
Slender Fireweed	Senecio tenuiflorus
Smooth Solenogyne	Solenogyne dominii
*Bluebell Creeper	Sollya heterophylla
*Rough Sow-thistle	Sonchus asper s.l.
*Common Sow-thistle	Sonchus oleraceus
*Sow Thistle	Sonchus spp.
Dusty Miller	Spyridium parvifolium
Creamy Stackhousia	Stackhousia monogyna
*Chickweed	Stellaria media
Grass Trigger-plant	Stylidium graminifolium s.l.
Pink-bells	Tetradlea ciliata
Spotted Sun-orchid	Thelymitra ixioides s.l.
Slender Sun-orchid	Thelymitra pauciflora s.l.
Sun Orchid	Thelymitra spp.
Kangaroo Grass	Themeda triandra
Twining Fringe-lily	Thysanotus patersonii
Yellow Rush-lily	Tricoryne elatior
*Narrow-leaf Clover	Trifolium angustifolium var. angustifolium
*Gorse	Ulex europaeus
Spur Velleia	Velleia paradoxa
Hairy Speedwell	Veronica calycina
Ivy-leaf Violet	Viola hederacea sensu Entwisle (1996)
Bluebell	Wahlenbergia spp.
Tall Bluebell	Wahlenbergia stricta
Common Early Nancy	Wurmbea dioica
Cut-leaf Xanthosia	Xanthosia dissecta s.l.

## Appendix 6

### Recommended Fire Management Works

#### Ref. Tindals Wildflower Reserve, Bushfire Prevention and Preparation Plan (November 2009)

OBJECTIVES	STRATEGIES	ACTIONS
Limit occurrence of unplanned fires	Regulate fire use	<ul style="list-style-type: none"> <li>Prohibit all fires</li> <li>Signage at Heidelberg-Warrandyte Road, Melbourne Hill Road and Wildflower Court entrances re prohibition of fires (Item 1 on Figure 8)</li> </ul>
	Isolate known ignition sources	<ul style="list-style-type: none"> <li>Clear power lines to relevant code standard and remove slash (Item 2 on Figure 8)</li> </ul>
	Discourage arson	<ul style="list-style-type: none"> <li>Council staff patrol in reserves on Total Fire Ban days</li> <li>Signage at each entrance re patrol</li> <li>Request that CFA investigate all unplanned fires</li> </ul>
	Facilitate first attack fire fighting	<ul style="list-style-type: none"> <li>Maintain current level of access into the reserve via walking track and public road network (Item 3 on Figure 8)</li> <li>Remove fallen branches with fine fuel from within 5 metres of either side of the track and roads (Item 3 on Figure 8)</li> <li>Maintain access to reticulated water supply</li> </ul>
No person should suffer injury or lose of their life from wildfire in the reserve	Regulate use of the reserve	<ul style="list-style-type: none"> <li>Signage at Heidelberg-Warrandyte Road, Melbourne Hill Road and Wildflower Court entrances warning against use on Total Fire Ban days (Item 4 on Figure 8)</li> </ul>
Potential damage to houses and infrastructure from fire in the reserve should be minimised	Reduce potential for flame and radiant heat damage to built assets	<p><u>North of Heidelberg-Warrandyte Road</u></p> <ul style="list-style-type: none"> <li>Create Fire Management Zone 1 (FMZ) by slashing grass to 100 mm and removing elevated fuel beneath the power line east of Pound Road to supplement the break currently provided by the roadway (Item 5 on Figure 8)</li> <li>Establish a FMZ2 for a width of 10 metres adjacent to Diane Court to supplement the break provided by the roadway. Thin elevated fuel so as to provide less than 20% cover (Item 6 on Figure 8)</li> </ul> <p><u>South of Heidelberg-Warrandyte Road</u></p>

OBJECTIVES	STRATEGIES	ACTIONS
		<ul style="list-style-type: none"> <li>• Maintain the power line easement to the south of the reserve as a FMZ1 with grass cut to 100 mm and monitored for regrowth during the Fire Danger Period, and no elevated fuel (Item 7 on Figure 8)</li> <li>• Recognise the property management to the southeast of the reserve as providing a defacto FMZ but monitor for changes in the condition of the private property (Item 8 on Figure 8)</li> <li>• Maintain strip between Melbourne Hill Road and dwellings in northeast corner as FMZ2 with litter depth less than 10 mm, grass cut to 100 mm and monitored for regrowth during the Fire Danger Period, and elevated fuel on less than 20% of the area (Item 9 on Figure 8)</li> </ul>
	Reduce potential for ember ignition of built assets	<ul style="list-style-type: none"> <li>• Target adjacent private properties for annual fire hazard inspection by MFPO and stipulate maintenance of appropriate WMO inner and outer zone standard vegetation management</li> <li>• Manage vegetation on any power line easements, other than those designated as FMZs, to relevant code standard and remove slash</li> <li>• Verify relative consequence of damage to power lines with relevant consequence of damage to power lines with relevant distribution company</li> </ul>
Fire management should protect and enhance environmental values within the reserve	Ecological burning program	<ul style="list-style-type: none"> <li>• Reduce bark fuel hazard through burning along the eastern boundary</li> </ul>
	Fire protection works to minimise environmental impact where compatible with safety objectives	<ul style="list-style-type: none"> <li>• Targeted outreach to residents in Diane Court and Melbourne Hill Road within 50 metres of the reserve</li> <li>• Target all adjacent private properties for CFA and/or Council community education programs</li> <li>• Develop and implement an ecologically-based burning program that achieves appropriate fire regimes for EVC</li> <li>• Continue woody weed removal giving priority to areas adjacent to Diane Court and Melbourne Hill Road near dwellings east of the reserve (Items 6 &amp; 9 on Figure 8)</li> <li>• Time mowing, slashing etc. to favour desired species</li> </ul>

OBJECTIVES	STRATEGIES	ACTIONS
		<ul style="list-style-type: none"> <li>• Undertake post-fire monitoring and weed control as required</li> <li>• It is desirable for fire suppression to use existing roads as control lines where safe and practical in order to limit machinery use within the reserve</li> </ul>
Built and natural environment beyond the reserve should not suffer significant damage from a fire in the reserve	Increase community resilience beyond the reserve boundary	<ul style="list-style-type: none"> <li>• Ensure surrounding area is covered by relevant planning and building approval controls</li> <li>• Target surrounding area for CFA and/or Council community education re wildfire safety</li> </ul>
	Plan to manage fire spread beyond the reserve	<ul style="list-style-type: none"> <li>• Seek to integrate fire prevention works with neighbouring land managers, e.g. Parks Victoria</li> <li>• Include consideration of Tindals Wildflower Reserve in relevant landscape scale wildfire management plan</li> </ul>



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## Appendix 7

### 'Our Community Voice' Tindals Wildflower Reserve Questionnaire Results – January 2012

The 'Our Community Voice' survey was a self-completion questionnaire, which was mailed on 9 November 2011 to 446 households in the area surrounding Tindals Wildflower Reserve.

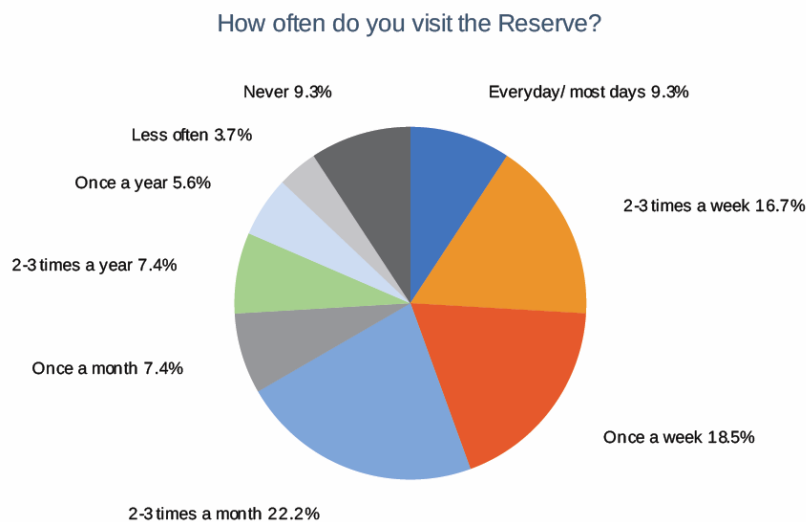
The questionnaire was designed to inform the community about preparation of the Tindals Wildflower Reserve Management Plan and ascertain how the reserve is used by the local community and ideas and issues that should be addressed in the Management Plan.

The questionnaire was a mixture of tick boxes and space for individual written comments. Respondents were given an opportunity to indicate if they wished to be involved in future consultation. The respondents had until 23 December 2011 to complete the questionnaire and return it via a reply paid envelope for data processing and analysis.

53 responses were received which represented a 12% response rate. 25 respondents indicated that they would like to be involved in further consultation regarding the preparation of the Tindals Wildflower Reserve Management Plan.

The results of the survey are presented below. In response to the open ended questions of the survey, a summary of comments is provided in Attachment 1.

#### Question 1. How often do you visit the Reserve?



Even though Tindals Wildflower Reserve is a relatively small area of open space compared to the larger reserves in Warrandyte, such as the Warrandyte State Park, it is a popular place to visit for local residents on a regular basis. A large number of respondents (41.5%) regularly visit the reserve throughout the week with almost a quarter of the respondents (22%) visit the reserve twice a month.

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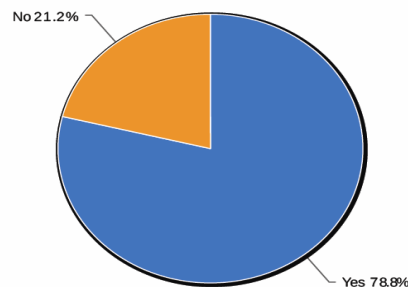
## Question 2. When do you usually visit the Reserve?

The results of the survey reveal that the reserve is visited on a constant basis throughout the week. Almost half of the respondents (41.5%) visit the reserve both on the weekday and weekend, which indicates there is no peak visitation time between weekday and weekend use.

## Question 3. Do you feel safe when visiting the reserve?

### Question 4: Why do you say that?

Do you feel safe when visiting the Reserve?



The survey findings indicate that the majority of the respondents (78.9%) believe that Tindals Wildflower Reserve is a safe place to visit, and cited reasons such as they enjoyed the solitude of the reserve as a place which is quiet and relaxing. Almost a quarter of the respondents (21.2%) did not feel safe when visiting the reserve and cited that they do not like to walk alone and the reserve appears untidy and isolated from the road, the paths are overgrown and snakes and fire risk (especially in summer) are a concern.

## Question 5. How do you usually get to the reserve?

The majority of respondents surveyed (85.7%) walk/run to Tindals Wildflower Reserve. Most of the reserve is surrounded by large properties in the low density residential zone to the west and rural conservation zone to the southeast. Higher density development on the northern side of Heidelberg-Warrandyte Road abuts the reserve to the northeast.

The survey results indicate the importance of accessible, safe and walkable catchments to green open space areas, even in areas with larger properties. The range of psychological benefits for people who visit green open spaces in vast and includes:

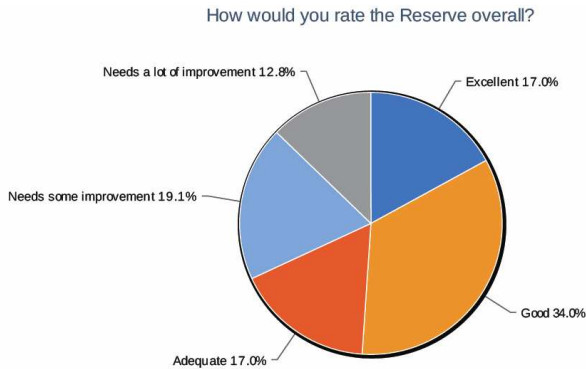
- a place to escape to away from the home/school or workplace;
- changes of scenery;
- improvements in mood;
- lower levels of anxiety;
- lower stress levels;
- lower levels of depression; and
- increased physical activity.

A low proportion of respondent's cycle (4.1%) to the reserve and 10.2% of respondents travel by car. The reserve's significant flora is of long standing value and interest to the wider community including plant specialist groups, international visitors (naturalists,

biologist, tourists) and the general public interested in the natural environment, as it represents a good example of the original Yarra Valley flora within easy reach of the city and airport.

**Question 6. How would you rate the reserve overall?**

**Question 7. Why do you say that?**

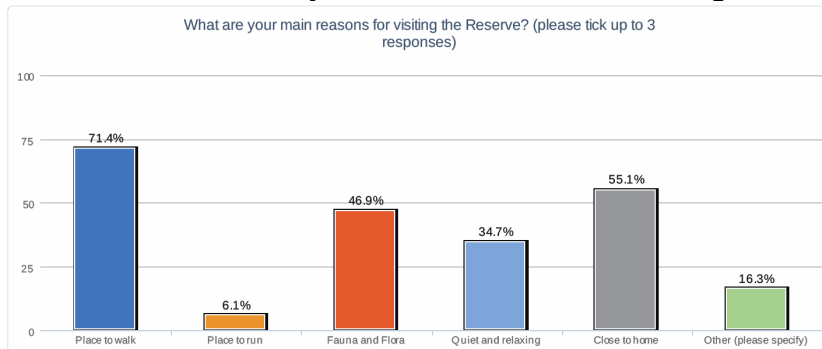


The survey results indicate that a little over a half of the respondents (51%) rated the reserve as good (34%) or excellent (17%). However, over a third of the respondents (32%) believed that the reserve could be improved, of these 19.1% of the respondents indicated that the reserve ‘needs some improvement’ and 12.8% indicated that the reserve ‘needs a lot of improvement.’

In response to the open ended question, a summary of reasons why people chose a particular rating for the reserve is provided in Attachment 1. The comments can be divided into the following two broad areas:

- ‘Good to excellent’ rating. Tindals Wildflower Reserve is highly valued by the local residents for it is a natural bushland with significant environmental qualities. As one respondent succinctly stated “it doesn’t need changing, just maintaining’. An objective of the Management Plan would be to continue to protect and enhance the biodiversity and conservation values of vegetation communities and flora and fauna species of the reserve. (17 comments)
- ‘Needs some/a lot of improvement’ rating. The main concerns cited were that the reserve is not user friendly, paths are overgrown and it is a fire hazard. (15 comments)

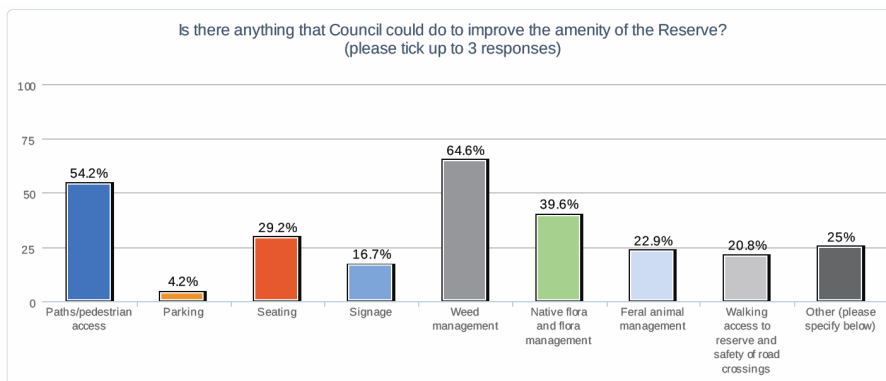
**Question 8. What are your main reasons for visiting the reserve?**



Respondents were asked to indicate up to three reasons why they visited the reserve. Almost three quarters of the respondents (71.4%) cited 'place to walk' as the main reason they visit followed by 'close to home' (55.1%) and 'fauna and flora' (46.9%). Efforts must be made to improve the reserve, particularly path upgrades and maintenance and by improving the quality of life in local neighbourhoods by increasing walkability and access to natural environment.

The growing community awareness about biodiversity and conservation is likely to increase the demand for the protection of natural areas while also increasing the attraction of such areas to people as they continue to seek natural environments as settings for leisure and recreation activity. Continued and improved provision of sustainable nature-based recreation for the community and recognition of their attachment to the natural areas will be important objectives for the future management of Tindals Wildflower Reserve.

**Question 9. Is there anything that Council could do to improve the amenity of the reserve?**

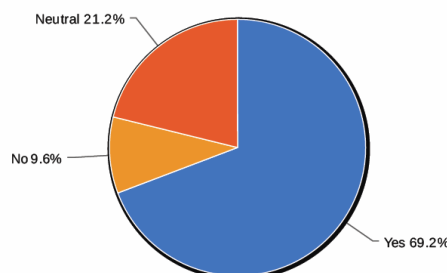


Respondents were asked to indicate up to three items that they believe would improve the amenity of the reserve. The survey findings reveal the following main areas of improvement:

- Environmental management includes 'weed' (64.6%), 'native flora' (39.6%) and 'feral animal' management (22.9%);
- Path/pedestrian access (54.2%);
- Seating (29.2%);
- Walking access to reserve and safety to road crossings (20.8%); and
- Signage (16.7%)

**Q10. Would you support an extension of the Main Yarra Trail to Warrandyte along the north side of Heidelberg-Warrandyte road within the Reserve?**

Would you support an extension of the Main Yarra Trail to Warrandyte along the north side of Heidelberg- Warrandyte Road within the Reserve?



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Over two thirds of the respondents (69.2%) indicated that they supported the extension of the Main Yarra Trail to Warrandyte along the north side of Heidelberg-Warrandyte Road within the Reserve as the trail would provide the local community with safe cycling/walking access to Warrandyte. 9.6% of respondents did not support the trail extension through the reserve and 21.25% indicated that they were neutral about the trail extension which could be attributed to concern over potential loss of significant vegetation and habitat and the lack of information about designated route of the trail extension. The Main Yarra Trail to Warrandyte is not a high priority with Parks Victoria in the current climate.

**Q.11 Is there anything Council could do to encourage you to use the reserve more often?**

In response to this open ended question a summary of comments from the respondents is provided in Attachment 1. The comments can be grouped into the following:

- Improve general maintenance of the reserve including path clearances and provide some seating within the reserve (ten respondents);
- No action required, leave the reserve alone. (nine respondents);
- Provide low key interpretation, directional and regulatory signage (five respondents);
- Provide opportunity to walk dogs in the reserve, as it is currently designated a dog prohibited reserve (three respondents).

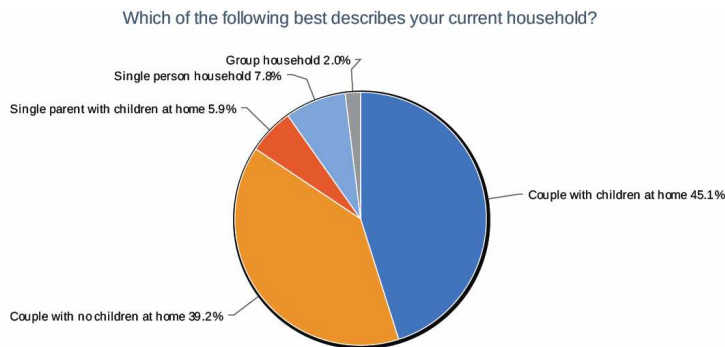
**Q.12 Do you have any further comments?**

In response to this open ended question a summary of comments made from the respondents is provided in Attachment 1. The comments can be divided into the following areas;

- Residents enjoy the naturalness, peace and quiet of the reserve and believe that the bushland should continue to be maintained and protected. Development of the reserve is not supported as “the bush does not need developing’ and ‘keep the bushland the way it should be - natural’, ‘that’s part of the Warrandyte appeal’. (twelve comments)
- Main Yarra Trail extension is only supported if there is no loss of significant vegetation and no impact on Tindals Wildflower Reserve. (four comments)
- Other. (individual comments)
  - Car speeds in Pound Road, Tindals Road and other local roads should be reduced to 40 kph as pedestrians, cyclists and dog walkers have to walk on narrow roadways;
  - The reserve is a fire hazard;
  - Consider Pound Road/Dianne Court, Warrandyte-Heidelberg section a designated dog off lead area on the paths; and
  - Dumping of rubbish in the reserve.

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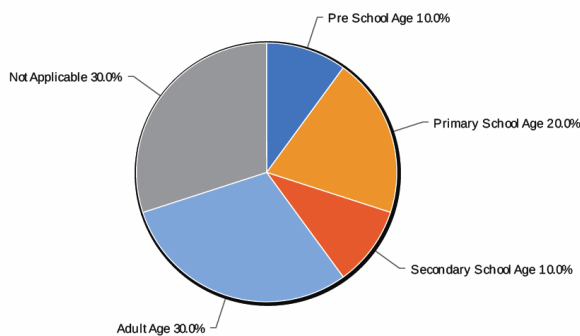
**Q.13. Which of the following best describes your current household?**



The survey findings reveal two broad demographic groups. The first group comprised over half the respondents (51%) represented families with children at home. The second group comprised over a third of the respondents (39.2%) represented a 'mature' household composition with 'couple with no children at home'.

**Q.14. If there are children in the household are they?**

If there are children in the household, are they? (please tick all that apply)



The results of the survey indicate that 40% of the households surveyed represent young and growing families with 10% with pre school age children, 20% with primary school age children and 10% with secondary school age children. Almost a third of the respondents (30%) represented families with adult children.

Research has shown that children who experience high levels of contact with nature are reported to have higher levels of self-worth and higher cognitive function.

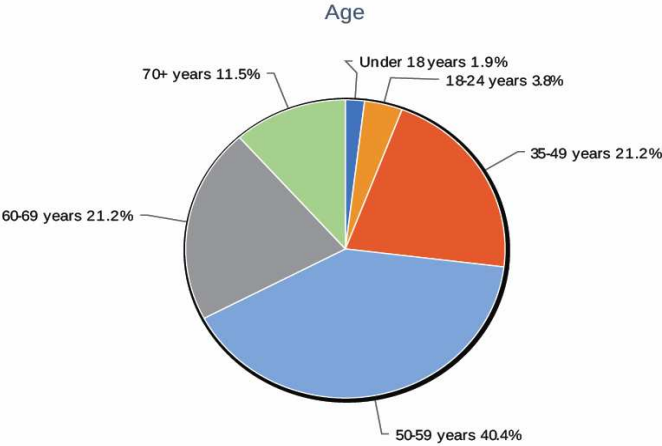
The outdoors is believed to be one of the most suitable and favourite places for children to indulge in free play and gross motor activity, due to the presence of trees and flowers, among other features. This type of setting is described as an enriched environment and is believed to have multiple functions by providing a platform for play, as well as objects to interact and play with.

An enriched environment opens avenues for developmental benefits in older children including learning and memory; opportunities to accrue and display decision-making skills; and problem solving and creative thinking. Younger children can engage in imaginative play, which is considered a foundation of social and cognitive development. Research has shown that children who experience high levels of contact with nature are reported.

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The challenge of the management plan is to enhance environmental appreciation of the reserve which is particularly important for children who are experiencing less and less of nature from one generation to the next.

**Q15. Age**



The survey results reveal that almost three-quarters (73.1%) of the respondents who completed the questionnaire were fifty years or older with almost a quarter representing the 35-49 years age group.

Tindals Wildflower Reserve should provide for an aging population as well as young and growing families with opportunities for nature appreciation, relaxation, education, research and special activities such as art and photography, provided these activities do not compromise the long term environmental integrity and management of the reserve. Enjoyment of the reserve for the local and wider community will enable people of all ages to engage in physical activity leading to increased health and well being balanced with the need to protect the natural assets of this sensitive reserve.

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## ATTACHMENT 1

In response to open ended questions in the survey the detailed comments made from the respondents are provided below.

### Q4. Do you feel safe when visiting the reserve?

Yes 78.8%  
No 21.2%

**Why do you say that?** Responses were grouped in the following areas:

Walk with friends/family	6
Quiet & Relaxing	18
Worry about Snakes	3
Don't walk on high fire danger days	3
No comment	3
Overgrown paths	5

### Q6. How would you rate the Reserve overall?

Excellent	17.0%
Good	34.0%
Adequate	17.0%
Needs some improvement	19.1%
Needs a lot of improvement	12.8%

**Why do you say that?** Responses were grouped in the following areas:

Natural Bushland, good weed control	16
Overgrown paths	13
Quiet	2
Needs to be fire ready	2

### Q11. Is there anything Council could do to encourage you to use the Reserve more often?

Responses were grouped into the following areas:

Allow dogs on lead	3
Clean up paths/maintenance	12
Leave it alone	4
No signs	3

### Q12. Do you have any further comments?

Responses were grouped in the following areas:

Terrible fire hazard	1
Keep as is/lovely place	19
Reduce speeding traffic to 40 kph/and stop rubbish dumping	4
Dog off lead	1