## Contents

- **EXECUTIVE SUMMARY** .................................................................................................................................2
- **SUMMARY REPORT CARDS - 2012/13** .............................................................................................................11

### 1. BIODIVERSITY ...............................................................................................................................................20

1.1 Background Context ........................................................................................................................................21
1.2 Biodiversity across the municipality .............................................................................................................23
1.3 Working with the community .........................................................................................................................39
1.4 Working with Regional partners .....................................................................................................................41
1.5 Creating a Greener City ......................................................................................................................................42

### 2. WATER ...........................................................................................................................................................44

Part A Water Conservation and Efficiency ..........................................................................................................45
2.1 Background Context ........................................................................................................................................45
2.2 Council’s efficient use and management of water resources ........................................................................47
2.3 Community water use ...................................................................................................................................53

Part B Water Quality ....................................................................................................................................58
2.4 Background Context ..................................................................................................................................58
2.5 Quality of our local waterways and associated water quality ....................................................................59

### 3. WASTE MINIMISATION ...............................................................................................................................62

3.1 Background Context ....................................................................................................................................63
3.2 Reducing waste and increasing recycling of residents ................................................................................65
3.3 Future Directions - Impacts of State and Federal Policy ...............................................................................72
3.4 Working towards an integrated approach to waste minimisation .................................................................74
3.5 Key recent initiatives taken by Council to minimise waste production from the non-residential sector and increase recycling ............................................................................................................76
3.6 Working with the community to reduce littering ..........................................................................................77

### 4. SUSTAINABLE TRANSPORT ........................................................................................................................80

4.1 Background context .......................................................................................................................................81
4.2 Transport patterns in Greater Dandenong ....................................................................................................83
4.3 Improving the walkability and cycling capacity of the Municipality ..............................................................84
4.4 Public Transport in Greater Dandenong .........................................................................................................89

### 5. CLIMATE CHANGE .......................................................................................................................................96

5.1 Background Context .....................................................................................................................................97
5.2 Mitigation - Reducing Greenhouse Gas Emissions .......................................................................................98
5.3 City of Greater Dandenong - Corporate Emissions ....................................................................................99
5.4 City of Greater Dandenong - Community emissions ....................................................................................109
5.5 Adaptation – increasing resilience to the unavoidable impacts of Climate Change ......................................114

### REFERENCES .................................................................................................................................................118
EXECUTIVE SUMMARY

REPORTING COUNCIL’S PROGRESS TOWARDS A HEALTHIER ENVIRONMENT, A HEALTHIER COMMUNITY

State of the Environment Reporting

State of the Environment (SoE) Reporting is a management tool that collates and analyses information to enable an assessment of environmental trends. This information is then used to inform policies and practices for improving the state of the environment. Across the Victorian local government sector, there is limited use of SoE reporting – in part due to the paucity of appropriate data and a lack of formal requirements and guidelines. As a result, where undertaken, the scope of SoE reports and the indicators reported on can vary considerably across the sector.

City of Greater Dandenong’s SoE Reporting

The scope of this City of Greater Dandenong SoE Report has been broadened to provide a reporting tool to specifically monitor Council’s progress towards the goals and objectives identified in the 2010 Environmental Sustainability Strategy: A Healthier Environment, A Healthier Community. This has been undertaken because in the past, while Council has made significant statements of leadership on environmental issues, the implementation of environmental related strategies has at times been limited. The transparent approach provided through this SoE reporting will, over time, enable Council and the community to become more informed and assess progress that has been made towards implementing A Healthier Environment, A Healthier Community.

Reporting on Environmental Sustainability Strategy Themes

The first stage of the Strategy identified the following four broad themes:

- Biodiversity
- Water
- Waste
- Sustainable Transport.

As part of the development of this SoE reporting framework, the theme of Climate Change has also been considered. For each theme in the Strategy, a long term goal was identified. For each goal, a number of strategic objectives were determined, focused towards achieving intermediate outcomes. Indicators have been identified to enable monitoring of the progress towards these goals and objectives. Where appropriate quantifiable data is not readily available for use as an indicator, interim indicators have been used. Indicators used will evolve over time as data becomes available and our knowledge and understanding of the issues increases.

Establishing Targets

This 2013–14 SoE Report provides the reporting mechanism for these stated goals, objectives and indicators. It will be used to guide the City of Greater Dandenong’s progress towards a healthier environment. For each indicator, a specific target has been established. Where targets have been established previously, such as existing Council strategies or business plan reporting, these have been incorporated into this report. For indicators where targets previously did not exist, new targets have been established. Where appropriate, longer term targets have been established.

Future Direction of Themes and Overall Strategy

The 2010 Environmental Sustainability Strategy addressed four initial themes, with additional themes to be addressed in the next stage. Planning for this next stage commenced in 2013 and community consultation and engagement were identified as a key component in addressing these additional themes. As a result, it was determined that the community should have the opportunity to provide input into all the themes in the strategy, not just the proposed additional themes. A new Environmental Sustainability

ENVIRONMENTAL SUSTAINABILITY STRATEGY VISION:

By 2015, the City of Greater Dandenong is recognised as being a committed organisation that is achieving significant reductions in its environmental impacts and has developed a sound foundation to provide leadership and direction to achieve real change with the community.

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EXECUTIVE SUMMARY

Strategy is planned to be completed in 2015. This new overarching strategic document will provide the framework that informs Council’s policies and actions in relation to the environment at both an organisational and community level. It is intended to continue to provide an annual environment report that monitors Council’s and the community’s progress towards the goals and objectives outlined in the new strategy. The format and content of the future reports will be considered as part of the development of this strategy.

SUMMARY OF THEMES FOR 2012–13

Biodiversity
Past land use has resulted in clearance of much of the remnant native vegetation across the state of Victoria, including this municipality. State planning provisions were introduced to reduce the rate of clearing and provide greater protection for the remaining native vegetation. Across Greater Dandenong, the significant remnant vegetation that remains is usually in the form of scattered River Red Gums (Eucalyptus camaldulensis), many of which are over a hundred years of age. These remnant River Red Gums predominantly occur in the southern half of the municipality, including the Greater Dandenong’s Green Wedge.

Development across the municipality continues to impact on remnant vegetation. The State’s planning provisions have until recently provided Council with the ability to limit the permitted clearance of native vegetation across the municipality. In December 2012, the State Government introduced new native vegetation clearance controls which have significantly reduced the impact on remnant vegetation and protected local remnant vegetation based on its biodiversity values.

Council, in collaboration with other councils, expressed its concerns and advocated for changes when the initial draft vegetation clearance controls were first released in 2012 for community consultation. With the new clearance controls implemented, Council is exploring what opportunities exist to provide increased protection through its powers of control.

Apart from clearing, remnant native vegetation faces other pressures such as the spread of weeds, which can lead to a further decline in the quality and/or extent of the remnant vegetation. Council is working to address these issues through the development and implementation of management plans for the bushland areas within Council’s open space reserves.

Council is also taking action, increasing the connectivity of patches of native vegetation across the municipality. To assist in this process, Council is a participant in ‘Living Links’, a long-term, strategic project focused upon the delivery of more liveable and sustainable outcomes across the Dandenong Creek catchment. ‘Living Links’ aims to protect key environmental and cultural features as well as encouraging a network of linked trails to better connect people to these natural areas. Initiated by the Port Phillip and Westernport Catchment Management Authority, the collaborative project now involves 10 Councils and other stakeholders including state government authorities such as Melbourne Water and Parks Victoria. The final stage of the Living Links Masterplan was recently completed, of which forms the centrepiece to achieve the overall aims of ‘Living Links’.

Significant patches of River Red Gums remain within the Greater Dandenong Green Wedge area. Council is currently in the process of developing a Green Wedge Management Plan. This plan will provide Council, residents, landowners and business operators with more certainty about the protected remnant vegetation across the Greater Green Wedge and all the land within it. Community consultation identified that protection and enhancement of the natural biodiversity values of the area was a key concern. As a result, an objective of this plan focuses on enhancing the ecological values within the Green Wedge. The community has once again played a critical role in the management of local biodiversity, participating in a range of environmental education programs established by Council’s bushland team. For example, in 2012–13:

• Over 22,600 indigenous plants were planted during 10 planting days with the public at numerous reserves in addition to 9 school planting days. Over 1000 people from the local community participated in these planting days. Of the 75 community environment events held, over 1750 members of the community attended.

• Council’s environmental education program recorded 77 events with a combined total of over 2030 participants recorded. This included events such as hosting excursions with local students in the Alex Wilke Nature Reserve, visiting community groups and holding an event for World Wetlands Day.

• Council contributed funding to Melbourne Water’s Waterwatch program, enabling students from a number of local schools as well as three friends-of groups to participate in this program that educates awareness and monitors the water quality of local waterways.

Water

Integrated Water Management

The standard industry approach to water management has been to plan and implement water cycle components such as water supply and stormwater separately. Recent developments have led to a rethink of these water management practices. Water authorities and local governments are now identifying opportunities to achieve a more integrated approach to the management of water resources. To assist in this process, Council has undertaken a range of measures, including the preparation of an Integrated Water Management Background Report and participation in the CRC - Water Sensitive Cities – which brings together over 70 research, industry and government partners to help guide urban development over the next 15 years to make towns and cities water sensitive.

Water Conservation

Council, across its operations, used approximately 194ML of drinking (or potable) water in 2012–13. While this is an increase from the 142ML used the previous year, it is still considerably lower than the nearly 400ML recorded in 1999–00. A drier 2012–13 was a significant factor in the increase in water use compared with the previous few years, with nearly 60 per cent of Council’s water use being associated with Council’s sports fields and pavilions.

Drinking water use at the major leisure centres (such as Dandenong Oasis and Noble Park Sports and Aquatic Centre or NPAC) and across Council’s buildings and operations has remained relatively stable. Over the time, the cost of drinking water has increased significantly. This provides a financial incentive for Council to reduce its use of drinking water through measures such as increased efficiency and the use of alternative sources of water, such as rainwater and stormwater.

Council’s water use in recent years has been impacted by a number of factors, including the impacts of water restrictions and the conversion of all playing fields to drought resistant turf grasses. The latter can reduce watering needs by up to 70 per cent when compared with the more traditional grass types. Seasonal variation in rainfall levels can also significantly impact irrigation requirements, with greater demand for irrigation in drier years. Alternative supplies, such as harvesting of rainwater and stormwater, are increasingly being implemented to reduce drinking water use. Recent examples include:

• the recently completed Greater Dandenong Civic Centre, with measures that include a 117,000 litre rainwater tank for flushing of toilets and irrigation of landscaped areas, water efficient fittings and fire sprinkler testing systems that reduce water use.

• a 700,000 litre rainwater tank at the Noble Park Aquatic Centre (NPAC), for uses including flushing of toilets and irrigation of the surrounding landscaped areas. Grey water is also harvested to irrigate lawn areas.

• the stormwater harvesting project at Tatterson Park, which has the potential to provide up to 20ML per year of water to irrigate the surrounding ovals and landscaped areas.

Data indicates that under the State Government’s water restrictions, as with the rest of Melbourne, the average levels of residential drinking water use per property for suburbs within Greater Dandenong had fallen each year under restrictions. As expected, the easing of restrictions has seen a rebound in water use across Melbourne, including this municipality. While councils have relatively limited direct ability to influence community water use, the City of Greater Dandenong has undertaken a range of measures to increase the community’s awareness of water related issues and opportunities to reduce drinking water use. For instance:

• Council has actively lobbied for increased access across the municipality to recycled water from the Eastern Treatment Plant. Recycled water infrastructure is now being installed in Keysborough and Dandenong South, with 1,150 residential and industrial properties being connected to recycled water at the start of 2014. This is expected to result in a reduction in drinking water for those properties connected.
EXECUTIVE SUMMARY

- An example of a recent initiative was the focus on water conservation and stormwater quality through use of displays representation by SE Water and Melbourne Water at Council's first Sustainability Festival, held in March 2014.

Water Quality

Across Melbourne, creeks and rivers are part of the urban drainage system. The water quality of the local waterways is generally poor, which is typical for urban areas. Traditionally, urban drainage systems have been viewed as a means of providing protection for urban areas from flooding rather than on water quality and its reuse. An integrated approach to water management provides the opportunity to improve water quality as well as make better use of the significant amount of stormwater that currently flows into the drainage network and out into the bay.

Responsibility for stormwater management is shared between local government and Melbourne Water. Recent measures are being taken to improve the quality of water entering our waterways include:

- the use of tree pits and rain gardens to collect and treat stormwater as part of the redesign of Lonsdale Street, Halpin Way, and new Settlers Square and Walker Street in Central Dandenong;
- participation in the development of regional Water Sensitive Urban Design guidelines;
- improving environmental management practices for development sites;
- improving water quality outcomes through the planning process, particularly for the development of larger residential and non-residential sites;
- assisting state authorities with the monitoring of pollutants in Dandenong South to identify its source to enable inspections to be undertaken.

Waste Minimisation

Australian’s are reported to be amongst the highest generators of waste in the world per capita, with Victoria’s on average producing 1.162 million tonnes per annum. Possible factors include a decline in the average time we spend at work per day, the increased use of home automation, our growing population and a significant factor, the generation and management of this waste have many environmental impacts, including the inefficient and unsustainable use of our natural resources. It is also recognised that the greater the amount of waste generated, the greater the health and environmental risks.

City of Greater Dandenong household residents currently have access to a three bin system – a smaller general waste bin and larger recycling and garden waste bins. Council’s waste data shows that since 1999, despite the increase in household numbers and in total waste collected, waste sent to landfill is around 5% per cent lower overall. Of the 57,384 tonnes of household waste collected by the City of Greater Dandenong during 2012–13, approximately 48 per cent was diverted from landfill. Vawn rates for recycling materials (paper and bottles) peaked three years ago but have since declined. Possible factors include a decline in newspaper sales and reduced packaging content.

A key waste initiative being undertaken by the City this year is the ‘Green Bin Swap’. Across the municipality, household waste and recycling bins are being changed over to the Australian colour standards for garbage (red), recycling (yellow) and garden (green) waste. This will enable statewide education programs to be undertaken, which will aim to influence our community’s recycling behaviours. The standard garbage bin size is also being reduced from a 140 litre to a 120 litre bin to encourage people to put greater thought into recycling and to reduce the recyclables still going into the garbage bin. A larger 360 litre recycling bin is also being offered to further increase the opportunity to recycle. Different options and prices are provided to encourage more environmentally friendly choices.

Council’s waste education officers each year undertake a range of programs and other initiatives to reduce waste and littering. Recent activities include:
- working with local schools to promote waste minimisation, with over 50 incursions undertaken;
- co-ordinating local ‘Clean Up Australia Day’ and ‘Schools Clean Up Day’ activities;
- continuing support for the ‘Dob in a Dumper’ campaign;
- expanding the Public Place Recycling programs;
- conducting ‘Follow Your Waste’ toys;
- waste education programs aimed at multi-unit dwellings;
- co-ordinating the Litter Action Task Force and the annual Litter Action Plan;
- assisting the Metropolitan Waste Management Group / Sustainability Victoria with the implementation of the ‘Get it Right on Bin Night’ campaign.

The City of Greater Dandenong municipal household waste systems and education programs are designed to reduce waste and increase recycling rates. However, local governments only have limited levers of control to minimise the amount of municipal household waste that is generated and recycled. Everyday, from federal and state governments, down to individuals, there is a role to play if we are to reduce waste generation and increase recycling rates. This will involve consideration of many factors, including product stewardship, packaging and new waste sorting technologies.

The cost of Council’s household waste service is impacted by state and federal policy decisions. Recent examples include:
- the federal government’s introduction of the Clean Energy legislation in 2011;
- the increase by the state government of waste landfill levies as part of its efforts to reduce waste to landfill.

More recently, the state government is introducing new waste management and resource recovery policies designed to help transform the state’s waste management system by setting a long-term vision for waste management. The idea is to stimulate a three bin system for recycling and the recycling of waste to landfill.

The most relevant state government activity is the introduction of waste levy on landfill activity as part of its efforts to reduce waste to landfill.

Other initiatives and achievements in 2012–13 include:
- Council achieving “Silver Accreditation” as part of Sustainability Victoria’s WasteWise™ office program;
- Ongoing work with local charity stores to reduce the amount of dumped rubbish;
- The continued funding by Council of the Litter Prevention Officer’s position, created in 2011 as part of a two year program funded by the Victorian Government. The role for this position is to lead strategic projects to reduce and assist the prevention of litter and illegal dumping of waste within the municipality;
- For the Year 2013:
  > Council investigated 2802 dumped rubbish reports.
  > 436 Litter infringements were issued.

Sustainable Transport

Transport is central to our way of life, connecting us with our families, friends, community and work. An effective transport system is critical to the livability of any city. The Victorian Government has significant responsibility for the development, management and operation of the state’s transport system. Councils traditionally have had a statutory responsibility for the management of local roads and local traffic management. Local governments are increasingly being recognised as having a role to play at the local and regional level as a planner, facilitator, advocate, and in some cases, as a provider of transport solutions. As part of Council’s efforts to facilitate improved transport for the region, Council is a member of a number of groups such as the Eastern Metropolitan Group of Councils.

Greater Dandenong is recognised as a regional transport hub. Council has long recognised that it has a key role to play in the provision of integrated transport solutions. Greater Dandenong, like the rest of Melbourne, is dominated by a car-based motor vehicle transport. The most recent Census data (2011) shows that journeys to work are dominated by the car, with Greater Dandenong residents using the car for around 79.3 per cent of their journeys to work as either a driver or passenger. This is slightly higher than the Melbourne average. Journeys to work by train accounted for 10.9 per cent of journeys, which is slightly lower than the Melbourne Metropolitan average. Journeys to work by bus, which increased by 5 per cent this year, is more than the Melbourne average. The latest data available from the Department of Transport indicates that train and patronage have increased.

• Estimated passenger boarding’s at Dandenong station have increased to over 2.5 million people in 2011–12 – an increase of over 30 per cent over the last several years.
• Noble Park and Springvale railway stations are equal in their patronage to make them the second and third busiest train stations, with an estimated 1.6 million boarding’s in 2011–12, an increase of over 175 per cent over the last seven years.
• Bus routes that travel through Greater Dandenong have also shown an increase in patronage, with figures for 2008–09 showing an increase of over 70 per cent since 2004–05.

The municipality’s bike path network is increasing each year as Council implements its Bicycle / Shared User Path Network. By May 2014, the network consisted of approximately 167km’s of paths, which is a significant increase from the 54km’s a decade ago. The network is planned to be developed in conjunction with VicRoads Principal Bicycle Network. Other notable achievements include the recent completion of the Springvale Level Crossing Removal project including the construction of the new Springvale Station (of which Council has been a contributing body in the process led by VicRoads). Council continue to implement the Springvale way finding and signage strategy with the installation of new way finding signage in the Springvale activity centre to further encourage walking and cycling.
EXECUTIVE SUMMARY

Climate Change

Corporate emissions

The City of Greater Dandenong has long recognised the need to contribute to global efforts to reduce greenhouse gas emissions. An important step in this process is determining Council’s corporate emissions. Council is recognised across the local government sector for demonstrating best practice in the area of utility usage data monitoring. This data has been used to determine Council’s corporate greenhouse gas emissions, which have fallen marginally in 2013 when compared with the previous year. Recent measures undertaken to minimise Council’s corporate greenhouse gas emissions include:

• completion of the Greater Dandenong Civic Centre, which has been designed to achieve a 5 star Green Star rating including a number of energy efficient design features.
• energy saving measures incorporated into the new Noble Park Aquatic Centre (NPAC), including the cogeneration plant
• replacement of old hot water units with new solar hot water systems to a number of council buildings
• the recent successful bid for $1.5 billion of government funding towards a $3 Million dollar project to enable Council to replace approximately 6,500 inefficient public streetlight lamps with energy efficient lights. This is expected to result in:
  > better lighting outcomes for the community
  > the saving of over 2000 tonnes of greenhouse gas emissions each year
  > ongoing financial savings due to lower energy usage and operating costs.

Community emissions

The amount of greenhouse gas emissions generated across the local community is not known due to the paucity of reliable and accurate data available at the local level. While Council does not have control or responsibility over emissions generated by the local community, Council can facilitate progress towards a reduction in community emissions through leadership, advocacy and its programs. Key measures Council has undertaken to reduce community greenhouse gas emissions include:

• Demonstration of Council’s environmental leadership through the new 5 star Green Star rated Greater Dandenong Civic Centre and the installation of a cogeneration plant at the new Noble Park Aquatic Centre.
• Working with Places Victoria on the Precinct Energy Project (PEP) as part of the Revitalising Central Dandenong project. The PEP is the first of its kind in Australia, using cogeneration from natural gas and is a new model for the sustainable delivery of energy to the precinct’s developments. The new Greater Dandenong Civic Centre is the first building to utilise the electricity and hot water supplied by the PEP.
• Council’s Home and Community Care ongoing program that assists the aged and frail to reduce energy use in their homes. This involves implementing basic measures such as reducing draughts in homes or replacing broken seals on fridges.
• Membership of the Council Alliance for a Sustainable Built Environment (CASBE), which provides the 20 member councils with access to various resources to improve the environmental performance of the built environment. CASBE also undertakes advocacy on planning matters involving sustainability, including energy efficiency and climate change. Membership of CASBE has also assisted Council in its trial of sustainability planning tools in the planning application process to improve the environmental performance of new residential and non-residential buildings. A review was completed in 2013 with the aim of formalising this process.
• In 2012, Council joined the South East Councils Climate Change Alliance (SECCCA), which enables Council with the opportunity to participate in SECCCA projects that aim to reduce community emissions, as well as increasing the community’s resilience through adaptation.

Adaptation

Global efforts to reduce greenhouse gas emissions are increasing, but too slowly to avoid the risks of dangerous climate change. A rise in temperatures is projected to increase significantly the potential impacts on areas such as food production, water and extreme weather conditions. Australians are faced with the need to adapt to the impacts of climate change. The impacts we face currently from natural events such as drought, flood and bushfires show how vulnerable we can be to our variable climate and climatic extremes. Adaptation, by adjusting existing activities and practices, will be required to increase our resilience to the unavoidable impacts of climate change.

The role for local government is evolving over time. Greater Dandenong is currently taking direct measures such as the implementation of Council’s Heatwave Plan. To effectively plan for climate change, Council needs to have a clear understanding of the projected changes and the potential impacts. SECCCA has been successful in receiving State Government funding to develop a framework to integrate climate change risks and adaptation into their financial planning of participating councils. Council plans to undertake a climate change risk assessment as a component of this project. The outcomes will ultimately inform the development of a climate change mitigation and adaptation strategy by Council.

Summary Report Card for each of the themes

A summary report card for each of the themes identified above has been provided as part of the Executive Summary. The following report cards for each theme are based on the following framework:

Goal

Long term outcome that Council is striving to achieve. Goals for each theme were identified in Council’s 2010 Environmental Sustainability Strategy: A Healthier Environment, A Healthier Community.

Objectives

Area of focus for intermediate outcomes to achieve long term goal, as identified in the Environmental Sustainability Strategy. Indicators have been identified for each objective and are reported against in this Strategy.

Snapshot of Current Status

A brief report on the current status, based on a summary of the information reported on for each objective and corresponding indicator(s).

Last Year’s Targets - 2011–12

Did we meet them?

The status of the level of achievement for the identified targets from last year’s 2011–12 report.

This Year’s Targets - 2012–13

New targets identified in this year’s report, which will be reported on in next year’s SoE report.

Strategic Actions This Year 2012–13

A summary of actions identified to be undertaken by Council’s responsible business units in 2012–13. To enable integration into Council’s Planning Cycle, actions for future years have also been identified in the body of this year’s report but have not been incorporated into this summary report card.

Rating

The level of achievement of identified targets is rated. The ratings are graded, depending on the level of achievement.

Rating Legend:

✓ Not Achieved

★★ 50per cent Achieved

★★★ 75per cent Achieved

★★★★ Met

★★★★★ Exceeded

The following report cards for each of the themes are based on the following framework:
## OBJECTIVES

<table>
<thead>
<tr>
<th>OB jective</th>
<th>SNAPSHOT OF CURRENT STATUS</th>
<th>LAST YEAR’S TARGETS 2012-13</th>
<th>THIS YEAR’S TARGETS 2013-2014</th>
<th>STRATEGIC ACTIONS THIS YEAR 2013-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 - Minimise further extinctions of indig enous flora, fauna and vegetation communities in Greater Dandenong.</td>
<td>Past land use has resulted in clearance of most areas of native vegetation across the municipality. The extent of remnant vegetation within Council reserves is relatively well documented, but limited for other areas across the municipality. Up to date fauna data is limited. The development of the Green Wedge Management Plan has resulted in an assessment of native vegetation across this area. The new State Government Native Vegetation Permitting Clearing Regulations have significantly impacted Council's ability to protect remnant flora and fauna within the municipality. Council is currently exploring what opportunities exist to provide increased protection through its layers of control.</td>
<td>Participate in the State Government’s review of Native Vegetation Clearance Controls.</td>
<td>Identify actions to be undertaken by Council in response to the changes to the Native Vegetation Permitting Clearing Regulations.</td>
<td>Identify funding opportunities to enable commencement of assessment of sites of biological significance. Continue to investigate opportunities to increase use of GIS to map and register significant patches of remnant vegetation. Identify opportunities to improve fauna data. Ongoing advocacy for improvements to the State’s Native Vegetation Permitting Clearing Regulations. Consider implications of the changes to the Native Vegetation Permitting Clearing Regulations and identify measures to improve the protection of native vegetation of local biodiversity significance through local planning policies.</td>
</tr>
<tr>
<td>1.2 - Increase the quality and quantity of indigenous vegetation within Council reserves</td>
<td>Council’s reserves with significant areas of remnant vegetation have had vegetation quality assessments undertaken to establish benchmarks of their condition and to identify management actions. Improvements to these reserves are occurring through the ongoing implementation of their management plans. In its efforts to improve the extent and quality of native vegetation with its reserves, Council has received funds to achieve ‘offsets’ within its reserves for native vegetation cleared elsewhere in the municipality. As a result of the recent changes to the Native Vegetation Clearing Regulations, Council is currently not in a position to accept ‘offsets’ for new developments sites.</td>
<td>Undertake at least 1 assessment of Council reserves quality of remnant vegetation to establish benchmark data.</td>
<td>Undertake at least 1 assessment of Council reserves quality of remnant vegetation to establish benchmark data.</td>
<td>Actions undertaken to improve the quality of indigenous vegetation within Council reserves includes: net gain assessments ongoing management activities e.g. re-vegetation, ecological burns, past control, community education development and ongoing review of management plans consider opportunities to achieve native vegetation ‘offsets’ within Council reserves.</td>
</tr>
<tr>
<td>1.3 - Increase the connectivity of existing rabbit corridors across the municipality</td>
<td>Council is a partner in ‘Living Links’, a large-scale environmental improvement program for the Dandenong Creek catchment. This collaborative project involves councils, government agencies and community organisations. 16 inter-connecting corridors have been identified that offer the opportunity for new or improved links across the region to benefit the local community and environment. Community consultation undertaken for the draft Green Wedge Management Plan has identified that the protection and enhancement of the remnant flora and fauna within the area is of high importance to the community.</td>
<td>Contribute to the funding of the development and implementation of the Living Links Masterplan.</td>
<td>Contribute to the funding and implementation of the Living Links Masterplan.</td>
<td>Participate in the implementation of the ‘Living Links’ Masterplan. Laise with Melbourne Water to identify and prioritise potential weed control and revegetation projects along the local waterways, such as Dandenong Creek and Mill Creek. Prepare a draft Green Wedge Management Plan for exhibition based on outcomes of community consultation,</td>
</tr>
<tr>
<td>1.4 - Work with the community to increase awareness of biodiversity, its importance and the impact that they can have on its conservation &amp; management.</td>
<td>During 2012–13:</td>
<td>Work with MW to identify and prioritise potential revegetation projects along the local waterways.</td>
<td>Work with MW to identify and prioritise potential revegetation projects to improve the local waterways.</td>
<td>Work with MW to identify and prioritise potential revegetation projects to improve the local waterways.</td>
</tr>
<tr>
<td>1.5 - Work with landholders to promote improved control of past animals and weeds on private and public land.</td>
<td>Council’s activities include: Working bees Weedbuster events Rabbits and fox control</td>
<td>5 Working bees with community groups per year.</td>
<td>5 Working bees with community groups per year.</td>
<td>Ongoing commitment to the ‘Living Links’ project.</td>
</tr>
<tr>
<td>1.6 - Work with partners to improve biodiversity through a regional approach.</td>
<td>Council is a partner in the ‘Living Links’ project, which was initiated by the Port Phillip and Westport Catchment Management Authority (PPWOMA). The collaborative project involves 10 Councils and other stakeholders including state government authorities such as Melbourne Water and Parks Victoria. Council is collaborating with Melbourne Water to identify projects with community involvement.</td>
<td>Attendance at ‘Living Links’ meetings.</td>
<td>Ongoing commitment to the ‘Living Links’ project.</td>
<td>Ongoing commitment to the ‘Living Links’ project. With architecture and community engagement to identify potential revegetation projects to improve the local waterways. Ongoing participation in the activities of the Local Government Professional’s Special Interest Group - Biodiversity Planning Network. Participation in the LGPro Biodiversity Planning Network.</td>
</tr>
<tr>
<td>1.7 - Create and encourage a greener city through the use of trees and indigenous vegetation in public and private spaces.</td>
<td>During 2012–13:</td>
<td>Plant 18,000 Indigenous plants.</td>
<td>Plant 18,000 Indigenous plants.</td>
<td>Ongoing commitment to an annual planting program. Planting of the wetlands constructed as part of the Tatterton Park Stormwater harvesting project.</td>
</tr>
</tbody>
</table>
## OBJECTIVES

**SNAPSHOT OF CURRENT STATUS**

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>LAST YEAR’S TARGETS 2012-13</th>
<th>DID WE MEET THEM?</th>
<th>THIS YEAR’S TARGETS 2013-2014</th>
<th>STRATEGIC ACTIONS THIS YEAR 2013-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2 – Reduce the consumption of drinking water and improve water use efficiency across Council’s operations.</td>
<td>• Monitor water leaks through Hydroshare’s meters and report on savings made.</td>
<td>Exceeded</td>
<td>• Monitor water leaks through Hydroshare’s meters and report on savings made.</td>
<td>Continue to implement actions identified in “Towards a Water Smart City: Council’s Sustainable Water Use Plan”.</td>
</tr>
<tr>
<td>2.3 – Assist water authorities in their efforts to reduce drinking water consumption across CGD.</td>
<td>• Report Council’s corporate water use and measures undertaken to increase efficiency across Council departments.</td>
<td>50% Achieved</td>
<td>• Report Council’s corporate water use and measures undertaken to increase efficiency across Council departments.</td>
<td>Ongoing reporting of Council’s corporate water use and measures undertaken to increase efficiency across Council departments.</td>
</tr>
<tr>
<td>2.4 – Council actively demonstrate the use of sustainable integrated management of water resources across its facilities and operations.</td>
<td>• Monitor average residential drinking water use per property for CGD.</td>
<td>50% Achieved</td>
<td>• Monitor average residential drinking water use per property for CGD.</td>
<td>Continue ongoing programs, including:</td>
</tr>
</tbody>
</table>

### LAST YEAR’S TARGETS 2012-13

| Rating: The level of achievement of identified targets is rated. These ratings are graded, depending on the level of achievement: |
|---|---|---|---|---|
| **Not Achieved** | **50% Achieved** | **75% Achieved** | **Met** | **Exceeded** |
| **Rating: 50% Achieved** | | | | |

### STRATEGIC ACTIONS THIS YEAR 2013-14

- Participate in the South East Councils regional Integrated Water Management group.
- Finalise the Integrated Water and Pollutant Balance (IWPB) study renamed Integrated Water Management Background Report and then consider implementation where appropriate of the report’s recommendations.
- Monitor developments regarding the Office of Living Victoria’s ‘Metropolitan Whole-of-Water-Cycle Planning Framework’ and Action 3.2.2 of Melbourne’s Water Future, which centres on developing local water plans.
3.1 - A reduction in the waste generated by the residential community.

**SNAPSHOT OF CURRENT STATUS**

For 2012–13, 57,364 t in total waste collected through household kerbside collections:
- 31,915 t waste to landfill (20,784 for 2011–12)
- 13,691 t recycled products purchased
- 11,784 t recyclables (12,385 for 2011–12)

While total waste levels fell slightly for the second year, the overall trend has been for increasing total waste collection, which is consistent with the increase in households across the municipality.

3.2 - Increase waste diverted from landfill.

Council’s diversion rate in 2012–13 was 45.5 per cent. This was the second year that diversion rates have fallen since the peak in 2011–12 of 52.5 per cent.

The reasons for the changes to the recycling levels are not clear at this stage. Possible factors include:
- A decline in newspaper sales and the uptake of online services
- Reduced packaging content, such as the use of thinner plastic bottles
- Transport Packaging Waste
- Reduces packaging content, such as the use of thinner plastic bottles

3.3 - Consider appropriate responses to changes in Federal and State Government policies and strategies that affect Council’s management of waste.

Recent policy changes are likely to have significant impacts on local government’s management of waste into the future. This includes:
- The federal government’s plan to repeal the Clean Energy Legislation
- The State Government’s new waste and resource recovery policy, Getting Full Value. This sets the long term vision for waste management in Victoria. This includes moving away from seeing waste as something to be discarded to seeing waste as a resource from which maximum value should be extracted.
- The draft (Statewide Waste and Resource Recovery Infrastructure Plan, which provides a roadmap to guide future investment in waste management and resource recovery.

3.4 - An integrated approach to waste minimisation through advocacy to other levels of government and agencies.

Council has been a member of the project advisory panel for the development of Sustainability Victoria’s and the Metropolitan Waste Management Group’s behaviour change program, ‘Get it Right on Bin Night’, which aims to increase the recovery of recyclable materials from households and reduce the amount of waste to landfill.

Council is developing Waste Management Guidelines for Multi Unit Developments, and is working with the Metropolitan Waste Management Group for these plans to be formally recognised in the planning process.

3.5 - Work with the non-residential sector to reduce waste generated and increase recycling.

Recent programs include:
- Public Place Recycling
  - This was first introduced to Council’s major leisure centres such as Dandenong Oasis and the Dandenong Basketball Stadium. Following a successful trial at 6 sports clubs that showed a significant increase in waste diverted from landfill, the program has now been rolled out to all sporting clubs across Greater Dandenong.
- Transport Packaging Waste
  - Councils South East Business Networks (SEBN) and the South East Melbourne Manufacturers Alliance, with funding from Sustainability Victoria undertook a project focused on transport packaging waste.
- Support ‘Clean Up Australia’ and ‘Schools’ Days programs

3.6 - Work with the community to reduce littering.

Council’s Litter Action Taskforce regularly reports on progress of key tasks identified in the annual action plan. Council has continued to fund the Litter Prevention Officer, initially funded with support from the Victorian Government. The focus for this strategy is promoting programs to reduce and prevent the litter and illegal dumping of waste within the municipality. For 2013, there were 2892 investigations into dumped rubbish and litter, resulting in 436 litter infringements issued.

3.7 - Increase the reuse of materials across Council’s operations.

Limited monitoring / data currently available on materials reused across Council’s operations, including green products purchased. There is recycling of operational waste handled at Council’s Operation Centre. Council has implemented a program “Closing the Loop” to find new use for recycled green waste across Council’s operations.

3.8 - Promote opportunities to improve waste management across Council’s operations.

Council has achieved Silver level Wastewise accreditation and will continue running the program, as well as continuing to further expand the program across other office locations, e.g.: Family & Children’s Services.
## SUSTAINABLE TRANSPORT SUMMARY REPORT CARD – 2013–14

**Goal:** The provision of safe integrated sustainable municipal transport systems

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>SNAPSHOT OF CURRENT STATUS</th>
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<th>STRATEGIC ACTIONS THIS YEAR 2013-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 - Improve the walkability of the municipality through the provision of pedestrian paths and related facilities.</td>
<td>ABS Journey to work data for CGD residents – 2011 (vs. 2006)</td>
<td>Compilation of Way finding Strategy for Dandenong and Springvale Activity Centres.</td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td>Plan to monitor extent and type of walking / bicycle use within CGD.</td>
<td>Ongoing participation in regional transport bodies regarding connectivity.</td>
</tr>
<tr>
<td></td>
<td>Car (driver/passenger) – 84.7% (87.2% for 2006)</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Council to work with the VicRoads Springvale Level Crossing Removal Project (SLCRP) project alliance team to facilitate the rail grade separation in Springvale.</td>
</tr>
<tr>
<td></td>
<td>Walking 2.1% (1.9% for 2006)</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Implement actions identified in the Dandenong Railway Precinct Station Action Plan 2011 – 2018, which aims to improve safety in and around the Station, Council to work with the VicRoads Springvale Level Crossing Removal Project (SLCRP) project alliance team to facilitate the rail grade separation in Springvale.</td>
</tr>
<tr>
<td></td>
<td>Cycling 5.6% (5.5% for 2006)</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Plan to monitor extent and type of walking / bicycle use within CGD.</td>
</tr>
<tr>
<td></td>
<td>Trends indicate that while journeys to work by walking or cycling have increased by CGD residents, rates are lower than for the Melbourne Metropolitan average.</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Ongoing monitoring of municipalities walking / bicycle use and needs.</td>
</tr>
<tr>
<td>4.2 - Improve the cycling capacity of the municipality through the provision of bicycle paths, lanes and related facilities.</td>
<td>At the start of 2014, the municipalities Bicycle / Shared User Path (SUP) Network consisted of:</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Use of design principles to create people friendly spaces and places in all development opportunities.</td>
</tr>
<tr>
<td></td>
<td>74.2km of concrete paths (67km at the start of 2013)</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Ongoing improvement to SUP network across municipality.</td>
</tr>
<tr>
<td></td>
<td>61.7km of road surface paths (61.7km - 2013)</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Use of design principles to create people friendly spaces and places in all development opportunities.</td>
</tr>
<tr>
<td></td>
<td>25.5km of gravel paths (25.4km - 2013)</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Ongoing improvement to SUP network across municipality.</td>
</tr>
<tr>
<td></td>
<td>5.1km of asphalt paths (5.1km - 2013)</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Use of design principles to create people friendly spaces and places in all development opportunities.</td>
</tr>
<tr>
<td></td>
<td>The significant expansion of the network from the 54km recorded in 2004 has been facilitated by a number of factors, such as the development of Eastlink and the Dandenong Bypass, development within the new residential and industrial areas and ongoing application for Government and VicRoads funding.</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Council to continue to monitor community public transport needs and advocate to Department of Transport and Public Transport Victoria for improvements to services where appropriate.</td>
</tr>
<tr>
<td></td>
<td>Council’s vision for the future is to develop our SUP network and bicycle facilities (racks, toilets and ticketing) in conjunction with VicRoads’ Principal Bicycle Network and Bike Priority Routes.</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Ongoing improvement to SUP network across municipality.</td>
</tr>
<tr>
<td>4.3 - To increase public transport patronage through improved access to existing public transport.</td>
<td>ABS Journey to work data for CGD residents – 2011 (vs. 2006)</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Regular updating of Bicycle / Shared User Path (SUP) Network Plan on Council’s GIS.</td>
</tr>
<tr>
<td></td>
<td>Car (driver/passenger) – 84.7% (87.2% for 2006)</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Update SUP Network Plan, including changes to VicRoads’ Principal Bicycle Network and Bike Priority Routes where appropriate.</td>
</tr>
<tr>
<td></td>
<td>Train – 10.9% (8.5% for 2006)</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Application to government and VicRoads for project funding where appropriate.</td>
</tr>
<tr>
<td></td>
<td>Bus – 5% (9.2% for 2006)</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Ongoing improvement to SUP network across municipality.</td>
</tr>
<tr>
<td></td>
<td>Data indicates a trend towards less reliance on cars and increased use of public transport, which is similar across Metpolitan Melbourne.</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Use of design principles to create people friendly spaces and places in all development opportunities.</td>
</tr>
<tr>
<td>4.4 - To increase public transport patronage by identifying achievable extensions to public transport services that improve coverage.</td>
<td>The latest available Department of Transport’s (DoT) estimated Total Annual Boarding’s at CGD train stations:</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Participate in discussions with neighbouring municipalities regarding connectivity.</td>
</tr>
<tr>
<td></td>
<td>6.55 Million in 2011–12 compared with 4.05 Million in 2004–05 – an increase of 62 per cent over that period</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Funding for new SUP in Keyborough area to connect to existing Dingley SUP and other surrounding SUP’s.</td>
</tr>
<tr>
<td></td>
<td>Dandenong and Springvale railway stations have the highest numbers of patronage in the municipality.</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Implement actions identified in the Dandenong Railway Precinct Station Action Plan 2011 – 2018, which aims to improve safety in and around the Station, Council to work with the VicRoads Springvale Level Crossing Removal Project (SLCRP) project alliance team to facilitate the rail grade separation in Springvale.</td>
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<td>Implement actions identified in the Dandenong Railway Precinct Station Action Plan 2011 – 2018, which aims to improve safety in and around the Station, Council to work with the VicRoads Springvale Level Crossing Removal Project (SLCRP) project alliance team to facilitate the rail grade separation in Springvale.</td>
</tr>
<tr>
<td></td>
<td>Public Transport Victoria’s 2012 Metropolitan Rail Network Development Plan includes consideration of the Dandenong Rail Corridor.</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Plan to identify and monitor community public transport needs and resources required to advocate for increased public transport services to Kaydborough South and Dandenong South</td>
</tr>
<tr>
<td>4.5 - To increase public transport patronage by identifying and acting upon major trip nodes that are not efficiently linked with direct public transport services.</td>
<td>DoT’s Total Bus Validation data for bus routes wholly or partially within CGD increased to 19 million in 2012–13 (compared with 7.5 million in 2004–05).</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Council to continue to monitor community public transport needs and advocate to Department of Transport and Public Transport Victoria for improvements to services where appropriate.</td>
</tr>
<tr>
<td></td>
<td>As part of its role to facilitate improved transport solutions for the region, Council is a member of the South East Metro (SEM) Group of Councils and Eastern Transport Coalition. This has led to the setting of a number of objectives and submissions to the state government.</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Ongoing participation in regional transport bodies such as the Eastern Transport Coalition (ETC) and the South East Metro Group of Councils to facilitate improved transport solutions for the region.</td>
</tr>
<tr>
<td>4.6 - To increase public transport patronage through improved interconnectivity of services.</td>
<td>Commence a program of data collection counting and monitoring of walking / bicycle use at key locations within CGD.</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Ongoing participation in regional transport bodies such as the Eastern Transport Coalition (ETC) and the South East Metro Group of Councils to facilitate improved transport solutions for the region.</td>
</tr>
<tr>
<td></td>
<td>• Work with the VicRoads grade separation project team to facilitate the Springvale Level Crossing Removal Project (SLCRP) in Springvale.</td>
<td></td>
<td><img src="Image" alt="Rating: Not Achieved" /></td>
<td></td>
<td>Ongoing participation in regional transport bodies such as the Eastern Transport Coalition (ETC) and the South East Metro Group of Councils to facilitate improved transport solutions for the region.</td>
</tr>
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<td></td>
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</tr>
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</table>

**Rating:** The level of achievement of identified targets is rated. The ratings are graded, depending on the level of achievement:

- **Not Achieved**
- **50% Achieved**
- **75% Achieved**
- **Met**
- **Exceeded**
5.1 - Reduce the consumption of energy

Council's corporate greenhouse emissions (GHG) results for 2012-13 are in line with those of 2011/12, with the exception of the council's fleet, where a significant reduction was seen. The significant reduction in the council's fleet is likely due to the replacement of older, high-wattage, faulty street lighting with energy-efficient light globes. The council was successful in a bid for $1.5M in federal funds through Round 2 of the City of Greater Dandenong's Climate Change Alliance (SECCCA), which supports and participates in a number of groups with a focus on climate change and increasing sustainability. An integrated approach to the management of our water resources will facilitate an increased resilience to future climate change mitigation and adaptation strategies. A Change Risk Assessment is planned to be undertaken in 2014-15. This will inform the development of a Heatwave Plan. To effectively plan for climate change, the council needs to have a clear understanding of the impacts of climate change on the community. As global efforts to reduce greenhouse gas emissions are occurring too slowly to avoid the risks of dangerous climate change, the council has undertaken a range of measures to directly reduce its GHG emissions. These include improving monitoring, increased reporting, reducing energy use, using alternative energy sources and in the past, offsetting emissions. Many of these activities have been promoted to the community.

5.2 - Council activity demonstrates measures to reduce both energy use and greenhouse emissions across its operations and facilities.

The council has undertaken a number of initiatives to reduce its GHG emissions. These include the installation of solar panels at the Dandenong Civic Centre, which has been designed to achieve a 5 Star Green Star rating, and therefore is significantly more energy efficient than the buildings it replaces. GHG emissions for Public Street Lighting, which accounts for virtually half of the council's corporate GHG emissions, decreased by around 2 per cent last year, even though there has been a slight increase in the number of lights. A contributing factor to this is the replacement of older high wattage, faulty street lighting with energy-efficient light globes. The council was successful in a bid for $1.5M in federal funds through Round 2 of the City of Greater Dandenong's Climate Change Alliance (SECCCA), which supports and participates in a number of groups with a focus on climate change and increasing sustainability.

5.3 - Assist state and federal governments in their efforts to reduce community greenhouse gas emissions.

Local community emissions generated from sectors such as residential and industrial are difficult to determine due to paucity of data at the local level. While targets were set as part of the 2003 Greenhouse Action Plan, the council has no responsibility or control over community emissions. The council is a member of the Council Alliance for a Sustainable Built Environment (CASBE) - an association of 20 Victorian rural and urban councils committed to the creation of a sustainable built environment within and beyond their municipalities. A number of these councils have implemented measures through the planning process that lead to improved sustainability outcomes of new buildings. Council has been funding this approach with larger residential and non-residential buildings across the municipality. A number of CASBE councils have submitted Local Planning Policies to formally incorporate these principles into their planning scheme. Other councils, including the City of Greater Dandenong, have been following the outcomes of the Planning Panels Victoria's (PPV) hearing. The PPV's report, released in April 2014, supported the introduction of these local policies. Council is seeking ministerial approval before proceeding with these processes. Council is increasing its community engagement on sustainability issues, including climate change, through new activities such as the Family Sustainability Festival and the Environmental Sustainability Newsletter.

5.4 - Increase the Municipality’s resilience to climate change impacts.

As global efforts to curb greenhouse gas emissions are occurring too slowly to avoid the risks of dangerous climate change, adaptation will need to be undertaken by all sectors of the community. Local government's role is evolving. The council is currently taking direct measures such as the implementation of Council's Heatwave Plan. To effectively plan for climate change, the council needs to have a clear understanding of the projected changes and the potential impacts. To assist with this process, a Climate Change Risk Assessment is planned to be undertaken in 2014-15. This will inform the development of a future climate change mitigation and adaptation strategy. An integrative approach to the management of our water resources will facilitate an increased resilience to the impacts of climate change. Council supports and participates in a number of groups with a focus on climate change and increasing the community's resilience. These include:

- South East Councils Climate Change Alliance (SECCCA)
- Enlivin Victoria
- Membership of SECCCA

Council has undertaken a range of measures to directly reduce its GHG emissions. These include installing solar panels at the Dandenong Civic Centre, which has been designed to achieve a 5 Star Green Star rating, and therefore is significantly more energy efficient than the buildings it replaces. GHG emissions for Public Street Lighting, which accounts for virtually half of the council's corporate GHG emissions, decreased by around 2 per cent last year, even though there has been a slight increase in the number of lights. A contributing factor to this is the replacement of older high wattage, faulty street lighting with energy-efficient light globes. Council was successful in a bid for $1.5M in federal funds through Round 2 of the City of Greater Dandenong's Climate Change Alliance (SECCCA), which supports and participates in a number of groups with a focus on climate change and increasing sustainability.
1. BIODIVERSITY

The chocolate lily (arthropodium species), which occur in local woodlands, have lovely chocolate scented flowers.

COUNCIL’S GOAL:
To improve biodiversity and the health of ecosystems across the Municipality.
We work to create a healthy and connected environment, with increased quality and quantity of biodiversity and where the community take responsibility for their environment for now and the future.

STRATEGIC OBJECTIVES

Objectives | Indicators
--- | ---
1.1 Minimise further extinctions of indigenous flora, fauna and vegetation communities in Greater Dandenong. | 1.1.1 Types of vegetation communities identified in Greater Dandenong.
1.3 Increase the quality and quantity of indigenous vegetation within Council’s reserves. | 1.2.1 Area and quality of vegetation communities within Council’s Open Space network.
1.5 Increase the connectivity of existing habitat corridors across the municipality. | 1.3.1 Key measures taken to increase connectivity of existing habitat corridors across the municipality.
1.7 Work with the community to increase awareness of biodiversity, its importance and the impact that they can have on its conservation and management. | 1.4.1 Number of participants at Council’s environmental education program activities.
1.8 Work with landholders to promote improved control of pest animals and weeds on private and public land. | 1.5.1 Key measures undertaken to promote improved control of pest animals and weeds on private and public land.
1.10 Work with regional partners to improve biodiversity through a regional approach. | 1.6.1 Council’s participation in key regional biodiversity projects.
1.12 Create and encourage a greener city through the use of trees and indigenous vegetation in public and private spaces. | 1.7.1 Report number of street trees and indigenous plants planted.

1.1 BACKGROUND CONTEXT

In many parts of Australia, biodiversity continues to be in serious decline, with a large proportion of ecosystems across different bioregions being described as threatened. There is a similar trend in Victoria, with a continued decline in biodiversity and the general condition of land, in response to pressures such as continued population growth, urbanization and consumption. The most recent report on the assessment of native vegetation across Victoria (See Figure 1.1) is the Department of Sustainability and Environment’s Native Vegetation Net Gain Accounting: First Approximation Report 2008. As stated in the Executive Summary of this report:

Since settlement, approximately half of Victoria’s native vegetation has been cleared for agricultural and urban development, including 80% of the original cover on private land. In recent decades, in response to increasing recognition of the land protection and biodiversity conservation issues associated with this loss of native vegetation, the rate of clearing has been slowed by regulations and there has been an increasing policy focus on better management of remaining vegetation, more strategic revegetation and better offsetting of unavoidable losses.
BIODIVERSITY

Figure 1.1 – Extent of native vegetation in Victoria

The primary driver of a global decline in biodiversity is habitat loss and the fragmentation of natural ecosystems due to human activity. In Australia, biodiversity continues to decline as a result of both the legacy of past pressures and ongoing pressures, which include:

- Vegetation clearance
- Habitat fragmentation
- Grazing pressure
- Weeds
- Feral animals
- Changed fire regime
- Climate change
- Changed hydrology and salinity

The major cause of change in Victoria’s remaining native vegetation is no longer clearing but the continual decline and degradation resulting from factors such as fragmentation, weed invasion, pest animals and management. Pest species are a major problem and continue to establish in Victoria. Weeds affect all Victorian landscapes. Approximately 90% of the native bushland in Melbourne is badly affected by weeds, with more than 50% considered severely degraded. Almost 50% of recently recorded plant naturalisations in Victoria are of garden origin.

Impacts of pest species are high. Apart from a reduction in productivity and the costs associated with control, pest species continue to degrade the landscape and impact on biodiversity across the state. As stated on page 5 of the Department of Sustainability and Environment’s 2009 Land and Biodiversity White Paper:

Despite an improved understanding of environmental issues and the collective action of recent decades, the condition of Victoria’s land and biodiversity continues to decline. More than a thousand of Victoria’s native species are known to be threatened with extinction. Whole communities of plants and animals, including native grasslands, rainforests, woodlands and alpine bogs are at risk due to a variety of threatening processes.

The 2013 Victorian State of the Environment report identifies that the current extent and condition of Victoria’s native vegetation is poor and continues to decline. The report also identifies that information regarding the conservation status of threatened species is limited, but where available also indicates a continuing decline.

Across the state, vegetation communities have been classified into about 20 broad groups such as woodlands, forests or grasslands. These groups are then broken down further into distinct communities or Ecological Vegetation Classes (EVC’s), depending on various characteristics.

For Greater Dandenong, mapping of key EVC’s identified as occurring in the municipality is based on the then Department of Sustainability and Environment’s (DSE) modelling of the vegetation communities. Figure 1.2 illustrates modelling of vegetation communities that occurred across the state before 1750 (Pre-European settlement). Figure 1.3 illustrates modelling of the current extent. Greenhood orchids were once widespread across the municipality.

| Objective: | 1.1 Minimise further extinctions of indigenous flora, fauna and vegetation communities in Greater Dandenong. |
| Indicator: | 1.1.1 Types of vegetation communities identified in Greater Dandenong. |
| Target: | Sites of biological significance across the municipality identified, mapped, and where appropriate, protected. |
The key vegetation types that existed across the municipality can be broadly summarised as follows:

Plains Grassys Woodyland
- Plains Grassy Woodyland, dominated by River Red Gums (Eucalyptus camaldulensis), once covered much of the municipality. The open woodland occurred on poorly drained plains with a rich grassy understorey. Red River Gums were the dominant tree species across the municipality, both in terms of size and numbers.

Grassy woodland
- Grassy woodlands with Peppermint Gums (Eucalyptus radiata) dominated the undulating slopes around the northern areas of the municipality around Springvale and Noble Park.

Damps Sands Herb Rich Woodland / vegetation
- Coastal Manna Gums (Eucalyptus viminalis subsp. priority) were dominant in the higher sandier soils in areas to the west of the municipality around Springvale and Keysborough.

Swampy Woodlands
- Swampy woodlands with Swamp Gums (Eucalyptus ovata and Eucalyptus radiata) were associated with the riparian areas along Dandenong Creek and Mille Creek as they wound their way south through the municipality.

Swamps and wetlands
- Swampy and wetlands dominated where the Dandenong and Mile Creeks merged and in the lower areas further to the south. This area was known as the Carrum Swamp, and spread out behind the sand dunes between Mordialloc and Frankston. The swamp drained into the bay via Mordialloc Creek and the Kananook Creek at Frankston.

The northern portion of the municipality is now highly urbanised and hence retains little of the original vegetation away from the creeks and waterways. Dandenong Creek now flows into the Patterson River, a man made waterway created in 1876 to provide direct drainage from the entire Dandenong Valley catchment area to Port Philip Bay. Mordialloc Creek is now fed by a diversion on lower Dandenong Creek. The flood-prone southern portion of the municipality was predominantly utilised for agriculture but retained some pockets of reasonably intact indigenous vegetation. Recently, recent changes to the urban growth boundary have resulted in areas of this land now being developed for residential and industrial purposes. Land outside the urban growth boundary is incorporated into the Greater Dandenong Green Wedge (See Figure 1.4).

The current extent or remnant vegetation shown in Figure 1.3 is based on vegetation modelling at a broad scale. This clearly shows that most vegetation across Greater Dandenong has been cleared. Ground truthing indicates that there are inconsistencies with the vegetation type or extent shown on this map. It also needs to be noted that scattered remnant trees, which make up the majority of the remnant vegetation in Greater Dandenong, are not well represented in the mapping shown in Figure 1.3. There has not however been a recent detailed assessment of the sites of biological significance across the municipality.

A 1994 study by Holistic Ecology5 into remnant overstorey vegetation across Greater Dandenong stated that “all of the communities have been highly fragmented and that most remnants have been excessively disturbed, modified and invaded by environmental weeds”. Since this 1994 report, the assessment of remnant flora across the municipality has generally been limited to those assessments targeting specific patches of remnant vegetation and scattered trees. Usually this has been undertaken as part of the development of reserve management plans or as assessments required for the development of parcels of land. Recently, a preliminary assessment of sites of biological significance in the Greater Dandenong Green Wedge was undertaken as part of the development of Greater Dandenong’s draft Green Wedge Management Plan (See section 1.2.3). Where site specific biodiversity assessments have been undertaken, there has been limited incorporation of this data into a central register within Council’s GIS systems. This has limited the accessibility to this data for use by other areas of Council’s operations where appropriate. An assessment across the municipality of sites of biological significance and incorporating this information into Council’s GIS system would provide detailed benchmarking and provide the opportunity to provide greater protection to those patches of remnant vegetation that do remain.

Native Vegetation Clearance Controls

To reduce the level of vegetation clearing in Victoria, Native Vegetation Regulations have been introduced into the State’s Planning Scheme provisions in 1989. In 2002, the then Department of Natural Resources and Environment introduced a policy seeking to retain native vegetation, enhance its quality and expand its coverage. This Active Native Vegetation Management Framework (NVMF) – also called the ‘Net Gain’ policy incorporated a system of vegetation condition quality measurements (Habitat Hectares) and was incorporated into Victoria’s Planning Scheme, in particular Clause 52.17 Native Vegetation.

Following a review of the Net Gain Policy in 2012–13, the NVMF was replaced with the Permitted clearing of native vegetation – Biodiversity assessment criteria. These guidelines, which were incorporated into all Victorian Planning Schemes in December 2013, outline how impacts on Victoria’s biodiversity are assessed when an application to remove native vegetation is lodged.

Local government is generally the Responsible Authority that considers applications for native vegetation removal, principally through Clause 52.17. Some of these applications may be required to be referred to the Department of Environment and Primary Industries (DEP) for their comments.

The revised purpose of Clause 52.17 Native Vegetation is “To ensure permitted clearing of native vegetation results in no net loss in the contribution made by native vegetation to Victoria’s biodiversity.” These controls require a planning permit to be obtained for clearing native vegetation (subject to a range of exemptions designed to facilitate normal domestic and rural practices). When considering an application, the Responsible Authority must apply the decision guidelines defined in the Permitted clearing of native vegetation – Biodiversity assessment guidelines.

Where native vegetation is permitted to be removed, applicants are generally required to provide offsets which contribute to the maintenance of Victoria’s biodiversity. These offsets can be achieved either by protecting and improving patches of remnant vegetation, or by revegetation. Offsets can be either achieved by the applicant on their own land, or a third party can take on the responsibility of achieving these offsets. To facilitate this process, Council has on occasions in the past taken on the responsibility for achieving these offsets through the clearance of native vegetation within the municipality. These offsets were undertaken within a few of Council’s existing bushland reserves resulting in an increase in the quality and extent of native vegetation in these reserves. The costs required to achieve these offsets have been met by the applicant.

As a result of the recent reforms to the native vegetation permitted clearing regulations, Council is no longer in a position to acquire offsets at its reserves for new applications. The reforms have also impacted on local governments’ ability to protect locally significant native vegetation.

Each local Council has to identify and implement measures to strengthen their local planning policies if they wish to provide greater protection for native vegetation in their municipalities. Greater Dandenong, as with other councils, is currently investigating opportunities to provide greater protection for these patches of significant remnant vegetation.

A result, limited data exists for fauna across the municipality. A number of ongoing fauna assessments occur within the municipality. This includes:

- Frogwatch surveys. These are advertised on Council’s website and have been held in the past at Council reserves such as Fotheringham Reserve and Timehaugh Reserve.
- Bird surveys at local reserves – in particular Alex Wilkie Nature Reserve
- Waterwatch monitoring programs. Waterwatch activities within the municipality are coordinated by Melbourne Water, with Council providing funds.

Information from these and other assessments will be incorporated into future reports where appropriate.

1.2.3 The Greater Dandenong Green Wedge

‘Green Wedges’ are the non-urban areas of metropolitan Melbourne that lie outside the Urban Growth Boundary and extend into the municipalities around the city. Green wedges are the open landscapes that were set aside, more than 40 years ago, to conserve agricultural land and natural features and resources between the growth areas of metropolitan Melbourne. Green wedges now spread out along major road and rail links.

There are 12 designated Green Wedge areas that span across 17 municipalities. In recognition of the special needs of each green wedge, there is a requirement for councils to produce Green Wedge Management Plans. The purpose of these plans is to identify a vision, objectives and actions to maintain the sustainable use and development of each green wedge6.

As illustrated in Figure 1.4, the Greater Dandenong Green Wedge is located in the middle of the broader ‘South East Green Wedge’ which extends into the municipalities of Kingston, Frankston and Casey.

The City of Greater Dandenong’s section of the Green Wedge includes all land outside the Urban Growth Boundary in the municipality, which is over 3,700 hectares, or around 29 per cent of the total area of the locality.

Greater Dandenong Green Wedge

Monitoring of fauna is difficult and data is time consuming to collect. As a result, limited data exists for fauna across the municipality. A number of ongoing fauna assessments occur within the municipality. This includes:

- Frogwatch surveys. These are advertised on Council’s website and have been held in the past at Council reserves such as Fotheringham Reserve and Timehaugh Reserve.
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Information from these and other assessments will be incorporated into future reports where appropriate.

1.2.2 Fauna

Although much of the region’s vegetation has already been cleared, leading to a loss of habitat for indigenous fauna, substantial biodiversity values persist. The existing ‘urban forest’ comprises vegetation in public and private gardens, along streets, in reserves and open space areas and undeveloped land areas. These green habitat patches, while varying considerably in size, layout and condition, provide habitat for fauna, both native and exotic, that now inhabit the municipality. Significant habitat areas for indigenous fauna include:

- remnant indigenous vegetation areas in reserves and open space areas
- remnant and non indigenous vegetation on private landholdings
- waterways across the municipality, and in particular Dandenong Creek
- farmland and rural residential areas occurring in the southern areas of the municipality.

Greater Dandenong Fauna Data

Monitoring of fauna is difficult and data is time consuming to collect. As a result, limited data exists for fauna across the municipality. A number of ongoing fauna assessments occur within the municipality. This includes:

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The City of Greater Dandenong’s section of the Green Wedge includes all land outside the Urban Growth Boundary in the municipality, which is over 3,700 hectares, or around 29 per cent of the total area of the locality.
A number of areas have been identified as making medium to high contributions to biodiversity within the Green Wedge. These areas include:

- Remnant woodland vegetation and scattered trees.
- Major watercourses including Eumemmerring Creek, Dandenong Creek, Patterson River, Mordialloc Main Drain (Creek), and the Eastern Contour Drain.
- The Eastern Treatment Plant.
- Wetlands (artificial and natural), particularly those which are densely vegetated or develop mud flats when drying out.
- Low-lying swampy areas.

As illustrated in Figure 1.5, scattered trees, which are predominantly River Red Gums, dominate the remnant vegetation that remains. These scattered trees are generally surrounded by exotic pasture, mown lawn or market gardens. As stated on page 42 of the Draft City of Greater Dandenong Green Wedge Management Plan:

> ‘Most of these have been created using levee banks which preclude connectivity with the surrounding landscape and therefore limit their capacity to be a source for aquatic fauna to colonise nearby farm dams or wetlands.’

The waterways vary from open channels with minimal vegetative cover to tall, dense reed beds. Their levee banks support predominantly introduced vegetation dominated by grasses that are generally maintained through slashing. Eucalypts, wattles and other shrubs (including weeds such as Gorse Ulex europaeus) are scattered along sections of these waterways. These waterways provide habitat for frogs and facilitate their movement through the area. Waterways that support fringing vegetation, such as Eumemmerring Creek, may facilitate the movement of more elusive birds such as crakes and rails.

Significant fish species such as the Dwarf Galaxias and Yarra Pygmy Perch have been recorded in the Dandenong Creek, and have the potential to occur in all connected waterways throughout the Green Wedge.
Development of a Green Wedge Management Plan

A Green Wedge Management Plan is being developed to provide Council and the community with a clear vision and direction for the City of Greater Dandenong’s part of the South East Green Wedge over the next 15–20 years. The plan will provide Council, residents, landowners and business operators with certainty about the Green Wedge and all the land within it. The preparation of the plan involves a detailed background review of previous studies, on-site study and extensive input from the community and stakeholders. Further information regarding the development of the Green Wedge Management Plan can be found on Council’s website.

By setting clear directions on future land use, the document is designed to provide greater certainty for landowners, developers and the community in planning matters involving this area. A draft Green Wedge Management Plan has been prepared for public exhibition for the end of 2013–14. This draft is based on extensive public consultation, which occurred in July 2013. Specific feedback was received across the themes of land use, drainage and water management, environmental values and biodiversity, access and movement and built form and heritage, as introduced by the Green Wedge Management Plan Review Report, July 2013, which was available for comment throughout July 2013. The consultation process included:

- letters sent to residents and businesses in and surrounding the Green Wedge as well as service authorities such as Melbourne Water, introducing them to the project and seeking feedback and input on the work to date;
- key stakeholder group workshops and a community information “drop in” session;
- a full page spread in the July edition of The City magazine;
- advertisements placed in each of the three local newspapers;
- promotion on Council’s website.

Out of the 91 written submissions received, there were 56 submissions on the topic of ‘Environmental values and biodiversity’. Of these, 46 raised the need to preserve and protect the environmental values and biodiversity of the Green Wedge. The protection of remnant vegetation and native bushland, including River Red Gums, was a common response raised by 18 submitters, as was the desire to revegetate using indigenous species (mentioned in 12 submissions).

As outlined above, the majority of the submissions to Council regarding Environmental values and biodiversity identified the need to preserve and protect the environmental values and biodiversity of the Green Wedge. Council’s ability to protect remnant native vegetation of local significance has been reliant on the provisions in the Greater Dandenong Planning Scheme, and in particular the State’s native vegetation clearance controls.

<table>
<thead>
<tr>
<th>STRATEGIC ACTIONS TO BE UNDERTAKEN:</th>
<th>TIMEFRAME / RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finalisation and adoption of the City of Greater Dandenong Green Wedge Management Plan.</td>
<td>2014–15 – Planning and Design</td>
</tr>
<tr>
<td>Ongoing advocacy for improvements to the State’s Native Vegetation Permitted Clearing Regulations.</td>
<td>Ongoing – Parks Services, Planning and Design</td>
</tr>
<tr>
<td>Identify and implement measures to improve protection of native vegetation and local biodiversity significance through local planning policies.</td>
<td>Ongoing – Parks Services, Planning and Design</td>
</tr>
<tr>
<td>Assessment of sites of biological significance.</td>
<td>Ongoing – Parks Services</td>
</tr>
<tr>
<td>Ongoing regional co-operation and action.</td>
<td>Ongoing – Parks Services, Planning and Design</td>
</tr>
<tr>
<td>Use of GIS to map and register significant patches of remnant vegetation.</td>
<td>Ongoing – Parks Services, Planning and Design</td>
</tr>
<tr>
<td>Identify opportunities to improve data on fauna within the municipality.</td>
<td>Ongoing – Parks Services</td>
</tr>
</tbody>
</table>

Figure 1.6 – Key consultation feedback received regarding environmental values and biodiversity

![Graph showing key consultation feedback received regarding environmental values and biodiversity.]

Source: City of Greater Dandenong Draft Green Wedge Management Plan for public comment, April 2014.

The male flower of an Early Nancy (Wurmbea dioica), which occur in Red Gum Woodlands.
1.2.4 Key remnant vegetation communities protected within Council’s reserves

Objective: 1.2 Increase the quality and quantity of indigenous vegetation within Council’s reserves.

Indicator: 1.2.1 Area and quality of vegetation communities (EVC’s) within Council’s open space network.

Target: To increase the quality and quantity of indigenous vegetation within Council’s reserves.

Clearing of land results in smaller patches of remnant indigenous vegetation that become fragmented and more isolated. This impacts upon the long term viability of specific species of plants, animals and communities within the ecosystems, leading to a breakdown of ecological processes required for the ongoing health of the ecosystem. This leads to a decline in biodiversity and the local loss of sensitive species.

Previous studies highlighted the fact that across the municipality, the natural vegetation communities have been highly fragmented and that the remnant patches of indigenous vegetation that do remain are usually extensively modified and invaded by weeds. What remains can be enhanced by improving the protection, management and connectivity of these isolated patches. Council’s reserves have an important role in the protection of the biodiversity that remains within the municipality. Significant patches of remnant vegetation exist within Council’s open space reserve system and are illustrated in Figure 1.7.

Council’s open space reserve system is increasing as development occurs, particularly in Dandenong South and Keysborough. A number of the areas identified to become new reserves contain significant patches of remnant vegetation which have been identified for protection as part of the planning process. These reserves will be reported in future SoE reports as they are handed over to Council. A recent example is National Drive Reserve, which was created to protect the largest extent of Plains Grassy Woodland in the south east of Melbourne as the surrounding area was developed for industrial uses.

Figure 1.7 – Council reserves with significant patches of remnant vegetation

1. Alex Wilke Nature Reserve
2. Coomoora Woodland
3. Fotheringham Reserve
4. Tirhatuan Park
5. Falkiner Reserve
6. Tatterson Park
7. Bowmans Road Redgum Reserve
8. National Drive Reserve

A magnificent River Red Gum (Eucalyptus camaldulensis) in Dandenong South that towers above its surrounds.
### Table 1.1 – Key remnant Ecological Vegetation Classes (EVC’s) protected within Council reserves

<table>
<thead>
<tr>
<th>VEGETATION COMMUNITIES (EVC No.)</th>
<th>DESCRIPTION*</th>
<th>BIOREGIONAL CONSERVATION STATUS*</th>
<th>COUNCIL RESERVES CONTAINING REMNANTS OF EVC’S (See Figure 1.6)</th>
<th>ESTIMATED AREA OF REMNANT VEGETATION* (Year of assessment)</th>
<th>QUALITY OF VEGETATION – HABITAT HECTARE SCORE (Year of assessment)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damp Sands Herb – rich Woodland (EVC No. 3)</td>
<td>A low, grassy or bracken –dominated eucalypt forest or open woodland to 15 m tall with a large shrub layer and ground layer rich in herbs, grasses, and orchids. Occurs mainly on flat or undulating areas on moderately fertile, relatively wet –drained, deep sandy or loamy topsoils over heavier subsoils.</td>
<td>Vulnerable</td>
<td>• Coomoora Woodland</td>
<td>2.34 ha (Coomoora Woodland – rich Woodland / Healthy Woodland Mosaic)</td>
<td>54 (2013) (42 in 2009)</td>
</tr>
<tr>
<td>Healthy Woodland (EVC No. 48)</td>
<td>Eucalypt –dominated low woodland to 10 m tall lacking a secondary tree layer and generally supporting a diverse array of narrow or ericoid –leaved shrubs except where frequent fire has reduced this to a dense cover of bracken. Geophytes and annuals can be quite common but the ground cover is normally fairly sparse. Spans a variety of soil types.</td>
<td>Least Concern</td>
<td>• Alex Wilkie Nature Reserve</td>
<td>1.02 ha</td>
<td>(2009)</td>
</tr>
<tr>
<td>Swamp Scrub (EVC No. 53)</td>
<td>Closed scrub to 8 m tall at low elevation along streams or on poorly drained fertile sites. Swamp Paperbark Melaleuca ericifolia (or sometimes Woolly Tea –tree Leptospermum Langerianum) dominates, often forming a dense thicket, out –competing other species. Occasional emergent eucalypts may be present. Where light penetrates, a grassy / herbaceous ground layer is often present.</td>
<td>Endangered</td>
<td>• Alex Wilkie Nature Reserve</td>
<td>0.78 ha (Swamp Scrub / Sedgy Swampland / Woodland Mosaic)</td>
<td>(2009)</td>
</tr>
<tr>
<td>Plains Grassy Woodland (EVC No. 55)</td>
<td>An open, eucalypt woodland to 15 m tall occurring on a number of soil types. Occupies poorly drained, fertile soils on flat or gently undulating plains at low elevations. The understory consists of a few sparse shrubs over a species –rich grassy and herbaceous ground layer. Dominated by Red Gums (Eucalyptus camaldulensis).</td>
<td>Endangered</td>
<td>• Coomoora Woodland</td>
<td>1.2 ha</td>
<td>48 (2013) (46 in 2009)</td>
</tr>
<tr>
<td>Floodplain Riparian Woodland (EVC No. 56)</td>
<td>An open eucalypt woodland to 20 m tall over a medium to tall shrub layer with a ground layer consisting of amphibious and aquatic herbs and sedges. Occurs along the banks and floodplains of the larger meandering rivers and major creeks, often in conjunction with one or more floodplain wetland communities. Elevation and rainfall are relatively low and soils are fertile and subject to periodic flooding and inundation.</td>
<td>Endangered</td>
<td>• Fotheringham Reserve</td>
<td>1.4 ha (Zone 1)</td>
<td>33 (Zone 4) (2009)</td>
</tr>
<tr>
<td>Plains Grassy Wetland (EVC No. 125)</td>
<td>This EVC is usually treeless, but in some instances can include sparse River Red Gum (Eucalyptus camaldulensis) or Swamp Gum (Eucalyptus ovata). A sparse shrub component may also be present. The characteristic ground cover is dominated by grasses and small sedges and herbs. The vegetation is typically species rich on the outer verges but is usually species poor in the wetter central areas.</td>
<td>Endangered</td>
<td>• Tirhatuan Park</td>
<td>0.09 ha</td>
<td>83 – Wetland Vegetation Quality Score</td>
</tr>
<tr>
<td>Sedgy Swamp Woodland (EVC No. 707)</td>
<td>Eucalypt woodland to 15 m tall with sedgy ground layer and a range of herbs tolerant of seasonal water logging. Occurs on poorly drained, seasonally wet flats on sandy soils over heavier sub soils.</td>
<td>Endangered</td>
<td>• Alex Wilkie Nature Reserve</td>
<td>0.42 ha</td>
<td>23 (2006)</td>
</tr>
<tr>
<td>Tall Marsh (EVC No. 821)</td>
<td>Closed to open grassland/sedgeland to 2 –3 m tall, dominated by Common Reed (Phragmites australis) and Cumbungi (Typha domingensis). Small aquatic and semi –aquatic species occur amongst the reeds. It requires shallow water (to 1 m deep) and low current –scour, and can only tolerate very low levels of salinity.</td>
<td>Endangered</td>
<td>• Falkiner Reserve</td>
<td>0.097 ha</td>
<td>53 – Wetland Vegetation Quality Score (2006)</td>
</tr>
<tr>
<td>Wet Verge Sedgegland (EVC No. 932)</td>
<td>Tussock Sedge wetland component of cooler areas, occasionally occurring as main wetland vegetation present, typically dominated by Tall Sedge (Carex appressa).</td>
<td>Not identified</td>
<td>• Tirhatuan Park</td>
<td>0.04 ha &amp; 0.08 ha</td>
<td>45 – 57 Wetland Vegetation Quality Score (2006)</td>
</tr>
</tbody>
</table>


* based on flora assessments or indicative estimates area using Council’s Intramap aerial photographs.
1.2.5 Actions to improve quality of indigenous vegetation within Council’s reserves

Outcomes
Council’s Bushland team manages areas within the municipality’s open space reserves that retain remnant vegetation. Actions undertaken to improve the quality of indigenous vegetation within Council’s reserves includes:

- Over 22,614 indigenous plants were planted as part of revegetation projects in 2012-13.
- Management Plans for a number of reserves have been prepared and are being implemented.
- Over 22,614 indigenous plants were planted as part of revegetation projects in Council’s reserves and school grounds in 2012-13.
- Ongoing alignment of the Port Phillip and Westernport Catchment Management Authority’s (PPWCMA) ‘Living Links’ Master Plan with Council’s strategic strategies and projects.

Acceptance of ‘Offsets’ at Council Reserves

Where a permit is granted to remove native vegetation within the municipality ‘Offsets’ are usually required to be achieved (see section 1.2.1 for further details). In the past, when requested by the proponent, Council has agreed to accept the responsibility for achieving the required offset within a Council bushland reserve for an agreed payment. There are a number of benefits to this approach, which include:

- the loss of vegetation within the municipality is offset by gains elsewhere within the municipality
- additional funds are provided to assist with the ongoing management and improvement of existing bushland areas within Council’s open space reserves.

As a result of the reforms to Victoria’s native vegetation permitted clearing regulations (see section 1.2.1 for further details), Council is no longer in a position to accept ‘Offsets’ at its reserves. For councils to provide ‘Offsets’, they are now required to have an accredited ‘Over–the–Counter’ offset program. A few councils with high numbers of applications for native vegetation removal have been developing these programs over the last few years, but at the time of writing, none of these schemes were able to provide offsets under the new requirements.

For Council, with the relatively small demand for offsets from development within the municipality, the significant resources that would be required to develop an accredited scheme are a significant barrier.

Ongoing Management Activities

Measures include:

- pest plant and animal control
- undertaking ecological burns as well as other measures to minimise impacts of wildfire
- revegetation and habitat restoration
- managing impacts of park users
- community awareness and education programs
- reducing litter and rubbish.

Development of Management Plans

To guide Council’s long term management of its bushland reserves, management plans for a number of reserves have been prepared and are being implemented.

Revegetation Projects

Over 22,614 indigenous plants were planted as part of revegetation projects in Council’s reserves and school grounds in 2012-13. (see Section 1.3 for further details)

STRATEGIC ACTIONS TO BE UNDERTAKEN:

Implementation of reserve management plans to achieve targets.

Assess and benchmark significant remnant vegetation occurring within Council’s reserves through ongoing programs to develop and maintain reserve management plans.

Consideration of potential opportunities to accept native vegetation offsets within the municipality.

TIMEFRAME / RESPONSIBILITY

Ongoing – Parks Services

Ongoing – Parks Services

Ongoing – Planning and Design

1.2.6 Actions to improve connectivity of existing habitat corridors

Objective: 1.3 Increase the connectivity of existing habitat corridors across the municipality.

Indicator: 1.3.1 Key measures taken to increase connectivity of existing habitat corridors across the municipality.

Target: Ongoing alignment of the Port Phillip and Westernport Catchment Management Authority’s (PPWCMA) ‘Living Links’ Master Plan with Council’s strategic strategies and projects.

Connectivity between remnant patches of habitat provides an opportunity for maintaining ecological processes such as the movement of wildlife, interbreeding of plants and animals and the continuation of viable populations. Improving connectivity between patches of remnant vegetation can be achieved by creating corridors of wildlife habitat to compensate in part for the fragmentation of the landscape. ‘Wildlife corridors’, generally of native vegetation, can provide a link between separate patches of vegetation which provide habitat for wildlife. These corridors can consist of a continuous length of vegetation and habitat, as occurs along creeks and waterways. Corridors can also consist of a series of distinct patches of vegetation such as wetlands or patches of trees along roadsides and in paddocks.

The Greater Dandenong Green Wedge, while significantly altered through clearing and other actions, remains a pocket of undeveloped area bordered by highly urbanised areas. While not providing large areas of natural remnant habitat, or specific habitat corridors, it does provide areas of significant habitat value. While the extensive pasture areas provide some habitat value, the scattered trees and waterways provide a ‘stepping stone’ for more mobile fauna such as migratory birds and aquatic species. Enhancement to the native vegetation and waterways in the Green Wedge areas would improve the connectivity of highly fragmented habitat within the area, as well as with the broader region.

A Barn Owl (Tyto alba) is displayed at one of Council’s community environmental events.
BIODIVERSITY

Outcomes
Activities undertaken include:

Development of City of Greater Dandenong Green Wedge Management Plan
As previously discussed, the City of Greater Dandenong Green Wedge Management Plan is in the process of being developed. An objective of this plan focuses on enhancing the ecological values and improving the connectivity of the Green Wedge. The implementation of the actions identified in the draft plan will facilitate greater connectivity both within the municipality’s Green Wedge and across the broader region. Exhibition of the draft Green Wedge Management plan will occur in 2013–14, with the plan to be finalised during 2014–15.

‘Living Links’ Master Plan
Council is a partner in ‘Living Links’, a large-scale environmental improvement program for the Dandenong Creek catchment coordinated by the PPWCMA. It is a collaborative project involving 10 municipal councils, 3 government agencies and community organisations. A Master Plan is being developed as part of the ‘Living Links’ project. See section 1.4 for further details.

Dandenong Creek Weed Control and Revegetation
Melbourne Water, in conjunction with Council, conducted a broad weed control program along Dandenong Creek, between Tirhatuan Park and Robert Booth Reserve, followed by an extensive revegetation program. The weed control and planting will allow local native plants and animals to thrive, as well as providing canopy cover and improved amenity.

STRATEGIC ACTIONS TO BE UNDERTAKEN:
Finalisation and adoption of the City of Greater Dandenong Green Wedge Management Plan.
Participate in the development and implementation of the Living Links Masterplan, including identifying and assessing opportunities to improve connectivity of biodiversity corridors.
Liaise with Melbourne Water to identify and prioritise potential weed control and revegetation projects along the local waterways, such as Dandenong Creek and Mile Creek.

TIMEFRAME / RESPONSIBILITY
2014–15 – Planning and Design
Ongoing – Parks Services, Planning and Design
Ongoing – Parks Services, Planning and Design

1.3 WORKING WITH THE COMMUNITY

Objective:
1.4 Work with the community to increase awareness of biodiversity, its importance and the impact that they can have on its conservation and management.

Indicator:
1.4.1 Number of participants at Council’s environmental education program activities.

Targets:
800 residents per year involved in tree planting and working bees
15 planting days (Schools and Community) per year

Objective:
1.5 Work with landholders to promote improved control of pest animals and weeds on private and public land.

Indicator:
1.5.1 Key measures undertaken to promote improved control of pest animals and weeds on private and public land.

Targets:
5 working bees with community groups per year
1 ‘Weedbuster’ event per year

The local community can play a critical role in the management of the remaining local biodiversity, both in the public and private realm. This may be as individuals or as a part of an organised community group. Community participation in local biodiversity issues can occur through a variety of ways, including:

• school students and community members participating in local activities such as planting days and frog surveys
• through the workplace
• through involvement in policy development processes
• through advocacy
• as individuals on private land
• through the ballot box.

It is difficult to gauge the level of community participation in biodiversity issues across the municipality. Anecdotal evidence suggests that for this municipality, participation rates in local environment community groups are relatively low when compared to neighbouring municipalities. In response, Council undertakes a wide variety of environmental education programs that aim to increase the community’s awareness of biodiversity, its importance and the impact that they can have on its conservation and management.

Outcomes
Council’s Parks Bushland Team provides an extensive range of environmental education programs for the community which are promoted by Council. A selection of these activities are summarised in the following table:

<table>
<thead>
<tr>
<th>Objective</th>
<th>Indicator</th>
<th>Targets</th>
</tr>
</thead>
<tbody>
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• as individuals on private land
• through the ballot box.

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BIODIVERSITY

KEY SELECTED MEASURES INCLUDE:

- Alex Wilkie Nature Reserve
- Greaves Reserve
- Dandenong Creek Reserve
- Fotheringham Reserve
- Tatterson Park
- Pencil Park
- Tirhatun Park

A total of 75 community environmental events, attended by 1751 members of the community.

9 School planting days were held in 2012–13 with 794 participants recorded. Schools involved include:
- Keysborough College
- Silverton Primary School
- Yarraman Oaks Primary School
- Heatherhill Primary School
- Woorana Park Primary School

School Planting Days

Council's bushland team provides opportunities for environmental education programs to local schools and community groups. These are held at either Council's reserves, such as Alex Wilkie Nature Reserve (AWNR) or within the school grounds. During 2012–13:
- 51 community groups visited AWNR with 278 participants
- 7 school events were held at AWNR with 273 participants
- 14 visits to community groups with 1155 participants
- 5 other events with schools were held, involving 326 participants

Guided walks

These events are included in Council's bi–annual environmental events program calendar and are promoted on Council's website.

Weedbusters

An annual Weedbuster day activity is held by Council.

Friends of Fotheringham Reserve

Council assists the friend's group's activities. Working bees are held bi–monthly on the fourth Sunday of the month. Activities include water watch, indigenous planting, weed control, seed collecting, nature walks and BBQ's.

Melbourne Water's Waterwatch Program

Council provides financial support to Melbourne Water's Waterwatch program enabling local schools and community groups to participate in the program. Activities undertaken in 2012–13 include:
- working with primary and secondary schools
- assisting 3 community groups to monitor local waterways:
  > Friends of Fotheringham
  > Greater Dandenong Environment Group
  > Keysborough Pencil Park Monitors
- attending community events such as the Dandenong Show and World Wetlands Day.

World Wetlands Day

To mark this event, Council's Parks team organises an event every February at an appropriate reserve. This year's event was held at Tatterson Park to raise the community's awareness of environmental issues. Activities include: wetland tours; water watch activities; a native animal display and kids activities.

STRATEGIC ACTIONS TO BE UNDERTAKEN:

- Continue environmental education programs funding for community groups, schools and Waterwatch.
- Council’s Parks Business Unit to routinely review annual environmental education program to identify opportunities for improvement.

TIMEFRAME / RESPONSIBILITY

- Ongoing – Parks Services
- Ongoing – Parks Services

1.4 WORKING WITH REGIONAL PARTNERS

Objective: 1.6 Work with partners to improve biodiversity through a regional approach.

Indicator: 1.6.1 Council’s participation in key regional biodiversity projects.

Target: Ongoing Council commitment to the ‘Living Links’ project.

Council is responsible for the management of over 610 hectares of public open space reserves across the municipality, which represents nearly 5 per cent of the municipality. Additional open space areas are being created as part of the new major residential and industrial development areas in Keysborough and Dandenong South. Many of these new reserves are being established to provide protection for the remnant red gums that occur in these areas.

The existing public open spaces range from small local parks to large regional parks such as the Dandenong Wetlands, which are part of the larger Dandenong Valley Parklands. The Dandenong Valley Parkland provides a linkage of open space areas along the Dandenong Creek corridor, which extends beyond municipal boundaries and includes a range of landowners and managers. Currently, projects to improve open space across these various municipalities and landowners often occur in isolation. Improved communication between regional landowners and managers, such as local governments, Melbourne Water and Parks Victoria would provide the opportunity for better biodiversity outcomes through a regional approach.

Outcomes

Living Links

Council is a participant in ‘Living Links’, a long-term, strategic development program focused upon the delivery of more liveable and sustainable outcomes within the Dandenong Creek catchment. The ‘Living Links’ project aims to protect key environmental and cultural features as well as encouraging a network of linked trails to better connect people to these natural areas. Initiated by the PPWMCA, the collaborative project now involves 10 councils (Kingston, Casey, Whitehorse, Yarra Ranges, Bayside, Frankston, Knox, Monash, Maroondah and Greater Dandenong) and other stakeholders including state government authorities such as Melbourne Water and Parks Victoria.

A Living Links Master Plan has been prepared to provide a sound basis for ongoing planning. It has been developed in three stages:

- Stage 1 – Asset Identification and Analysis
- Stage 2 – Corridor Identification and Analysis
- Stage 3 – Master Plan

Stage 2 of the Living Links Master Plan won the Australian Institute of Landscape Architects Planning Awards in November 2011. The awards stated that:

“This work clearly highlights the ability of landscape architects to understand, filter and prioritise a wide range of scientific, social and cultural data as a basis for broad scale landscape planning to inform a Master Plan that moves beyond the traditional hydrology focused Waterway Activity Plans.

The Master Plan is a well founded and accessible document that provides achievable guidelines for social, environmental, cultural and recreational improvements across the identified corridors.”

Stage 3 – the development of the Final Masterplan has been completed. This has resulted in the redevelopment of the Living Links website, which provides a tool to assist with the communication with stakeholders and the public. Further details can be found at the website http://livinglinks.com.au/.

Melbourne Water

Melbourne Water are the caretaker of river health in the Port Phillip and Westernport region and as such have a responsibility to manage the region’s rivers and creeks. Melbourne Water undertakes programs and projects with the community, councils and organisations to improve the health of our rivers and creeks and manage drainage and floodplains. Council and Melbourne Water now meet on a regular basis to discuss potential projects and opportunities for community involvement.

Regional Co-operation

An example of regional co-operation is the LGPro Biodiversity Planning Network Special Interest Group. The group’s regular meetings provide a forum for communication amongst local government staff and other stakeholders with the aim of assisting in the protection and enhancement of natural values within their municipality and the State.
BIODIVERSITY

Outcomes
Activities undertaken include:

<table>
<thead>
<tr>
<th>Woody Weed Control</th>
<th>During 2012–13, Melbourne Water continued their woody weed removal program along Dandenong Creek, between Police Road and Clow Street. Further revegetation was also completed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pest Animal Control</td>
<td>Melbourne Water has undertaken extensive rabbit warren mapping along the Dandenong Creek at Tirhatuan Park, in consultation with Council. This work will assist with the overall rabbit control program, to be completed by both landholders.</td>
</tr>
</tbody>
</table>

STRATEGIC ACTIONS TO BE UNDERTAKEN: TIMEFRAME / RESPONSIBILITY

| Continued Council commitment to the “Living Links” project and regional communication and engagement. | Ongoing – Parks Services, Planning and Design |
| Work with Melbourne Water to identify and prioritise potential weed control and revegetation projects along the local waterways. | Ongoing – Parks Services, Planning and Design |
| Ongoing participation in the activities of the LGPro Biodiversity Planning Network Special Interest Group. | Ongoing – Parks Services, Planning and Design |

1.5 CREATING A GREENER CITY

Objective: 1.7 Create and encourage a greener city through the use of trees and indigenous vegetation in public and private spaces.

Indicator: 1.7.1 Report number of street trees and indigenous plants planted.

Target: 18,000 indigenous plants to be planted annually.

Vegetation in public and private gardens, along streets, in reserves and open space areas combine to comprise an “urban forest”. These green spaces, while varying considerably in size, layout and condition, provide a range of environmental and social benefits. Environmental benefits include the provision of habitat for wildlife, absorption of pollution and reducing the urban heat island effect. The social benefits are wide ranging and can include:
- Providing an opportunity for recreational use – a place to gather, rest or play
- Fostering increased positive social interaction, strengthening the sense of community
- Bringing nature to urban environments
- Providing a source of food
- Softening harsh rigid structures associated with the built environment
- Providing a stimulating environment through movement, colour, sounds and smells
- Promoting a sense of a safe liveable community
- Enhancing amenity in urban and rural areas through the planting of street trees in road reserves.

The Living Links implementation plan and website was launched in April 2014.

Trees are a prominent feature of the recently completed Greater Dandenong Civic Centre’s outdoor plaza.

Outcomes
Activities undertaken include:

| Tatterson Park | A project to harvest and store up to 20ML per annum of stormwater for the irrigation of nearby playing fields and surrounds has commenced with earthworks for the treatment wetlands (Stage 1) completed. As funds become available, further stages, such as creating a storage pond and pumps to harvest stormwater will be implemented. This project will achieve multiple benefit, including:
- Providing a reliable water source for irrigation of the adjoining open space
- Reducing reliance on drinking water supplies
- Providing wetland habitat
- Providing water source for the adjoining remnant red gums
- Reducing pollution levels |
| Implementing Leafy Legacy | The management of street trees assists Council to create a healthy, safe and enjoyable environment for present and future residents. Leafy Legacy is a strategy that helps Council plan its future direction in terms of desired streetscape, its management and maintenance. In line with this strategy, approximately 1500 street trees are planted each year. |
| Revegetation Projects | 22,614 indigenous plants used as part of revegetation projects in Council’s reserves and across a number of school grounds. |

STRATEGIC ACTIONS TO BE UNDERTAKEN: TIMEFRAME / RESPONSIBILITY

| Completion of the Tatterson Park Stormwater Harvesting project. | As funding permits – City Improvement, City Design and Sustainability Planning |
| Ongoing annual planting program and financial commitment. | Ongoing – Parks Services |
COUNCIL’S GOAL:
A sustainable approach to the management and use of our water resources.
We work to promote sustainable water management practices across the municipality by reducing our water use, utilising alternative sources of water and improving our local waterways.

### STRATEGIC OBJECTIVES

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Indicators</th>
</tr>
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</table>
| 2.1 Council to integrate its management and use of water resources across its operations. | 2.2.1 Report on Council’s Corporate water use.  
2.4.2 Council’s use of alternative sources of water.  
2.6.1 Water quality of local waterways. |
| 2.2 Reduce the consumption of drinking water and improve water use efficiency across Council’s operations. | 2.2.1 Report on Council’s Corporate drinking water use. |
| 2.3 Assist water authorities in their efforts to reduce drinking water consumption across the municipality. | 2.3.1 Report the community’s average household drinking water use. |
| 2.4 Council to actively demonstrate the use of sustainable alternative sources of water across its facilities and operations. | 2.4.1 Council’s use of alternative sources of water. |
| 2.5 Advocate for increased access to recycled water across the municipality from the Eastern Treatment Plant. | 2.5.1 Number of properties connected to Class A recycled water across the municipality. |
| 2.6 Act to improve water quality and the associated environmental values of the local waterways. | 2.6.1 Water quality of local waterways. |

### PART A
WATER CONSERVATION AND EFFICIENCY

#### 2.1 BACKGROUND CONTEXT

Australia
Drought and climate change have focused attention on Australia’s water supply and water usage. While Australia is the driest inhabited continent on earth¹, Australians are one of the biggest consumers of water per capita in the world². According to the Australian Bureau of Statistics, in 2011-12, the agricultural sector increased its use of water to 59 per cent of the total amount of water extracted from the environment and used across Australia (See Figure 2.1). Household water use fell to be the third largest use by sector, accounting for around 11 per cent of the total water consumed³.

![Figure 2.1 - Water consumption by sector](Image)

Gigalitres

<table>
<thead>
<tr>
<th>2008/09</th>
<th>2009/10</th>
<th>2010/11</th>
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</tr>
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<tr>
<td>Agriculture</td>
<td>Water Supply</td>
<td>Household</td>
<td>Other Industries</td>
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<tr>
<td>Mining</td>
<td>Manufacturing</td>
<td>Electricity</td>
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Source: ABS data: 4610.0 Water Account, Australia, 2011-12
Melbourne
In Melbourne, due to the planning and commitment shown by our forebears, we are fortunate to have protected catchments that are recognised as producing some of the best quality drinking water for a large city in the world. From 1997 until 2009, Melbourne experienced an extended period of reduced rainfall levels, with 2006–07 being a drought year of record proportions. Melbourne’s households and businesses have reduced their water use considerably since the 1990’s, but there is still significant further ongoing commitment and action required by all of our community, whether it be government, business or residents, to ensure our water supplies are secure into the future. While drought has been the primary cause of Melbourne’s recent water scarcity problem, modelling indicates that it will be a long term issue for Melbourne. Planning for the future must consider issues such as projections for increasing demand for water as the city and its population grows, increasing environmental concerns and the potential impacts of climate change. Climate change modelling indicates that southern Australia is likely to receive reduced rainfall, increasing intensity of rainfall events and temperatures as well as more periods of drought in the future. The 2007 next stage of the Victorian Government’s Our Water Our Future plan identified a range of actions, including major infrastructure projects such as the desalination plant to manage the risk of a drier future. The cost of water has been increasing to fund these long term solutions.

The election of the Victorian Coalition to government in 2010 resulted in a change in policy direction. In March 2011, the Victorian Government released the Living Melbourne, Living Victoria roadmap. This document “provides recommendations on strategic priorities for reform in the water sector to support the Living Melbourne, Living Victoria policy”. This resulted in the creation of the Office of Living Victoria (the OLV) in May 2012 to drive reform by coordinating urban and water planning. Integrated water cycle planning is the immediate focus of the OLV, which will work to achieve a more holistic approach to the management of the water cycle, to support and enhance the liveability of Melbourne.

Melbourne’s Water Future
On the 17th of December 2013, Minister for Peter Walsh released the Victorian Coalition Government’s new urban water policy Melbourne’s Water Future. It is stated in the media release that: “By averting the need for new dams or desalination plants, reducing capital costs of upgrading pipe networks and reducing pumping costs, Melbourne’s Water Future will help avoid the scale of price rises seen on household bills in recent times. “Melbourne’s future use of water will now be based on whole-of-water-cycle principles to keep costs down and the whole city green, healthy and liveable.” Mr Walsh said the new policy would see Melbourne make smarter use of rainwater and recycled water, and the right water being used for the right purpose. “Every year, even in drought years, more rain falls on Melbourne than the city draws from the dams. It makes no sense to let that rain run into stormwater drains and out to sea when it can be harvested for better use on ovals, parks and gardens.”

It makes even less sense to flush high quality drinking water down the toilet when cheaper water options are available. Alternative water resources will guarantee sufficient water for the city’s needs, even with a growing population and the probability of future droughts. “This policy is about securing Melbourne’s future water supplies, keeping future costs low and ensuring our cities are green and liveable.” An immediate priority from this policy is the development of the ‘Metropolitan Whole-of-Water-Cycle Planning Framework’. This framework, which is still under development, is intended to guide the development of regional and local water cycle plans across Melbourne. At the local level, the OLV state they will support local councils to design local water cycle plans (Action 3.2.2) that align with the Metropolitan Framework and are consistent with the regional plans. Each level of planning is to have a ten year timeframe with detailed implementation plans for local and regional plans. Details regarding Melbourne’s Water Future can be found on Council’s website.

The City of Greater Dandenong has historically managed its water resources as separate systems. Existing strategies and recent developments have required Council to rethink its water management practices. These include:

- Managing flows through the system from upstream catchments (i.e. outside the municipal boundary and outside the direct control of CGD)
- Increased urbanisation through development of greenfield sites, infill development and urban renewal
- An increasing population and a changing demographic
- The increasing cost of water
- The need for active and passive open space
- Climate change – the projections for reduced rainfall, increased temperatures, and increased extreme events (floods and heatwaves)
- Advances in technology
- Changes in approaches to the reuse of recycled water and stormwater
- Increased expectations for local governments to ensure the efficient and sustainable use and management of resources
- State government policies.

Council’s sphere of influence across its own operations and that of the community to establish and promote an integrated whole-of-water-cycle approach is potentially significant. In recognition of this, Council has undertaken a number of measures to identify potential opportunities, priorities and resources required for Council to take action within its sphere of influence. These include:

- The preparation of an Integrated Water Management Background Report, which was an outcome of last year’s initiatives
- Participation in the CRC for Water Sensitive Cities
- Participation in the South East Councils Integrated Water Management Group.

Integrated Water Management Background Report
In 2013, with financial assistance from Melbourne Water, Council engaged consultants to undertake an assessment into the current water cycle across the municipality. This involved consideration of the drinking water, sewerage and recycled water. Using rainfall data and the level of development across the municipality, modelling was then undertaken to estimate the amount of runoff generated across the municipality and pollution levels in this stormwater. The study then went further than similar studies undertaken at that stage by other councils across Melbourne by also considering flooding and the benefits from a more integrated approach to water management. Using this information as a benchmark, the study then considered the implications of future scenarios, including: increases in population and building activity; climate change; and, the level of investment in measures to reduce both stormwater runoff and pollution levels.

As stated in the report, the results of this study “provides the evidence base for the City of Greater Dandenong to better prepare for a pending wicked problem: more people, more urban development, a drier climate, increasing costs of water, increasing flooding, increasing loads of pollutants in the waterways, increasing demands on open space and public life, and an increasing need for resilience in the water system”. Further work is being undertaken by Council as it works to address this complex problem.

CRC for Water Sensitive Cities
The Cooperative Research Centre for Water Sensitive Cities (CRC-WSC) is a collaboration between 74 research, industry and government partners, with research nodes at Monash University, the University of Western Australia, the University of Queensland and in Singapore. Participating industry and government partners and organisations come from five states in Australia and a number of international entities are also involved. The City of Greater Dandenong is one of now nine Victorian councils participating in this project.

The goal of the CRC-WSC is to deliver the socio-technical urban water management solutions, education and training programs, and industry engagement required to make Australian towns and cities water-sensitive. Further details regarding the CRC-WSC can be found at http://www.watersensitivesites.org.au/.

South East Councils Integrated Water Management Group
Representatives from the water authorities and local councils in the south east of Melbourne meet regularly throughout the year to discuss integrated water management activities being undertaken across the region as well as consideration of statewide policy developments.
2.2.2 Water consumption across Council’s operations

Objective: 2.2 Reduce the consumption of drinking water and improve water use efficiency across Council’s operations.

Indicator: 2.2.1 Council’s corporate drinking water use.

Target: A 25 per cent reduction in drinking water by 2018 from the 2004–05 to 2005–06 baseline average of 267 Megalitres (ML) - Target: 200ML by 2018

This reduction in use of water since the year 2000 is mainly attributable to a reduction in the amount of water used to irrigate playing fields. This is a result of a combination of factors, including:

- water restrictions
- conversion of Council’s playing fields to warm season grasses – which require less water
- seasonal variations in weather conditions.

Seasonal variation in local temperatures and rainfall amounts can impact significantly on water use, particularly for playing fields. Figure 2.2 shows that Council’s water use can increase significantly from year to year. Ongoing effort will be required if Council is to maintain usage of water below its current target, particularly during drier years. The increasing cost of water provides a significant financial incentive. As illustrated in Figure 2.2, while Council’s use of drinking water is around the same level as 2006–07, the costs have nearly doubled.

Council has converted the turf on all of its playing fields to grass species that use significantly less water than those used in the past.
The impact of water restrictions

The State Government’s Stage 3A water restrictions, in place from April 2007 until April 2010, limited councils to irrigating only one in four of their playing fields. Without irrigation to maintain safe playing surfaces, restrictions would have been required to be placed on the use of affected playing fields. Council minimised the impacts of these restrictions to the community’s sporting activities through the use of recycled water on its playing fields, which was carted at considerable expense. The cartage of recycled water peaked in 2009, when just less than 21ML was used on Council’s playing fields. As experienced across the rest of Melbourne, the easing of restrictions has resulted in a bounce back of water use. For Council, this is mainly through the irrigation of playing fields. With the desalinisation plant complete, it is anticipated that there will be less likelihood of strong water restrictions being required during future droughts in the medium term. As playing fields are responsible for the bulk of the water used by Council, the limited restrictions could result in a significant increase in Council’s use of drinking water in drought years. As indicated by Figure 2.2, a significant increase in drinking water usage would result in significantly higher charges.

From 1 December 2012, Melbourne moved to Permanent Water Use Rules (previously Stage 1 water restrictions). These Permanent Water Use Rules aim to provide greater flexibility while curbing water wastage. Council’s public gardens, lawns and playing surfaces can be watered in accordance with these rules.

Key measures undertaken by Council to reduce drinking water use

In recent years, Council has undertaken a range of actions to reduce its use of drinking water. Key selected measures are summarised in the table below:

**KEY SELECTED MEASURES INCLUDE:**

| New Municipal Building | The new municipal building has achieved its 5 Star Greenstar rating through the inclusion of water conservation and efficiency measures. These include:
<table>
<thead>
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<td>• Use of water efficient taps, toilets and showers</td>
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</tr>
<tr>
<td>• The installation of a 117,000 litre tank for the harvesting of rainwater to be used in the flushing of toilets and irrigation of landscaped areas</td>
<td></td>
</tr>
<tr>
<td>• Measures to reduce the buildings fire systems use of drinking water during testing.</td>
<td></td>
</tr>
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</table>

| Playing fields | A completed program to convert playing fields to warm season grasses, which use up to 70 per cent less water than traditional grasses. At the end of 2010, all Council owned and / or managed playing fields had been converted. |

| Water efficient fixtures | An audit was undertaken to identify Council’s water using fixtures (taps, showers, toilets etc) at Council facilities and identify the proportion that were water efficient. As a result, water efficient showersheads, taps and flow restrictors have been retrofitted across all of Council’s facilities where possible. Co-contribution grants from South East Water assisted with this process. |

| Noble Park Pool upgrade (NPAC) | Water conservation and efficiency is a key component of the design of this facility. Features include:
<table>
<thead>
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</thead>
<tbody>
<tr>
<td>• A 700,000 litres of rain water storage and reuse for irrigation, toilets, cleaning, and other municipal uses</td>
<td></td>
</tr>
<tr>
<td>• water harvesting off roofs and canopies</td>
<td></td>
</tr>
<tr>
<td>• grey water recycling from showers and basins for sub-surface drip irrigation of the landscaped areas</td>
<td></td>
</tr>
<tr>
<td>• water saving plant, fixtures and fittings.</td>
<td></td>
</tr>
</tbody>
</table>

| Monitoring | Council is recognised as a leader in the sector in regards to its efforts to monitor utility use and billing. Water use patterns across Council’s facilities are monitored through:
<table>
<thead>
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</thead>
<tbody>
<tr>
<td>• incorporation of water bill data into Sustainability Victoria’s Utility Tracker software system</td>
<td></td>
</tr>
<tr>
<td>• Remote monitoring of utility meters at key Council sites. Data loggers that provide real time monitoring are being used on water and electricity meters at selected sites. This enables usage patterns to be analysed the following day and the early identification of leaks.</td>
<td></td>
</tr>
</tbody>
</table>

The use of alternative water sources provides Council with the opportunity to reduce its use and reliance on water suitable for drinking. These opportunities include the use of:

- rainwater
- stormwater
- recycled water
- bore water

**Rainwater Harvesting**

Rainwater tanks are being installed across Council facilities to capture rainwater from building roofs for subsequent reuse when the opportunity arises. This rainwater is used for a variety of purposes, such as the irrigation of garden beds, street trees, lawn areas and the flushing of toilets. The approximate storage capacity of these rainwater tanks is in the order of 3 ML. The actual volume of water consumed through these tanks is potentially many times more than the capacity each year, as they are normally filled and emptied several times over the course of the year. While the volume of harvested rainwater used at these facilities has generally not been measured, the design of the new Noble Park Aquatic Centre has incorporated extensive monitoring of water usage across the site, including rainwater.

**STRATEGIC ACTIONS TO BE UNDERTAKEN:**

**TIMEFRAME / RESPONSIBILITY**

- Undertake a high level assessment of potential opportunities to harvest stormwater that provide both flooding benefits and irrigation of Council’s playing fields. **2014–15 – Engineering Services, City Design and Sustainability Planning**
- Implement actions identified in Council’s “Towards a Water Smart City” Strategy and consider and implement where appropriate the recommendations outlined in the Integrated Water Management Background Report. **Ongoing – Responsible Departments**
- Report Council’s corporate water use and the measures undertaken to conserve drinking water across Council’s operations. **Ongoing – Planning and Design, Infrastructure Planning**
- Consider and implement where appropriate the recommendations outlined in the Integrated Water Management Background Report. **Ongoing – City Design and Sustainability Planning**

**2.2.3 Use of sustainable alternative water sources across Council’s operations**

**Objective:**

- Actively demonstrate the use of sustainable alternative sources of water across Council’s facilities and operations. 2.4

**Indicator:**

- Council’s use of alternative sources of water. 2.4.1

**Target:**

- To achieve 10 per cent of Council’s total corporate water use provided by sustainable alternative sources by 2018.

**Recent installation of rainwater tanks include:**

| New Municipal Building and Library | Rainwater is being captured at the new municipal building in Dandenong for a range of purposes, including the flushing of toilets, testing of fire sprinklers and irrigating landscaped areas. With the installation of the 117,000 litre rainwater tank, these measures are expected to result in savings in the order of 1 million litres or more of drinking water each year. |
| Noble Park Aquatic Centre | The refurbishment of the Noble Park Aquatic Centre (NPAC) has resulted in the conversion of the old 50 metre swimming pool into a 700,000 litre below ground storage tank. |
Stormwater Harvesting

Traditional urban stormwater drainage systems have been designed to meet community needs by minimising the impacts of flooding. The main focus has been the capacity of the system and its ability to transport the water away rather than on environmental quality and reuse of the resource9. Use of Water Sensitive Urban Design (WSUD) principles provides an alternative best practice approach that aims to reduce the environmental degradation that results from the traditional approach to stormwater management.

WSUD is about:
- trying to more closely match water runoff, in terms of both quality and quantity, with those runoff levels prior to development
- making the most effective use of rainwater that falls over our urban areas
- reducing both the amount of water imported into an area for use and the amount of waste water exported from the area10

Harvesting of rainwater and stormwater as part of an integrated approach to WSUD can provide a number of benefits, including:
- providing an alternative source of water for Council
- assisting to reduce overall demand on drinking water for the city
- reducing peak flows in local waterways
- reducing nitrogen and other pollutants from entering our waterways and Port Phillip Bay
- improving the aesthetics and liveability of our urban environments.

A number of stormwater harvesting projects have either recently been implemented or are being considered at present. These include measures listed in the following table.

**KEY SELECTED MEASURES INCLUDE:**

- Revitalising Central Dandenong: The Lonsdale Street redevelopment project incorporates an extensive WSUD system with rainwater collected from the road and footpath surfaces being filtered by a combination of at source filtration and bio retention systems, prior to being collected in underground storage tanks and then reused to irrigate the street trees and landscaping.

- Tatterson Park, Keysborough: The Station North Upgrade and Realignment Project (SNURP) for Walker Street incorporates a WSUD system with rainwater collected from the road and footpath surfaces being filtered by a bio retention system, whilst at the same time providing passive irrigation for the street trees, prior to being discharged into the drainage network that flows into the Dandenong Creek.

- Ross Reserve, Noble Park: The recently completed Halpin Way and Settlers Square incorporates a WSUD system with rainwater collected from the road and footpath surfaces being filtered by a bio retention system, whilst at the same time providing irrigation for the street trees, lawns and garden beds.

Use of recycled water across Council’s operations

The City of Greater Dandenong began using Class C recycled water from the Eastern Treatment Plant (ETP) to water street trees in 2003. Due to GHG reasons, Council then primarily used Class A recycled water (which is of higher quality and has fewer restrictions on its use but is not of drinking quality). Some bore water was also used to supplement this supply, but the high salinity levels limited its use.

Water restrictions introduced in 2007 limited irrigation of councils playing fields to one in four. To minimise the impacts of these restrictions on the community’s sporting activities, Council initiated a program to use recycled water on its playing fields. Twenty three 45,000lt tanks were installed across the municipality. A lack of supply of Class A water from the ETP initially necessitated Class A water to be carted from Werribee at considerable expense. Council was then able to use carted recycled water from the TopAq facility, a privately run business that adjoins the ETP. While recycled water use peaked at nearly 21ML in 2009, with the easing of water restrictions, Council’s use of carted water has ceased. Cartage of recycled water to irrigate playing fields was a short term fix but not sustainable over the longer term. The use of piped Class A recycled water is an alternative that has considerable merit, especially as the ETP occurs within the municipality. Council has been lobbying strongly for recycled water pipeline infrastructure but the provision of the required infrastructure is not Council’s core role.

Opportunities to monitor the volume of harvested water used will need to be an ongoing consideration as stormwater harvesting projects are designed and implemented.

2.3 COMMUNITY WATER USE

### 2.3.2 The community’s consumption of drinking water

Objective: To report the community’s average household drinking water use.

Indicator: Average residential drinking water use per property for CGD households to be below the Melbourne Metropolitan Average.

Across Melbourne, residential use of water accounts for around 60 per cent of water used from Melbourne’s reservoirs. The remainder is used by industry (around 30 per cent) and non-revenue uses such as leaks, fire fighting or other unaccounted for uses. Within the home, usage is typically11 in the order of:
- 50 per cent of use is for washing clothes and dishes, flushing the toilet and having baths
- 30 per cent of use is in the shower
- 20 per cent of use is in the garden

On average, all residents, businesses and public agencies across Greater Dandenong are consuming 13.3 GL of potable (or drinking) water each year. A downward trend can be observed for the years between 2001 and 2012 (see Figure 2.4). This is despite the number of properties connected to potable supply increasing significantly since 200112.

Within Greater Dandenong, residential demand accounts for approximately 60 per cent of the drinking water usage, non-residential demand accounts for 38 per cent and Council accounts for 1 to 2 per cent. Recycled water usage within Greater Dandenong has been virtually negligible, but this is expected to increase in the future (see section 2.3.2 for further details).
South East Water publishes figures on average residential water use per property by postcode. The figures for those postcodes within this municipality are illustrated in Figure 2.5.

When compared to the Victorian state government and water authorities, councils have relatively limited direct ability to influence community-water use. Consideration of Council’s role in reducing the community’s use of drinking water will be undertaken as part of the review of Council’s 2010 Environmental Sustainability Strategy. Actions that have been undertaken to date include:

- Increasing community awareness through having “Water” as a key focus at Council’s first annual Sustainability Festival held in March 2013 at the Dandenong Market. Both Melbourne Water and South East Water provided fun educational activities targeting children on the day. As part of the festival program, four local primary schools also participated in South East Water’s “Love Every Drop” program.
- Held preliminary discussions with the Office of Living Victoria to identify measures for Council to support their statewide “Right Water” campaign.
- Water saving and efficiency articles published in Council’s “The City” magazine, which is distributed to over 40,000 households across the municipality.
- Use of the Council’s website to promote water saving opportunities.
- Demonstration of leadership through the promotion of water saving initiatives that have been undertaken by Council.
- Support for South East Water’s former Showerhead Exchange Program. Council supported this program in a number of ways including providing an exchange point at the Springvale Municipal Offices. South East Water has recently stopped this program.
- Advocacy for increased access to recycled water for the municipality and the region through the provision of recycled water infrastructure.
- For larger developments (both residential and non-residential), Council may require applicants to submit a report outlining the sustainability measures incorporated into the design, including consideration of water conservation and quality.


Metropolitan Melbourne Average: Essential Services Commission, Performance of Urban Water and Sewerage Businesses 2012–13, Industry Summary 2013. These figures indicate that across this municipality, all suburbs except for Dandenong South have seen an increase in water use over the last two years when compared with the previous years. This has been expected as a result of the gradual easing of water restrictions across Melbourne since April 2010. The Essential Services Commission provides an annual report on Melbourne Metropolitan average household water usage. The average use per household dropped consistently each year from 171KL in 2006–07 to 138KL in 2010–11, but with the easing of water restrictions, water usage has bounced back, reaching an average of 152KL per household for 2012–13. When used as a benchmark to compare this municipality’s residential water use, the data indicates that the average water use per household across the municipality is greater than the Metropolitan Melbourne Average, apart from the suburbs of Dandenong, Dandenong South and Noble Park.

Source of data: Postcodes average residential water usage rates provided by South East Water.

Figure 2.5 Average residential drinking water use per property by postcode

<table>
<thead>
<tr>
<th>Year</th>
<th>Springvale</th>
<th>Keysborough</th>
<th>Springvale Sh.</th>
<th>Noble Park Nth.</th>
<th>Dandenong Nth.</th>
<th>Dandenong</th>
<th>Dandenong Sh.</th>
<th>Noble Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007/08</td>
<td>163</td>
<td>175</td>
<td>168</td>
<td>166</td>
<td>169</td>
<td>151</td>
<td>144</td>
<td>142</td>
</tr>
<tr>
<td>2008/09</td>
<td>166</td>
<td>171</td>
<td>163</td>
<td>164</td>
<td>159</td>
<td>156</td>
<td>151</td>
<td>144</td>
</tr>
<tr>
<td>2009/10</td>
<td>163</td>
<td>166</td>
<td>157</td>
<td>153</td>
<td>158</td>
<td>145</td>
<td>137</td>
<td>136</td>
</tr>
<tr>
<td>2010/11</td>
<td>160</td>
<td>158</td>
<td>155</td>
<td>152</td>
<td>152</td>
<td>141</td>
<td>132</td>
<td>131</td>
</tr>
<tr>
<td>2011/12</td>
<td>162</td>
<td>166</td>
<td>158</td>
<td>156</td>
<td>153</td>
<td>143</td>
<td>131</td>
<td>135</td>
</tr>
<tr>
<td>2012/13</td>
<td>166</td>
<td>166</td>
<td>163</td>
<td>160</td>
<td>154</td>
<td>145</td>
<td>130</td>
<td>135</td>
</tr>
</tbody>
</table>

Source of data: Postcodes average residential water usage rates provided by South East Water.

Figure 2.4 Drinking and recycled water consumption, sewerage produced and the number of residential properties in CGD
Melbourne Water’s Eastern Treatment Plant (ETP) is located in the south west of the municipality. The ETP treats around 40 per cent of Melbourne’s sewerage and currently supplies about 21 Gigalitres (GL) of recycled water a year, much of which is used within the facility itself. The remaining use of this water is mainly through the Eastern Irrigation Scheme and the connections along the outfall pipe. In 2013, Melbourne Water completed a $418 million upgrade of the ETP to include an advanced tertiary stage of sewage treatment. This has significantly improved the quality of water produced (Class A) and makes it one of the most sophisticated large-scale sewage treatment plants in the world. The aim of the project was to benefit the marine environment at Boags Rocks, Gunnamatta, by significantly improving the quality of the water discharged from the plant into the ocean there. The upgrade also provides a new source of higher quality recycled water (previously Class C), which has a greater range of permitted uses.

To make greater use of this water, opportunities to provide recycled water infrastructure to the municipality and region are being explored by South East Water. This includes the regional Dandenong Recycling Scheme. Council participated in the development of the Dandenong Development Board’s Greater Dandenong recycled water feasibility study (Marsden Jacob Associates and Osborne Management June 2008). This report identified that there were several feasible opportunities for industrial, residential and open space use of recycled water in the region. The Dandenong Recycling Scheme is expected to result in a significant increase in the number of residential properties that will have access to recycled water across Greater Dandenong. South East Water is currently working with stakeholders to provide recycled water infrastructure as development occurs. At the start of 2010, a small number of properties in the newly developed residential estates of Keysborough had Class A recycled water meters connected to the boundary of their properties (See Figure 2.6). This figure has increased to 1,121 early in 2014, with the number expected to continue to increase as new residential development areas continues in Keysborough and Dandenong South. While significant parcels of green-field industrial sites are currently being developed across Dandenong South, identified projects to provide recycled water to industrial and commercial areas are limited. One industrial development that has incorporated recycled water infrastructure is the LOGIS development in Dandenong South. This is the redevelopment of the old Dandenong sewerage treatment plant by Places Victoria and Melbourne Water. This 180 hectare site has been vacant since treatment operations ceased in 1996. When completed, the site will be a mixture of factories, offices and warehouses as well as areas of public open space. Development at the LOGIS site is well underway, and the number of industrial properties connected to recycled water infrastructure at the start of 2014 was 33 (See Figure 2.6).

**Figure 2.6 Properties within Greater Dandenong with Class A recycled water meters connected**

<table>
<thead>
<tr>
<th>Year</th>
<th>Residential</th>
<th>Non Residential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 2009</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Jan 2010</td>
<td>38</td>
<td>0</td>
</tr>
<tr>
<td>Jan 2011</td>
<td>292</td>
<td>19</td>
</tr>
<tr>
<td>Feb 2012</td>
<td>659</td>
<td>31</td>
</tr>
<tr>
<td>Jan 2013</td>
<td>955</td>
<td>33</td>
</tr>
<tr>
<td>Feb 2014</td>
<td>1,121</td>
<td>33</td>
</tr>
</tbody>
</table>

Data Source: Figures used in this table have been provided by South East Water.
PART B
WATER QUALITY

2.4 BACKGROUND CONTEXT

An assessment of national river health indicates that most rivers and basins are currently in poor condition19 and are declining, particularly in relation to:

- the ecological condition of waterways
- flow regimes
- the quality and quantity of in-stream habitat and riparian vegetation
- the recent extended drought conditions experienced across much of south east Australia

Across Melbourne, creeks and rivers are part of the urban drainage system. Traditionally, urban drainage systems have been viewed as a means of providing protection for urban areas from flooding.

Pollutants and litter in our waterways

Surface runoff is generated when the rate of rainfall is greater than that which can be absorbed by a surface. Runoff generally follows the contours of the land until it is intercepted by a drainage line where it is transported through a network of drains and stormwater pipes until discharged into our creeks, rivers, bays and oceans. As stormwater is usually not treated before it enters the creeks and rivers, the drainage system is also very effective at transporting litter and pollutants from their sources into our bays, affecting the environmental quality of the waterways and the bays.

The pollution of our waterways with visible litter and rubbish as well as other less visible contaminants can all add up to significant impacts on the waterways’ aquatic ecosystem and lessen their value and beneficial use. This includes our use of the waterways and marine environments for swimming, fishing, agricultural and industrial use as well as potentially creating unsightly creeks and rivers that lessen their recreational value and create health risks.

In rural areas, typical pollutants contained in surface runoff include traces of fertilisers, pesticides or animal wastes. It can also be plant matter or fine particles of soil. Typical pollutants from residential areas include plastic bottles, cigarette butts, animal faeces, oil from cars, dust from tyre wear, grass clippings, detergents, chemicals and soil particles. Industrial areas may also generate additional pollutants from the manufacturing process, the storage of materials and chemical spills.

Dandenong Creek

The main watercourse that flows through the municipality of Greater Dandenong is the Dandenong Creek and its tributaries, the Mile, Yarraman and Eumemmerring Creeks. Greater Dandenong is located lower in the Dandenong Creek’s catchment, and is characterised by significant urban development.

Historically, Dandenong Creek flowed into the Carrum Swamp which spread behind the sand dunes between Mordialloc and Frankston and entered the bay via either Mordialloc Creek or the Kanakook Creek at Frankston. Across the region, the Dandenong Creek and its tributaries have been substantially altered. Changes include:

- re-engineering for drainage and flood mitigation purposes with long sections of concrete channeling
- significant land clearing with associated loss of biodiversity and weed infestation
- urbanisation, including industrial and residential areas and associated changes resulting in an increase in the runoff that is generated from rainfall events.

Impacts include changes to stormwater discharges, nutrient enrichment, toxic discharges, agricultural chemicals, water extraction, flow manipulation, sedimentation and loss of biofiltration.

Greater Dandenong is a predominantly urban environment characterised by residential, commercial and industrial areas. In urban areas, the amount of hard surfaces is increased substantially (i.e. roofs, pavements and roads) which increases the amount and rate of runoff generated. The water quality of creeks and rivers is usually poorer in highly urbanised areas due to the large number of pollution sources.

Responsibility for the waterways and stormwater drainage

Melbourne Water is the caretaker of river health in the Port Phillip and Westernport region, and its responsibilities include:

- managing and monitoring rivers, creeks and wetlands
- managing the regional drainage system
- providing a safe level of flood protection
- making sure urban development is safe and meets flood and environment standards.

Responsibility for stormwater drainage in Melbourne is shared between local government and Melbourne Water: local drains are the responsibility of councils; the main drains are the responsibility of Melbourne Water. The City of Greater Dandenong is responsible for the management of the majority of the municipality’s drainage system and Council advocates for improved drainage within the waterways managed by Melbourne Water. Council also has a responsibility for managing stormwater pollution and community education.

2.5 QUALITY OF OUR LOCAL WATERWAYS AND ASSOCIATED WATER QUALITY

Objective: 2.6 Act to improve water quality and the associated environmental values of the local waterways.

Indicators: 2.6.1 Water quality of local waterways.

Target: In 2014–15, consider implications for Council from Action 3.2.2 of Melbourne Water Futures (the development of local water cycle plans).

Outcomes

Quality of our waterways

Melbourne Water undertakes monitoring of the water quality of waterways around Melbourne, including the Dandenong Creek and its tributaries. The majority of waterways in the Dandenong Creek Catchment are currently in poor (67 per cent of total length) or very poor (9 per cent) condition, which appears to be closely related to changes in land use across the catchment (See Figure 2.7). Vegetation along the waterways is generally poor, while bed and bank condition is considered to be good to moderate. Within the municipality, large sections of the Dandenong Creek are concrete lined and therefore of minimal ecological value.

Figure 2.7 Waterway condition in the Dandenong Valley

Source: Waterway condition in the Dandenong Valley (Source: Melbourne Water)

<table>
<thead>
<tr>
<th>WATERWAY SECTION</th>
<th>QUALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dandenong Creek – at its source</td>
<td>Excellent</td>
</tr>
<tr>
<td>Dandenong Creek – middle and lower sections</td>
<td>Very poor</td>
</tr>
<tr>
<td>Mile Creek tributary</td>
<td>Poor</td>
</tr>
<tr>
<td>Patterson River</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

Source: Waterway condition in the Dandenong Valley (Source: Melbourne Water)

To help improve water quality, the Tatterson Park wetlands have been planted with local native species.
Figure 2.8 Dandenong Creek and its catchment

Figure 2.8, reproduced from the recent 2013 Integrated Water Management Background Report, shows that for waterways that flow through Greater Dandenong, nearly 79 per cent of the catchment occurs upstream of Greater Dandenong. This upstream catchment generates on average 145GL of water that enters the municipality through Melbourne Water managed waterways and drains. A further 46GL of runoff is generated within Greater Dandenong. Modelling indicates that on average a total of 119 tonnes of “total nitrogen” is produced within the Greater Dandenong area annually, along with 16 tonnes of phosphorus and almost 7,000 tonnes of suspended solids. By comparison, almost three times as much nitrogen and about 1.5 time as much phosphorus and suspended solids enters the municipality from upstream of the catchment.

KEY SELECTED MEASURES INCLUDE:

**Integrated Water Management Background Report**
As outlined in section 2.2.1, Council engaged consultants to undertake an assessment into the current water cycle across the municipality in 2013.

**Revitalising Central Dandenong**
As outlined in Section 2.2.3, a number of measures have been incorporated into redevelopment of Lonsdale and Walker Streets to harvest stormwater and improve water quality.

**Regional Water Sensitive Urban Design Guidelines**
In 2011, Melbourne Water’s Living Rivers Stormwater Program provided funding to progress and finalise the second round of Water Sensitive Urban Design (WSUD) Guidelines for Council’s on the southern and eastern fringe of Melbourne. Councils involved include:

- Bass Coast Shire
- Baw Baw Shire
- Casey
- Greater Dandenong
- Gardinia
- Mornington Peninsula
- South Gippsland Shire
- Yarra Ranges Shire

These WSUD guidelines have been finalised and are available on Melbourne Water’s website.

**Regional collaboration**
Council is assisting the EPA and Melbourne Water in a project they are undertaking as part of the “A Cleaner Yarra River and Port Phillip Bay – A Plan of Action”. Monitoring has identified pollution hotspots in wetlands draining into Eumemmering Creek in Dandenong South. Subsequent monitoring of drains near the wetlands has confirmed high levels of heavy metals within the stormwater. There are multiple industrial sites located within the catchment which may be contributing to the high levels of contaminants within the drainage system. Following further monitoring, inspections will be undertaken to identify potential contributors within the identified industrial estate areas and take action where required.

**STRATEGIC ACTIONS TO BE UNDERTAKEN:**

<table>
<thead>
<tr>
<th>STRATEGIC ACTIONS TO BE UNDERTAKEN</th>
<th>TIMEFRAME / RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investigate opportunities, benefits and costs associated with incorporating WSUD measures into a drainage design to reduce the likelihood of localised flooding events for a site.</td>
<td>2014–15 – Engineering Services, City Design and Sustainability Planning</td>
</tr>
<tr>
<td>Undertake high level assessment of opportunities for the irrigation of Council’s playing fields through stormwater harvesting.</td>
<td>2014–15 – Engineering Services, Planning and Design</td>
</tr>
<tr>
<td>Identify opportunities to improve water quality outcomes through the planning process.</td>
<td>Ongoing – Planning and Design, Engineering Services</td>
</tr>
<tr>
<td>Continue advocacy and collaboration with Melbourne Water, Port Phillip and Westerport Catchment Management Authority (PPWCMA) and the Environment Protection Authority (EPA) to improve quality of local waterways.</td>
<td>Ongoing – Engineering Services, City Design and Sustainability Planning</td>
</tr>
<tr>
<td>Consider and implement where appropriate the recommendations outlined in the Integrated Water Management Background Report.</td>
<td>Ongoing – City Design and Sustainability Planning, Infrastructure Planning</td>
</tr>
<tr>
<td>Participation in the Cooperative Research Centre for Water Sensitive Cities.</td>
<td>Ongoing – City Design and Sustainability Planning, Infrastructure Planning</td>
</tr>
<tr>
<td>Participation in the South East Councils Integrated Water Management Group.</td>
<td>Ongoing – City Design and Sustainability Planning, Infrastructure Planning</td>
</tr>
</tbody>
</table>
3. WASTE MINIMISATION

COUNCIL’S GOAL:
An integrated approach to manage waste across the municipality. We work to create a community that lives in and respects a clean environment, where people: take responsibility for the waste they generate; dispose of it appropriately; reuse it where they can; and, look for better ways to manage their waste.

STRATEGIC OBJECTIVES

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 A reduction in the waste generated by the residential community.</td>
<td>3.1.1 Total household waste generated (Tonnes) through Council’s Municipal kerbside household waste collection service.</td>
</tr>
<tr>
<td>3.2 Increase waste diverted from landfill.</td>
<td>3.2.1 Kerbside collection diversion rates for recycled materials and garden waste.</td>
</tr>
<tr>
<td>3.2 Per cent recovery rate (by weight) of municipal solid waste for reuse and recycling.</td>
<td></td>
</tr>
<tr>
<td>3.3 Consider appropriate responses to changes in Federal and State Government policies and strategies that affect Council’s management of waste.</td>
<td>3.3.1 Alignment of Council’s waste and litter strategy with State and Federal Government objectives.</td>
</tr>
<tr>
<td>3.4 An integrated approach to waste minimisation through advocacy to other levels of government and agencies.</td>
<td>3.4.1 Report on measures undertaken to achieve an integrated approach to waste minimisation.</td>
</tr>
<tr>
<td>3.5 Work with the non-residential sector to reduce waste generated and increase recycling.</td>
<td>3.5.1 Report on programs undertaken to reduce waste and increase recycling with the non-residential sector.</td>
</tr>
<tr>
<td>3.6 Work with the community to reduce littering.</td>
<td>3.6.1 Report on measures undertaken to reduce littering across the municipality.</td>
</tr>
<tr>
<td>3.7 Increase the reuse of materials across Council’s operations.</td>
<td>3.7.1 Report on measures undertaken to increase the reuse of materials across Council’s operations.</td>
</tr>
<tr>
<td>3.8 Promote opportunities to improve waste management across Council’s operations.</td>
<td>3.8.1 Report on measures undertaken to promote opportunities to improve waste management across Council’s operations.</td>
</tr>
</tbody>
</table>

3.1 BACKGROUND CONTEXT

Australian’s are reported to be amongst the highest generators of waste in the world per capita. It is stated on Page 12 of the 2013 Victorian Waste and Resource Recovery Policy that, in regards to waste generation in Victoria:

“On average each one of us generates just over two tonnes of waste per year.”

“Over the last ten years, there has been a 29 per cent increase in the amount of waste we each generate per year.”

“The simplest challenge is that the amount of waste we produce is growing. One of the big reasons the amount of waste is increasing is that there are many more of us. Victoria’s population is 5.6 million, compared with 4.8 million in 2000, and is projected to grow to 7.3 million by 2031. Over the past decade Victoria’s annual waste generation has increased from roughly eight million tonnes in 2000, to 11.9 million tonnes in 2011. Between 2010 and 2011 alone there was a seven per cent increase in the total amount of waste Victoria’s system needed to handle.”

….. unless we take specific action, Victorian waste generation is expected to continue increasing by around four per cent per year, and may approach 17.4 million tonnes by 2022; a compelling reason to act and reduce our waste.”

The generation and management of this waste have many environmental impacts, including the inefficient and unsustainable use of our natural resources. It is also recognised that the greater the amount of waste generated, the greater the health and environmental risks. These risks include land and ground water contamination, odour, dust, litter and greenhouse gas emissions.
WASTE MINIMISATION

There are a number of factors or ‘drivers’ that influence the amount and type of waste that is disposed to landfill and what is recycled. These include:

• Population growth
• Population density and spread
• Packaging
• Government waste management policies
• Market forces
• Consumption levels
• Consideration of the ‘Waste Hierarchy’

‘Waste Hierarchy’ principles identify that wastes should be managed in accordance with the following order of preference:

1. Avoidance
2. Reuse
3. Recycling
4. Recovery of Energy
5. Treatment
6. Containment
7. Disposal

This hierarchy aims to eliminate waste before it is produced and to reduce its quantity. Prevention is the primary goal, followed by reuse, recycling, treatment and lastly, the appropriate disposal of the remaining waste. These principles of the waste hierarchy are incorporated into Victoria’s Environment Protection Act (1970).

In Australia, while waste and recycling is legislated at the State level, local governments have responsibility for domestic waste services as well as facilitating the communities awareness of recycling and being ‘waste wise’. According to the Australian Bureau of Statistics, the traditional council activity of solid waste management cost Australian local governments $1.2b during 2002 – 3.

Landfills have been the main method of managing our waste in Victoria. Disposing waste to landfill creates many issues including pollution and the generation of greenhouse gases. Costs are increasing as a result of a number of factors, including: federal and state policies; the filling of existing landfill sites; and, urban growth limiting future site options. A reduction in waste is not only cost effective but needs to be pursued as part of Greater Dandenong’s agenda to improve resource use and recovery and reduce greenhouse gas emissions.

Recycling of Victoria’s solid waste increased from 26 per cent in 1993 to 61 per cent in 2008. This increase in waste recovery can be attributed to a number of factors, including improved kerbside recycling practices and the introduction of the co-mingled recycling bin across metropolitan Melbourne. Most councils also provide recycling bins for garden organics. Recycling rates are generally higher in urban areas due to access to more comprehensive kerbside recycling services, while reuse of waste is higher among regional and rural households.

Investigations by Sustainability Victoria into the waste composition breakdown for kerbside garbage bins across metropolitan Melbourne showed that, even with recyclables and garden organic bins, garden organic waste and recyclable items still contributed to over 25 per cent of the waste in the average Melbourne garbage bin. When combined with food waste (42 per cent), overall results showed that two thirds of household garbage was potentially recoverable. The results of these findings illustrate that across Melbourne there are further opportunities to increase recycling rates and reduce the amount of waste sent to landfill.

3.2 REDUCING WASTE AND INCREASING RECYCLING OF RESIDENTS

Objective: 3.1 A reduction in the waste generated by the residential community.

Indicator: 3.1.1 Total household waste generated (Tonnes) through Council’s municipal kerbside household waste collection service.

Targets: A 2.5 per cent reduction per household.

Objective: 3.2 Increase waste diverted from landfill.

Indicator: 3.2.1 Kerbside collection recovery rates of recycled materials and garden waste.


3.2.1 Municipal household waste collections

City of Greater Dandenong household residents currently have access to a three bin system – a smaller general waste bin and larger recycling and garden waste bins. Figures 3.1 and 3.2 illustrate that since 1999:

• until 2012–13 year, Council’s overall collection of household waste had been increasing
• household waste sent to landfill has decreased, and currently is around 5 per cent lower when compared with 2012–13. The data indicates that since reaching its lowest levels in 2006-07, waste sent to landfill has increased slightly each year for the last six years.
• the amount of household recycled material collected has increased by 8 per cent when compared with 2012–13, even with a small decline in the recycled materials collected over the last few years.

Council holds a number of ‘Follow Your Waste’ tours each year.
WASTE MINIMISATION

For 2012–13, the tonnage of total household municipal waste collected was about 3 per cent lower when compared with the previous year. At the same time, waste sent to landfill increased by nearly 3 per cent, which is consistent with the recent trend. Going against the longer term trend has been the fall in the tonnage of green waste and to a lesser extent recycling collected. The reasons for these changes to recycling levels are unclear at present but will be monitored. Possible factors include:

- A decline in newspaper sales and the uptake of online services
- Reduced packaging content, such as the use of thinner plastic bottles
- The impact of community education programs encouraging the re-use of containers such as glass jars and plastic containers.

As illustrated in Figure 3.2, Council’s waste collection data shows that the number of households across the municipality has continued to increase as urban consolidation and new residential developments have occurred. Records indicate an increase of nearly 14 per cent in the number of tenements (residential properties) that waste has been collected from between the start of 2003–04 (45,359 tenements) to the end of 2012–13 (51,560 tenements)¹.

Council’s recycling programs and increased community understanding are likely to be a significant factor contributing to the decrease in waste to landfill (when compared with ten years ago), even though household numbers have increased. Local governments however have only limited levers of control in regards to minimising the amount of municipal waste that is generated. As stated on page 9 of the 2009 Metropolitan Waste and Resource Recovery Strategic Plan:

The core principle of product stewardship, introduced through amendments to the Victorian Environment Protection Act 1970 in 2001, producers, users and government share responsibility for the environmental impacts of products throughout their life cycles – from design and manufacture, to use and end-of-life management.

Product stewardship forms a key link between the community, brand owners and local government. Consumers can make informed, responsible purchasing decisions and make use of available recycling options when disposing of products, but manufacturers, brand owners and retailers are often in a far stronger position than consumers to reduce the environmental impacts of products, thereby providing consumers with better options. A number of products have been identified as priorities for end-of-life management, based on quantities disposed of to landfill, the adequacy of current systems for recycling and for managing environmental impacts and costs of managing discarded products. Prioritised products include electrical and electronic appliances, computers, paint and batteries, and these are now being addressed by a number of different programs.

The National Waste Policy was agreed to by all Australian Environment Ministers in November 2009. Key strategies in the policy are to address issues associated with Product Stewardship and Packaging. (See Section 3.3 for further details regarding the National Waste Policy.)

3.2.2 Diversion rates

For household waste collected across the municipality, current diversion rates per household, until recently, have been increasing since 2002–03. Diversion rates peaked at nearly 53 per cent in 2010–11. This figure has fallen since then to just over 45 per cent for 2012–13. (see Figure 3.3). As previously stated, the reason for these changes to recycling levels is unclear at present, but factors such as the decline in newspaper sales and reduced packaging content are likely to be contributing factors. A review of Council’s existing Waste Action Plan will be required to identify what action Council can take within its levers of control to increase diversion rates.
WASTE MINIMISATION

3.2.3 Contamination rates

While the community supports recycling programs, they often don’t realise the impacts that small amounts of materials that are not recyclable, referred to as contamination, can have. The process to separate materials is quite thorough but it only takes the collection of a small amount of the wrong material to result in large amounts of collected recycled materials having to be sent to landfill. For instance, one small piece of ceramic or pyrex glass in a recycling bin can result in a whole truckload of glass having to be sent to landfill. Larger items, such as pieces of metal or rocks, can result in the sorting equipment being broken.

Council is aware that contamination of garden waste and recycling bins occurs and this is monitored through bin inspections. In areas where consistently high contamination occurs such as older high density multi-unit developments, Council has developed tools and programs to address this. The bin inspection program is used as a tool to identify these contamination hotspots and as an educational opportunity to inform residents who have unwittingly put the wrong item in the recycling or garden waste bin.

Council’s new waste and recyclables collection contractor has on-board technology in their trucks which allows provides photo imagery of contaminants which can be generated into a standard letter to households where contaminated bins are detected. This provides a further means of educating our community on appropriate recycling practices. Educational sessions are also undertaken in primary schools, at the Australian Migrant English Schools (AMES) and other special focus groups on items that can contaminate recycling and garden waste bins.

3.2.4 Key measures taken to reduce waste and increase recycling by the residential community

Council is committed to increasing the community’s awareness of the issue associated with waste through the development of education programs for schools, community groups and residents. This strong commitment to community education is essential, particularly in a community where 52 per cent of the population was born overseas, which in turn presents language, educational and cultural barriers in gaining a commitment to recycling practices.

3.2.5 Key measures taken to reduce waste and increase recycling by the residential community

The Great Bin Swap

Council’s waste and recycling bins are being changed over to the Australian colour standards for garbage, recycling and garden waste so as statewide education programs can influence our community’s recycling behaviours. The standard garbage bin size is being reduced from 140 litre to a 120 litre bin so as to encourage people to put greater thought into recycling, transferring the many recyclables currently going into the garbage bin into the recycling bin. A 360 litre recycling bin is also being offered to further increase the opportunity to recycle. The new bins are being offered with 6 bin combination options. The different prices provide a mechanism to encourage more environmentally friendly choices.

Residents attending the ‘Cut your garbage in half workshop’ at Noble Park.

What goes in what bin signage

Council has been erecting ‘what goes in what bin’ signage at multi-unit dwellings.

Working with schools

Council’s interaction with local schools includes inclusion and excursion programs for local primary and secondary schools. These incursions and excursion programs promote the key waste minimisation messages of Avoid, Reduce, Reuse, Recycle for students to take home to their families. Council’s Waste Education Officer delivered 53 in-school waste minimisation sessions (classroom incursions and excursions) in 2012-13.

As part of the new waste contract with JJ Richards, Council has been working in partnership with Enviromax to develop a range of materials and resources to make available for schools to use, as well as further enhancing the schools waste minimisation minimisation and excursion programs, incorporating messages targeting recycling, composting, worm farming, waste less lunches (nude food), reducing food waste and litter education.

Greater Dandenong is also working with a selection of schools in rolling out recycling and composting programs, in order for schools to work towards making their schools sustainable and putting them in good stead in eventually working towards Sustainability Victoria’s ResourceSmart Schools AuSSI Vic Program.

Greater Dandenong has also been expanding the waste minimisation incursion and excursion programs to Early Learning Centres (ELC’s) and Kindergartens, as sustainability is increasingly becoming a big focus for many ELC’s and kindergartens.

‘Follow Your Waste’ tours

Council’s waste education officers organise ‘Follow Your Waste’ tours for members of the public. The eight tours undertaken in 2012–2013 all visited the following sites:
- a Materials Recovery Facility (MRF) in Dandenong South to learn how recyclable materials gets sorted, packed and processed into new products
- a landfill facility in Hallam to discover what happens to household garbage
- the Natural Recovery Systems facility in Dandenong that turns greenwaste into quality compost and mulch.

Council website and publications

Council’s website and also the community and waste calendar promotes ways in which things we throw away can sometimes be avoided, used again or composted. This includes a ‘waste and recycling disposal centres’ page and an “A-Z of recycling” These include details of retail outlets were computers and televisions can be disposed of under the Federal Government’s Product Stewardship Scheme.

Regular promotion of recycling and contamination issues occurs in Council’s publications, particularly ‘The City’, a glossy colour magazine distributed to all households in Greater Dandenong each month.

Cut your garbage in half workshop

Council organised a workshop in May 2013 at Noble Park for residents of Greater Dandenong to attend a practical workshop on ways to reduce food waste. This is because almost 50 per cent of the contents of our rubbish bins are food waste that ends up being sent to landfill. We can take measures to reduce the amount of food we waste in the first place, and then recycle much of this left over organic material into compost.

Increasing community awareness

Council’s waste and recycling bins are being changed over to the Australian colour standards for garbage, recycling and garden waste so as statewide education programs can influence our community’s recycling behaviours. The standard garbage bin size is being reduced from 140 litre to a 120 litre bin so as to encourage people to put greater thought into recycling, transferring the many recyclables currently going into the garbage bin into the recycling bin. A 360 litre recycling bin is also being offered to further increase the opportunity to recycle. The new bins are being offered with 6 bin combination options. The different prices provide a mechanism to encourage more environmentally friendly choices.

KEY SELECTED MEASURES INCLUDE:

Council’s waste and recycling bins are being changed over to the Australian colour standards for garbage, recycling and garden waste so as statewide education programs can influence our community’s recycling behaviours. The standard garbage bin size is being reduced from 140 litre to a 120 litre bin so as to encourage people to put greater thought into recycling, transferring the many recyclables currently going into the garbage bin into the recycling bin. A 360 litre recycling bin is also being offered to further increase the opportunity to recycle. The new bins are being offered with 6 bin combination options. The different prices provide a mechanism to encourage more environmentally friendly choices.

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WASTE MINIMISATION

**KEY SELECTED MEASURES INCLUDE:**

**Free Detox your Home service**
Council widely promotes Sustainability Victoria’s free “Detox your Home” service which is scheduled across Melbourne metropolitan councils. This program gives residents the chance to safely dispose of unwanted items such as:

- • left over paint
- • brake fluids
- • fuels and coolants
- • kitchen and bathroom cleaners
- • old batteries
- • poisonous household and garden products
- • cooking oil
- • Solvents and glues
- • Insecticides and pesticides
- • Fire extinguishers

The service is made available annually within Greater Dandenong. Dates for all collections and details on what will be accepted can be found via Sustainability Victoria’s website.

**Waste Education at community events and festivals**
Council’s waste education team participate at Council’s key events and festivals throughout the year, educating the community on a range of waste minimisation messages such as composting, worm farming, reducing food waste, litter education, through exchange of information and games and activities for the family. Council’s litter education mascot Lily Litter also makes appearances at a number of events throughout the year.

**Get it Right on Bin Night**
Council is partnering with the Victorian Government and other Melbourne councils in a new campaign, ‘Get it Right on Bin Night’, to improve recycling rates across metropolitan Melbourne. This program provides residents with tips and information on making recycling easier and to reduce contamination issues.

See Section 3.4 of this report for further details regarding this project.

**Multi Unit Dwellings project**
Council is working in partnership with Frankston Council to target Multi Unit Dwelling hot spots and develop a tailored education program for these sites. This project has received funding from the Metropolitan Waste Management Group.

The key objectives of the project are:

1. To reduce recycling and garden waste contamination and increase diversion rates at selected hot spots.
2. To reduce dumped rubbish at hotspots by 5 per cent.
3. To develop a tailored education program, including the development of educational toolkits for tenants, as well as for body corporate and real estate agents, to help educate their residents living in Multi Unit Dwellings.
4. To increase understanding on what can / cannot be recycled in the recycling bin.

**STRATEGIC ACTIONS TO BE UNDERTAKEN:**

<table>
<thead>
<tr>
<th>TIMEFRAME / RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continued participation by Council in local and regional programs to both increase awareness and work with the community to reduce waste and increase recycling.</td>
</tr>
<tr>
<td>Continue community awareness programs provided through Council’s media. This includes articles on Council’s website and in ‘The City’ magazine.</td>
</tr>
<tr>
<td>Expand existing school incursion and excursion programs by developing a ‘Schools education’ page on Council’s website to promote and deliver more waste minimisation programs within primary and secondary schools and early learning centres.</td>
</tr>
<tr>
<td>An annual Waste Education Plan prepared covering community education programs and marketing strategies.</td>
</tr>
<tr>
<td>Continue existing community incursion and excursion programs to encourage the community to have greener purchasing habits (buying in bulk, buying items with less packaging, buying local) and better recycling habits which reduces their carbon footprint and minimises waste to landfill. This includes Follow Your Waste tours to show residents and students the impact of their consumption and disposal choices.</td>
</tr>
<tr>
<td>Expand on existing incursion and excursion programs targeting Culturally and Linguistically Diverse (CALD) communities on how to correctly use the kerbside service and minimising waste.</td>
</tr>
<tr>
<td>Continue to undertake bin inspections to identify areas of high contamination within the municipality.</td>
</tr>
</tbody>
</table>

**RECYCLING OLD TVS**

This fast running out for anyone still using an old analog TV, with the service to be shut-down nation-wide this month. Council is reminding residents that there are several ways to recycle old televisions, instead of sending them to landfill.

As part of the National Television and Computer Recycling Scheme, there are a number of permanent drop-off facilities and drop-off events throughout Melbourne. The nearest permanent sites are:

- • Harvey Norman Dandenong 141-165 Frankston Dandenong Road
- • PSM Recyclers 7 Mills Road, Dandenong
- • Knox Transfer Station and Recycling Centre George Street, Wantirna South

Council’s website greaterdandenong.com has information on where to recycle a range of household items including mobile phones, household batteries, fridges, household chemcials, CDs, polystyrene and more. For more information on the nation-wide shut down of the analog TV service see www.digitallyready.gov.au/
WASTE MINIMISATION

3.3 FUTURE DIRECTIONS - IMPACTS OF STATE AND FEDERAL POLICY

Objective: 3.3 Consider appropriate responses to changes in Federal and State Government policies and strategies that affect Council's management of waste.

Indicator: 3.3.1 Alignment of Council's waste and litter strategy with State and Federal Government objectives.


3.3.1 Federal Policy Directions

As stated in the Federal Government's National Waste Policy - less waste, more resources (2009):

Under the Constitution the management of waste is primarily the responsibility of the state and territory governments. The Australian Government is responsible for ensuring that Australia's international obligations are met, whether through measures implemented by the Commonwealth or through measures implemented by the states.

Recent Policy Directions INCLUDE:

Clean Energy legislation

The Clean Energy legislation was passed by the Senate in November 2011. This carbon pricing mechanism requires Australia's biggest polluters to report on and pay a price for their carbon pollution.

Following the 2013 election of the Liberal-National coalition, the Australian Government is preparing to repeal the Clean Energy Legislation and plans to implement a Direct Action Plan which it states is designed to efficiently and effectively source low cost emissions reductions.

The National Waste Policy was agreed to by all Australian Environment Ministers in November 2009. It sets Australia's waste management and resource recovery direction to 2020.

The aims of the National Waste Policy are to:

- avoid the generation of waste, reduce the amount of waste (including hazardous waste) for disposal, manage waste as a resource and ensure that waste treatment, disposal, recovery and re-use is undertaken in a safe, scientific and environmentally sound manner.
- contribute to the reduction in greenhouse gas emissions, energy conservation and production, water efficiency, and the productivity of the land.

Key strategies in the policy to address issues associated with:

Product Stewardship include:

- a consistent approach to specified manufactured products and materials, particularly at the end of their useful life. Provides for co-regulatory schemes which will cover a small number of products and materials, (e.g. televisions and computers).

Organic Waste include:

- a continued focus to reduce biodegradable material sent to landfill
- the management of safety and health risks arising from landfill gas emissions
- the development of a strategy for emissions from landfills and other waste activities not covered by the operation of a carbon price.

Australian Packaging Covenant - the third iteration:

- the 3rd agreement is focused on improving packaging design, decreasing litter and increasing levels of recycling at work and in public places.

3.3.2 State Government

Recent Policy Directions INCLUDE:

Waste Landfill Levy Increases

The state government introduced Waste Levy increases in 2010 to:

- make new recycling ventures more viable
- expand employment in the recycling and materials processing industries
- reduce Victoria's reliance on landfills and our exposure to the environmental problems caused by waste
- make recycling useful materials more competitive with disposing waste in landfills
- signal a major shift in the economics of waste management and spur new investments in the industry
- be reinvested in the industry and through the Sustainability Victoria and the Victorian Government's Conserve, Invest and Save strategy in related environmental programs.


Waste generation trends over the past decade and current population projections suggest the next 10 years could see around a 45 per cent increase in waste generation. Victoria's waste and resource recovery infrastructure collects, processes, recovers and disposes over 12 million tonnes of solid waste each year. Most of Victoria's waste (about 70 per cent) is generated by metropolitan Melbourne. Waste and resource recovery contributes $2 billion to the Victorian economy. Only 3.7 per cent of food waste is recycled in Victoria.

Victorian waste generation is expected to increase by around 4 per cent annually and may approach 17.4 million tonnes by 2022 – a compelling reason to act now to reduce our waste.

The new policy is designed to help transform the state's waste management system by setting a long-term vision for waste management and resource recovery in Victoria, along with a range of actions to be undertaken over the next 10 years.

This plan is a key initiative of the Getting Full Value policy (see above). As stated in the foreword, this draft plan "recognises that current thinking about waste management is moving away from seeing waste as ‘something to be thrown away’, and moving instead towards seeing waste as a resource from which maximum value should be extracted."

The vision of the draft plan is:

"To provide Victoria with the roadmap to guide future investment in waste management and resource recovery infrastructure that effectively manages the expected mix and volumes of waste, supports a viable resource recovery industry and reduces the amount of valuable materials going to landfill."


This strategy outlines the Government's response to reducing the problem of littering. The strategy reflects recent and relevant changes, challenges and opportunities and provides new programs to prevent litter, increase public place recycling and address illegal dumping.

The Metropolitan Waste and Resource Recovery Strategic Plan is a statutory requirement under the Environment Protection Act 1970. The strategic plan identifies the specific waste and resource recovery infrastructure needed for metropolitan Melbourne into the future.

It is required to be reviewed every four years. This review of the 2009 plan provides the opportunity to align this strategic plan with the vision, goals and objectives set out in Getting Full Value (see above).

Consultation Draft Metropolitan Waste and Resource Recovery Strategic Plan 2013

This plan is a key initiative of the Getting Full Value policy (see above). As stated in the foreword, this draft plan "recognises that current thinking about waste management is moving away from seeing waste as ‘something to be thrown away’, and moving instead towards seeing waste as a resource from which maximum value should be extracted."

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The Metropolitan Waste and Resource Recovery Strategic Plan is a statutory requirement under the Environment Protection Act 1970. The strategic plan identifies the specific waste and resource recovery infrastructure needed for metropolitan Melbourne into the future.

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- signal a major shift in the economics of waste management and spur new investments in the industry
- be reinvested in the industry and through the Sustainability Victoria and the Victorian Government's Conserve, Invest and Save strategy in related environmental programs.

State of Environment Report 2013-14
WASTE MINIMISATION

Outcomes
State and federal government policies continue to impact on the costs associated with Council’s management of its household waste collection service. Recent direct examples include:

- the increase in the State government’s waste levies
- the Federal government’s Clean Energy legislation.

Advocacy
Council is participating in the development of the Draft Statewide Waste and Resource Recovery Infrastructure Plan 2013–2043 and the Consultation Draft Metropolitan Waste and Resource Recovery Strategic Plan through actions such as:

- attendance at workshops such as: Waste and Resource Recovery
- preparing submissions from Council
- participating in the drafting of the submissions from the Metropolitan Waste Management Group.

STRATEGIC ACTIONS TO BE UNDERTAKEN:
TIMEFRAME / RESPONSIBILITY

Continue to monitor changes in federal and state government policy directions and potential implications for Council’s waste management services. Ongoing – Waste and Cleansing Services

Continue to undertake advocacy with key stakeholders. Ongoing – Waste and Cleansing Services


3.4 WORKING TOWARDS AN INTEGRATED APPROACH TO WASTE MINIMISATION

Objective: 3.4 An integrated approach to waste minimisation through advocacy to other levels of government and agencies.

Indicator: 3.4.1 Report on measures undertaken to achieve an integrated approach to waste minimisation.

Targets: Actively participate in statewide waste policy and planning.

Outcomes
Advocacy
Council’s areas of focus includes product stewardship programs (including e-waste, paint, tyres and gas bottles) and the use of new technology for the disposal of prescribed and hazardous waste and its location.

Get it Right on Bin Night
Sustainability Victoria and the Metropolitan Waste Management Group received funding from the Australian Packaging Covenant to implement a program to increase the recovery of recyclable materials from households and reduce the amount of waste that goes to landfill. The project aims to develop a behaviour change strategy to help metropolitan households move recyclables from the garbage into the recycling bin and reduce contamination in the recycling bin.

This project involved conducting extensive social research on recycling behaviours. This included approximately 1000 random surveys across 32 municipalities, including 200 with culturally and linguistically diverse (CALD) residents. The City of Greater Dandenong was on the project advisory panel.

In response to the qualitative and quantitative research conducted, a behaviour change campaign called “Get it Right on Bin Night” was developed, consisting of two phases: Phase A and Phase B.

- Phase A of the ‘Get it Right on Bin Night’ campaign was officially launched in May 2012. A range of educational materials were developed for the campaign including the ‘Get it Right on Bin Night’ website, television advertisements, postcards, posters and fridge magnets as well as tools to help councils in delivering consistent recycling messaging across metropolitan Melbourne.
- Phase B of program was launched in 2013. A range of tools were developed including a behaviour change toolkit, as well as a range of activities and lesson plans targeting CALD communities. Further details can be found at http://www.getitrightbinnight.vic.gov.au/.

Waste Management Plan Guidelines
Council is developing Waste Management Guidelines for multi unit developments to assist developers with their completion of waste management plans for submission as part of a planning permit application. Council officers are also working in partnership with the Metropolitan Waste Management Group to develop a roadmap for waste management plans to be formally recognized as an enforceable planning requirement.

STRATEGIC ACTIONS TO BE UNDERTAKEN:

Timeframe / Responsibility

Assist the Metropolitan Waste Management Group / Sustainability Victoria with implementation of ‘Get it Right on Bin Night’ campaign. Ongoing – Waste and Cleansing Services

Formally adopt Waste Management Guidelines developed with the Metropolitan Waste Management Group for waste management plans for multi unit and commercial developments. 2014–15 – Waste and Cleansing Services, Planning and Design

Continue to advocate for strengthening of measures to increase producers and users responsibility towards product stewardship and waste minimisation. Ongoing – Waste and Cleansing Services

Continue to advocate for use of new technology for the disposal of prescribed and hazardous waste. Ongoing – Waste and Cleansing Services
WASTE MINIMISATION

3.5 KEY RECENT INITIATIVES TAKEN BY COUNCIL TO MINIMISE WASTE PRODUCTION FROM THE NON-RESIDENTIAL SECTOR AND INCREASE RECYCLING

Objective: 3.5 Work with the non-residential sector to reduce waste generated and increase recycling.

Indicator: 3.5.1 Report on programs undertaken to reduce waste and increase recycling with the non-residential sector.

Target: To be considered as part of development of Greater Dandenong Waste and Litter Strategy during 2014–15.

Outcomes

Last year, Council undertook a range of actions to minimise waste production from the non-residential sector and increase recycling. Key selected measures are summarized in the table below:

KEY SELECTED MEASURES INCLUDE:

Working with schools

Council’s interaction with local schools has also increased substantially by providing incursions to local primary and secondary schools to promote waste minimisation. A range of waste minimisation materials have been prepared to increase awareness amongst students and their families. Council’s Waste Education Officer delivered 53 in-school waste minimisation sessions (classroom incursions and excursions in 2012–13). As part of the new waste contract with JJ Richards, Greater Dandenong has been working in partnership with Envirocom to develop a range of materials and resources to make available for schools to use, as well as further enhancing the schools waste minimisation incursion and excursion programs, incorporating messages targeting recycling, composting, worm farming, waste less lunches (nude food), reducing food waste and litter education.

Greater Dandenong is also working with a selection of schools in rolling out recycling and composting programs, in order for schools to work towards making their schools sustainable and putting them in good stead in eventually working towards Sustainability Victoria’s ResourceSmart Schools AuSSI Vic Program.

Greater Dandenong has also been expanding the waste minimisation incursion and excursion programs to Early Learning Centres (ELC’s) and Kindergartens, as sustainability is increasingly becoming a big focus for many ELC’s and kindergartens.

Working with sporting clubs

A pilot program with 6 sporting clubs was undertaken in 2009–10 during the summer and winter sporting seasons to increase recycling and reduce waste to landfill at these facilities. Before the trial commenced, it was estimated that up to 80 per cent of materials thrown out at sporting clubs was recyclable. Approximately 67 per cent of recyclable have been diverted from landfill upon completion of the pilot. The pilot identified the need to establish a waste diversion model for all of our sporting clubs.

Due to the success of the pilot recycling program, the program was rolled out across all sporting pavilion sites at the end of 2012. All sporting pavilions in Greater Dandenong now have a recycling collection service. Council supplied recycling skips, as well as colour topped bins for inside the pavilion clubrooms (yellow for recycling, red for garbage).

South East Business Networks (SEBN), a business networking initiative of the City of Greater Dandenong, in partnership with South East Melbourne Manufacturers Alliance (SEMMA), has received financial support from Sustainability Victoria’s Beyond Waste Fund to undertake a new waste management project which includes a focus on transport packaging waste.

Working with businesses

3.6 WORKING WITH THE COMMUNITY TO REDUCE LITTERING

Objective: 3.6 Work with the community to reduce littering.

Indicator: 3.6.1 Report on measures undertaken to reduce littering across the municipality.

Target: Annual update of Litter Prevention Action plan.

Outcomes

Council’s Litter Action Task Force is an internal working group with cross organisational representation. This taskforce is committed to identifying the main sources and sites of littering within the municipality and develop and implement solutions aimed at reducing and preventing littering. The taskforce meets regularly on a monthly basis to progress the key tasks identified in an annual action plan.

KEY SELECTED MEASURES INCLUDE:

Roadside Litter Grant

The ‘Dob in a Dumper’ program was undertaken in 2008–09 with grant funding from Sustainability Victoria. Grant funding for the program has ceased but Council continues to support the installation of signage in dumping hotspots. Over 100 signs have now been erected across the municipality.

Clean Up Australia Day

Council co-ordinates ‘Clean Up Australia Day’ and ‘Schools Clean Up Day’ across the municipality each year. For this year’s event, held on March 2014, there were 16 sites registered across the municipality, which resulted in over 1 tonne of litter being collected.

Litter Prevention Officer

The position of Litter Prevention Officer, created in 2011 as part of a two year program funded by the Victorian Government, has been continued by Council. The focus for this position is strategic projects to reduce and assist the prevention of litter and illegal dumping of waste within the municipality.

Dumping at charity stores

Council continuously works with several charity stores within the municipality to try and reduce the amount of dumped rubbish that occurs out of business hours. Council has developed A-Frame signage that is placed outside of charity stores during their out of business hours, advising people that it is an offence to dump rubbish/leave donations. These signs are in the process of being upgraded to be more effective and educational.

Infringement notices

For the year of 2013:

• Council investigated 2802 dumped rubbish reports in the year 2013
• 436 litter infringements were issued in the year 2013.

It was announced in January 2013 that Council had been successful in its application for $48,000 of funds from Sustainability Victoria’s 2012 Roadside Litter Prevention Grants program. Projects were required to involve the three critical elements for successful litter prevention programs: education, infrastructure and enforcement. Council’s project includes developing branding materials to be used on roadside signage, Council vehicles and the kerbside waste collection trucks.

Roadside Litter Grant

Council is developing branding to promote the reporting of litter and littering for investigation. This will include Council’s Local Law officer’s vehicles which will be seen patrolling the municipality each day.

By the end of June 2014 Council plans to have installed illegal dumping and anti-littering messaging at the following locations:

• Frankston – Dandenong Road
• Abbotts Road
• Greens Road
• Westall Road
• Abbotsford Road
• Stud Road
3.7 INCREASING THE REUSE OF MATERIALS AND PROMOTING OPPORTUNITIES TO IMPROVE WASTE MANAGEMENT ACROSS COUNCIL’S OPERATIONS

Objective: 3.7 Increase the reuse of materials across Council’s operations.
Indicator: 3.7.1 Report on measures undertaken to increase the reuse of materials across Council’s operations.
Target: To be considered as part of development of Greater Dandenong Waste and Litter Strategy during 2014–15.

Objective: 3.8 Promote opportunities to improve waste management across Council’s operations.
Indicator: 3.8.1 Report on measures undertaken to promote opportunities to improve waste management across Council’s operations.
Target: To be considered as part of development of Greater Dandenong Waste and Litter Strategy during 2014–15.
4. SUSTAINABLE TRANSPORT

COUNCIL’S GOAL:
The provision of safe integrated sustainable municipal transport systems. We work to create a safe, healthy and connected community through integrated accessible transport systems for now and the future.

STRATEGIC OBJECTIVES

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 Improve the walkability of the municipality through the provision of footpaths and related facilities.</td>
<td>4.1.1 Australian Bureau of Statistics – Journey to work census data.</td>
</tr>
<tr>
<td>4.2 Improve the cycling capacity of the municipality through the provision of bicycle paths, lanes and related facilities.</td>
<td>4.2.1 Bicycle / Pedestrian Shared User Path Network across the municipality.</td>
</tr>
<tr>
<td>4.3 To increase public transport patronage through improved access to existing public transport.</td>
<td>4.3.1 Journey to work census data. 4.3.2 Greater Dandenong bus routes. 4.3.3 Total bus validations for buses that have all or part of their journey in CGD.</td>
</tr>
<tr>
<td>4.4 To increase public transport patronage by identifying achievable extensions to public transport services that improves coverage.</td>
<td>4.4.1 See above 4.4.2 4.4.3</td>
</tr>
<tr>
<td>4.5 To increase public transport patronage by identifying and acting upon major trip nodes that are not efficiently linked with direct public transport services.</td>
<td>4.5.1 See above 4.5.2 4.5.3</td>
</tr>
<tr>
<td>4.6 To increase public transport patronage through improved interconnectivity of services.</td>
<td>4.6.1 See above 4.6.2 4.6.3</td>
</tr>
</tbody>
</table>

4.1 BACKGROUND CONTEXT
Transport is central to our modern way of life. It connects us with our families, friends and community as well as to resources, employment and services. An effective transport system is critical to the livability of any city.

Melbourne’s transport system is dominated by road based motor vehicle transport:

- The predominance of the car and an abundant supply of low cost fuel over the last 50 years has allowed Victorians to commute long distances between where they live and work.
- Metropolitan Melbourne residents, according to 2011 Census data, used cars for 79.3 per cent of all journeys to work (either as driver or passenger), while public transport (trains, trams and buses) accounted for just over 19.2 per cent of journeys to work. Modes of active transport, such as walking and cycling accounted for around 5 per cent.
- Outer metropolitan areas and rural and regional Victoria are more car dependent due to limited public transport options.

Across Metropolitan Melbourne, freight and passenger transport compete for limited road space, resulting in congestion and increased travel times. Projected increases in population growth and freight movements will only create further pressures. As stated on page 22 of the State’s 2008 Victorian Transport Plan ‘If no action is taken, many of Melbourne’s major roads will be at or over capacity by 2020’.

Increasing the community’s use of public transport and active transport modes has the potential to provide a range of social, economic and environmental benefits, including:
SUSTAINABLE TRANSPORT

- reducing congestion - one full metropolitan train can remove as many as 800 cars off the road
- encouraging people to have more active healthy lifestyles and better health
- increasing social interactions which help foster a sense of community
- providing transport that is accessible to all, regardless of age or income
- improving air quality
- reducing greenhouse gas emissions
- lower travel costs
- increasing resilience against the impacts of peak oil and increasing prices.

Public transport usage in Melbourne, after a long period of gradual decline, has increased significantly in recent years. It is stated on page 4 of Public Transport Victoria’s 2012 Network Development Plan – Metropolitan Rail Overview* that “Population growth, road congestion, petrol price rises and greater environmental awareness have all contributed to more Melburnians using public transport. There has been an unprecedented 70 per cent growth in train patronage in the last decade and 40 per cent in the last five years alone, which has stretched the capacity of the current network”. This increased usage is placing pressure on the system and causing frustration with the public.

As stated on page 22 of the State’s 2008 Victorian Transport Plan, “if no action is taken... the metropolitan train network will hit the wall” by 2014.” The 2012 Network Development Plan and other strategies such as Victoria’s new Cycling Strategy: Cycling into the Future 2013 - 23 (2012) outline a range of measures to improve the state’s transport system.

While the Victorian Government has significant responsibility for the development, management and operation of the state’s transport system councils traditionally have had a statutory responsibility for the management of local roads and local traffic management. It is becoming increasingly recognised however that local governments have a role to play at the local and regional level as a planner, facilitator, advocate, and, in limited cases, as a provider of transport solutions. 7

City of Greater Dandenong - Regional Context

The municipality of Greater Dandenong is the regional capital to the rapidly expanding south-eastern region of Melbourne and is a net provider of jobs, being one of Australia’s premier industrial areas. The municipality, being well connected to the rest of Melbourne by rail and road, acts as a regional transport hub and principal service centre for the south eastern growth corridor. Council has long recognised that it has a key role to play in the provision of integrated transport solutions for the region. Council has developed a number of transport strategies. These include the:

- Bicycle / Walking Strategy (2002)
- Integrated Transport Strategy (2005)
- Bicycle/Shared Path Network Plan (2008)

As part of Council’s efforts to facilitate improved transport solutions for the region, Council is a member of the following groups:

- The Eastern Transport Coalition – a coalition of seven outer eastern councils that are united in demanding better public transport for the outer east.
- The South East Metro (SEM) Group of Councils – which includes the councils of Cardinia, Kingston, Frankston, Greater Dandenong, Bass Coast, and Mornington Peninsula. SEM is supported by South Eastern Metropolitan Integrated Transport Group, an officer group representing the above councils.

The integrated planning of transport infrastructure and services for this region will need to consider population growth and other drivers such as climate change and peak oil. For example, the neighbouring City of Casey’s population of over 270,000 in 2013* is forecast to exceed 450,000 by 2036*. The impact on local traffic within this municipality from the growth of Casey’s population has the potential to be significant. The Department of Transport’s 2012 Transport Demand Information Atlas for Victoria, using 2006 Census data, reported that over 25 per cent of car journeys to work from residents of the City of Casey were to Greater Dandenong. Internal journeys to work within Casey were of a similar percentage. Trips to the Cities of Kingston and Monash combined were a further 20 per cent*. It could be assumed that many of the trips to and from these municipalities would require travel through Greater Dandenong for some portion of the journey.

4.2 TRANSPORT PATTERNS IN GREATER DANDENONG

Objectives: 4.1, 4.2, 4.3, 4.4, 4.5, 4.6

Indicator: 4.1.1 Journey to work data – ABS Census.

Across the municipality, as with the rest of the state, private motorised vehicle travel represents the vast majority of transport. Census data, as illustrated in Figure 4.1, indicates that in 2011, journey’s to work, either as driver or passenger accounted for nearly 85 per cent, which is higher than the Metropolitan Melbourne average of 79.3 per cent. The data all shows that Greater Dandenong resident’s journeys to work by train in 2011 accounted for 10.9 per cent of all journeys. This is just below the Melbourne Metropolitan average of 11.7 per cent. The proportion of Greater Dandenong residents travelling by bus, at 5 per cent, is higher than the Melbourne Metropolitan average of 3.3 per cent. Journeys to work by walking or cycling are lower for residents of Greater Dandenong than that for Metropolitan Melbourne. This is to be expected, as it has been found that residents of the inner suburbs of Melbourne are more likely to cycle for transport than people living in the outer suburbs.*

A comparison of 2006 and 2011 census data, as illustrated in Figure 4.1, indicates that the trend for journeys to work by residents of Greater Dandenong is for less reliance on cars and greater use of public transport. The data also shows that this is a similar trend experienced across Metropolitan Melbourne.

Figure 4.1 Mode of travel to work data for residents of Greater Dandenong

![Figure 4.1 Mode of travel to work data for residents of Greater Dandenong](image)


These trends are further supported by the evidence provided by the Department of Transport’s estimates for train boarding and bus validations between 2004–05 to 2010–11. This data, the latest available at the time of writing, indicate that use of public transport has increased in the region over this period (see Section 4.4 for further details).
SUSTAINABLE TRANSPORT

4.3 IMPROVING THE WALKABILITY AND CYCLING CAPACITY OF THE MUNICIPALITY

Objective: 4.1 Improve the walkability of the municipality through the provision of footpaths and related facilities.

Indicators: 4.1.1 Journey to work data – ABS Census.

Target: Provide an interconnected and continuous network of safe, efficient and convenient footpaths based primarily on the network of arterial roads, neighbourhood streets and regional public open spaces.

Objective: 4.2 Improve the cycling capacity of the municipality through the provision of bicycle paths, lanes and related facilities.

Indicators: 4.2.1 Bicycle / Pedestrian Shared User Path Network across the municipality.


Outcomes

The municipality’s Bicycle / Pedestrian Shared User Path (SUP) network is increasing each year as Council implements its SUP Network Plan. By May 2014, the extent of the existing bicycle path network (see Figure 4.2) consisted of approximately 167km’s of paths, consisting of:

- 74.2 km of concrete paths (65 km at the end of 2011)
- 61.7 km of road surface paths (59 km at the end of 2011)
- 25.5 km of gravel paths (24 km at the end of 2011)
- 5.1 km of asphalt paths (5 km at the end of 2011).

The current extent of the SUP network is a significant increase on the 54km’s of bike paths that existed in 2004. At that stage, there was 37km’s of shared off road paths and 17 km’s of on road paths. The existing network is proposed to be expanded by an additional 40km’s of bike paths (see Figure 4.2) as funding opportunities arise. Council has started a program to evaluate the level of success of the bicycle infrastructure initiatives, through measures such as recording the level of cyclist activity and intercept surveys to gauge specific user views.

Byline to be created

To increase participation in active forms of transport such as walking and bicycle use requires a ‘whole-of-community’ approach, involving public education, changes to the built environment and strategies that create a positive social environment. The City of Greater Dandenong is undertaking a range of actions within its levers of control. A range of these measures are outlined in the following pages.

Figure 4.2 2014 City of Greater Dandenong Bicycle Path Network
SUSTAINABLE TRANSPORT

Implementing the Bicycle / Pedestrian Shared User Path Network Plan
Council’s vision for the future is to develop our SUP network and bicycle facilities (racks, toilets and lockers) in conjunction with VicRoads Principal Bicycle Network and Bike Priority Routes. The priorities are to:
1. Provide links with the Eastlink Trail.
2. Upgrade the network to link with Places Victoria’s (formerly VicUrban) Revitalising Central Dandenong project.
3. Provide links to Activity Centres (Dandenong, Springvale and Noble Park).
4. Provide links to the fast developing Dandenong South Industrial Area.
5. Provide links with all neighbouring councils.

The proposed 40kms of additional paths is a significant extension to the existing SUP network. Significant funds will be required for this plan to be achieved. Council’s City Improvement Program (CIP) provides the opportunity every year to fund particular elements of the plan, however in 2013-14 no CIP funding was allocated to this program. Funding levels provided through CIP is unlikely to be sufficient and therefore external sources of funds will be required. Council has been successful to date in this area, with a number of examples listed below.

The Way finding Strategy for Activity Centres has been completed. Council is now implementing way finding signage within the Springvale Activity Centre. The wayfinding signage installed includes the placement of a freestanding quad sign in Multicultural Place, a plinth sign near the post office on Springvale Road, and five wall mounted signs at various locations within the Springvale Activity Centre.

RECENT KEY SELECTED MEASURES INCLUDE:

Greater Dandenong Civic Centre:
- The recently completed Civic Centre provides a significant new pedestrian space within central Dandenong.
- This new development also provides bike facilities for the community and workers and is a main connection point or node that connects a number of the bike paths within Central Dandenong.

Thomas Street / Afghan Bazaar:
- Improved and expanded pedestrian space has been provided to highlight this busy area of Dandenong as a people friendly space. Works included lighting, public artwork and an increase in space allocated to pedestrians.

Station North Upgrade and Realignment Project:
- Pedestrian links between Dandenong Station and Lonsdale Street have been significantly improved through the creation of a pedestrian and shared space route through Settlers Square and Halpin Way.

New Bridge Links:
- In addition to Stockmans Bridge, the future extension of Allan Street across Dandenong Creek will provide improved accessibility for pedestrians, cyclists and potentially buses between the new Metro Village estate, the existing Dandenong South residential neighbourhood, and the rail and creek corridors to the Dandenong Central Activity Area.

Trial of regulations for display signs on footpaths:
A two year trial has commenced of new regulations to set minimum display standards in Dandenong’s Central Activity District. As a result, A-frame signs and display cases will not be allowed on footpaths in this area. This is being done to improve pedestrian access, increase safety for people with a disability and create a more beautiful streetscape.
SUSTAINABLE TRANSPORT

RECENT KEY SELECTED MEASURES INCLUDE:

Project Planning
- Upgrading of Council's Bicycle Network Plans in line with the new VicRoads Bicycle Priority Routes showing new and proposed paths. State Government released Victoria's new Cycling Strategy: Cycling into the Future, in December 2012. The directions of this strategy will need to be considered as part of ongoing updates to Council's Bicycle Network Plan.
- Council has undertaken parking surveys of the activity centres in Dandenong, Springvale and Noble Park. These surveys provide extensive information to assist council officers in providing parking in a manner which promotes modal shift towards walking, cycling and public transport.
- SUP connections in Keysborough South are being reviewed, in particular along Perry Road – between the Dandenong Bypass and Church Road.
- A shared path data collection program is set to commence following Council's purchase of a mobile pedestrian and cyclist counter. Results from this data collection will be used to identify needs and opportunities to enhance the shared user path network.
- Opportunities for improved connectivity of SUP's between the Cities of Kingston, Frankston and Greater Dandenong have been investigated by consultants and will be subject to further consideration.
- SUP connections through Dandenong South including links to the Eastlink Trail are being reviewed and will be provided through developer contribution. Upcoming works include routes through the LOGIS Estate.

Public Education
- TravelSmart map – a guide for walking, cycling and public transport in CGD to encourage sustainable transport use. This has been prepared by Council's Infrastructure Planning team in conjunction with the Department of Transport. This map can be found at the following Council website: [http://www.greaterdandenong.com/document/18608/greater-dandenong-travel-smart-map](http://www.greaterdandenong.com/document/18608/greater-dandenong-travel-smart-map)

STRATEGIC ACTIONS TO BE UNDERTAKEN:

<table>
<thead>
<tr>
<th>Action</th>
<th>Timeframe / Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commence a program of data collection counting and monitoring of walking / bicycle use at key locations within CGD.</td>
<td>Ongoing – Infrastructure Planning</td>
</tr>
<tr>
<td>Maintain and renew footpaths to a high standard, with an emphasis on footpaths of high pedestrian activity.</td>
<td>Ongoing – Infrastructure Planning</td>
</tr>
<tr>
<td>Monitor extent and type of walking / bicycle use within CGD and with regional links with adjoining councils.</td>
<td>Ongoing – Infrastructure Planning</td>
</tr>
<tr>
<td>Regular updating of Council's GIS information relating to the Bicycle / Pedestrian Shared User Path Networks.</td>
<td>Ongoing – Infrastructure Planning</td>
</tr>
<tr>
<td>Use of design principles to create people friendly spaces and places in all development opportunities.</td>
<td>Ongoing – Planning and Design, Parks Services</td>
</tr>
<tr>
<td>Project planning for new SUP's across the municipality.</td>
<td>Ongoing – Infrastructure Planning</td>
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</tbody>
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4.4 PUBLIC TRANSPORT IN GREATER DANDENONG

<table>
<thead>
<tr>
<th>Objectives:</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 To increase public transport patronage through:</td>
</tr>
<tr>
<td>4.2 Improved access to existing public transport</td>
</tr>
<tr>
<td>4.3 Improving coverage</td>
</tr>
<tr>
<td>4.4 Identifying and acting upon major trip nodes that are not efficiently linked with direct public transport services.</td>
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<tr>
<td>4.5 Improved interconnectivity of services.</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Indicators:</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.1 ABS Journey to work data.</td>
</tr>
<tr>
<td>4.3.1 Train boardings by train stations in Greater Dandenong.</td>
</tr>
<tr>
<td>4.3.2 Greater Dandenong bus routes.</td>
</tr>
<tr>
<td>4.3.3 Total Bus validations for buses that have all or part of their journey in CGD.</td>
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</table>

4.4.1 Responsibilities and Roles

The State Government in Victoria has a responsibility for the development, management and operation of the transport system. The Department of Transport is responsible for coordinating and monitoring public transport services in Victoria. Other government departments are also directly or indirectly involved. Contracted transport operators are responsible for the delivery of public transport services.

Councils have a role to play in public transport planning at a local and regional level. This role includes:

- **Planning** – councils can contribute to holistic transport planning and strategies that meet local and regional needs.
- **Facilitator** – councils can identify local and regional transport needs and convey these needs, such as service frequency levels and connectivity, to transport authorities and service operators.
- **Advocate** – councils can act as an advocate for the local community to state and federal authorities and the service providers by raising issues of importance. Councils can also advocate to the local community through education, initiatives and promotion of public transport and sustainable transport.
- **Provider** – White unlimited, councils can act to provide public transport services in particular circumstances.
4.4.2 Train Patronage

Outcome

In Greater Dandenong, as shown in Figure 4.5, estimated train boarding at all local railway stations have grown from 4.05 million boardings in 2004–05 to 6.55 million in 2011–12, which was the latest data available at the time of writing. This is an increase of over 62 per cent of boardings overall.

Figure 4.5 Estimated Train boarding by station 2004 - 2012

Source: PTV Train Patronage Research June 2013

The busiest train station across the municipality is Dandenong Station, with estimated boarding of over 2.5 million people in 2011–12. Patronage at Dandenong Station has steadily increased since 2004, with a slight drop in 2005–06, considered to be due to works associated with the Revitalising Central Dandenong (RCD) project, where approximately 5 hectares adjoining the station has been cleared and redesigned in accordance with the RCD Master Plan. The Master Plan included a focus on pedestrian connectivity, safety, attractiveness and improved public transport. It is anticipated that public transport patronage will increase to new highs once the redevelopment of the RCD area is fully developed. Further details regarding the Revitalising Central Dandenong project can be found at http://www.revitalisingcentraldandenong.com

The second busiest railway station is Springvale, with around 1.6million boardings during 2011–12. Noble Park had similar patronage during 2011–12 with just under 1.6million.

Key issues expected to impact on future train patronage numbers

Train patronage across this municipality in coming years is likely to be affected by a range of issues, including:

Growing population

Areas of Melbourne’s south-east, such as Keysborough and Cranbourne are experiencing significant growth in population as these growth areas are developed. The City of Casey’s population has more than doubled over the last twenty years. By 2036, it is expected to increase to 450,000 residents. This level of population growth has the potential to have significant impacts in transport usage patterns across the region. Currently, Casey residents use of cars for journeys to work is even higher than for residents of Greater Dandenong. An analysis of ABS Census Journey to Work data has shown that overall, 74 per cent of workers living in Casey travel to work outside of Casey. Nearly 25 per cent of these journeys are to Greater Dandenong. In addition to these, are journeys through Dandenong to destinations in the south east of Melbourne such as to the Cities of Kingston and Monash.

The other two train stations within the municipality are Sandown Park and Yarraman Stations. These smaller stations have significantly lower boarding rates which appear to have been relatively stable over the last few years. These stations aren’t located within activity centres and have limited parking and accessibility.

Dandenong Rail Corridor

The Dandenong rail line serves one of Melbourne’s largest regions, which is experiencing increasing population growth and an expansion of industrial areas. The line also connects regional passengers from the Gippsland region with Melbourne. The rail corridor is expected to see increases in freight movements as a result of proposals to make the Port of Hastings Victoria’s second major container port and the development of an inland port in the new industrial area in Dandenong South.

Public Transport Victoria has established the Dandenong Rail Capacity Program which is stated “to deliver progressive upgrades to existing corridor infrastructure to enable a higher capacity, more reliable and better quality trains”14. The Dandenong Rail Capacity Program has the potential to significantly increase capacity on the Dandenong rail line. The increased frequency of trains along this line would be likely to cause additional congestion and delays at level crossings on major arterial roads.

Public Transport Victoria’s 2012 Network Development Plan – Metropolitan Rail15 establishes the basis for expanding the capacity of the rail network for the next 20 years and beyond. While no specific new projects are identified for the Dandenong Rail corridor as part of the first stage, the 2nd stage identifies projects (within 10 years) that will create the opportunity to operate longer trains and focus on grade separations and road alterations at multiple level crossings between Caulfield and Dandenong. Stage 3, which lists projects to extend the network within 15 years, identifies the continuation of the Dandenong Rail Corridor Upgrade to allow more and longer trains to operate while still accommodating V/Line services in this major growth area. Key works identified include16:

- further grade separations and road alterations at multiple level crossings between Caulfield and Dandenong
- platform extensions at all stations to enable trains of up to 220 metres to operate through the corridor
- high capacity signalling

Dandenong Rail Capacity Program

The Dandenong Rail Corridor project to duplicate the existing single rail track to Cranbourne and provide Dandenong Station with an additional platform within 15 years. The state government budget in 2014 confirmed plans to remove level crossings on the Dandenong Rail Corridor and to upgrade signals along the line.

Revitalising Central Dandenong

This is a $290 million investment by the State Government to restore central Dandenong as the capital of Melbourne’s south east. The Revitalising Central Dandenong Master Plan provides the framework and vision for this 15-20 year urban renewal project. The plan seeks to attract more people, jobs and businesses to the city centre. It is estimated that the revitalisation of Central Dandenong will help to create up to 5,000 new jobs and 4,000 new homes in the city centre17. The completion of the new Greater Dandenong Civic Centre, which includes the new Dandenong Library, will see hundreds of new employees in this area alone.

14. V/Line services to Cranbourne
15. The Network Development Plan also identifies projects to duplicate the existing single rail track to Cranbourne and provide Dandenong Station with an additional platform within 15 years.
16. The state government budget in 2014 confirmed plans to remove level crossings on the Dandenong Rail Corridor and to upgrade signals along the line.
17. Revitalising Central Dandenong Master Plan provides the framework and vision for this 15-20 year urban renewal project. The plan seeks to attract more people, jobs and businesses to the city centre. It is estimated that the revitalisation of Central Dandenong will help to create up to 5,000 new jobs and 4,000 new homes in the city centre.
**SUSTAINABLE TRANSPORT**

**A regional response**

While the provision of public transport is not the responsibility of local government, councils have a key role to play at the local and regional level as a planner, facilitator and advocate for improved services to residents.

An example of how local governments are taking action through a regional response is South East Metro Group (SEM) of Councils (which includes the councils of Cardinia, Kingston, Frankston, Greater Dandenong, Casey, Bass Coast, and Mornington Peninsula). As part of their efforts to improve public transport in the region, SEM has identified a number of objectives for their current work plan. These objectives include:

- Secure funding commitments to upgrade existing bus routes to meet minimum service levels, improve coordination with trains and improve public transport services.
- Improve bus connections to key employment and service destinations such as Dandenong and Frankston Central Activity Centres, Dandenong South Industrial Area and Major Activity Centres.
- To provide more effective high capacity public transport services to existing and future growth areas.
- To duplicate and extend the Cranbourne rail line to provide high capacity public transport services to existing and future growth areas.
- To undertake grade separation of strategic level crossings on existing and future high capacity road networks.
- To undertake a variety of upgrades to the Dandenong rail corridor given future demands for passenger and rail freight.

This has resulted in the development of a budget funding submission to the State government related to the above issues and input to the proposed metropolitan strategy.

**4.4.3 Bus Routes and Patronage**

**Outcome**

There are 30 bus lines that run either wholly or partially within the municipal boundary. The Department of Transport collates validation data for these bus routes. When combined, these buses carried approximately 19 million passengers in 2011–12.

There are significant variations in recent bus data due to the introduction of Myki and the phase out of other ticketing. Future data is likely to be more robust, however the available data highlights a notable year on year increase in bus patronage on routes passing through Greater Dandenong.

Two key SmartBus lines experiencing significant growth between 2008 and 2012, and contribute to these figures are:

- 901 – Ringwood to Frankston bus, a SmartBus route which had seen continued growth in patronage
- 902 – Chelsea to Airport, a new SmartBus route, passing through Springvale commenced in 2009 and is a highly popular route

Across Victoria, bus patronage in 2011-12 rose by an estimated 15.8 per cent.

Bus priority lanes have been installed on sections of Springvale Road and Stud Road. This is part of a broader program of installing Bus lanes on key routes across Melbourne to help improve service reliability and travel times. Providing dedicated road space for buses helps them avoid delays.

**Bus Services Review**

The Victorian government introduced a review of 16 geographically-based bus services across the metropolitan area, studying the location, performance and effectiveness of metropolitan bus routes. The Department of Transport worked with local councils, public transport operators and community groups to identify how services can be improved. Areas for improvements included:

- hours of operation
- altering existing routes or introducing new routes
- frequency of services
- improving connectivity with trains, trams, and SmartBus services.

**Figure 4.6** Total Bus Validations for bus routes that fall within Greater Dandenong

![Figure 4.6 Total Bus Validations for bus routes that fall within Greater Dandenong](image)


**Figure 4.7** Map of public transport network in Greater Dandenong

![Figure 4.7 Map of public transport network in Greater Dandenong](image)

Image used with the permission of Public Transport Victoria
4.4.4 Measures undertaken by Council to improve public transport patronage

Council undertakes a range of actions to increase public transport patronage across the municipality. Key selected measures are summarised in the table below:

**KEY SELECTED MEASURES INCLUDE:**

**Dandenong Station Transit Interchange:**
- Modifications have been made to bus routes within central Dandenong, with the majority of the services now entering and exiting the transit interchanges at the intersection of Rudduck and Foster Streets facilitated by a new bus roundabout within the transit interchange.
- The Park and Ride facility and taxi rank has been relocated out of the transit interchange and into the adjacent Foster Street, where these facilities better integrate into the general traffic network and the enhanced pedestrian and bicycle connectivity through Settlers Square and Halpin Way. This has also allowed for the “freeing” up of the transit interchange for the expansion of bus services.
- New directional tactile paving, wayfinding signage and a new bicycle “Parkiteer” to enhance intermodal, and particularly local pedestrian and bicycle connectivity, with bus and train services.

**Halpin Way and Settlers Square:**
- The completion of Settlers Square and Halpin Way, significantly enhances the pedestrian and bicycle connections and accessibility between Dandenong Station and the more distant parts of the Dandenong Central Activity Area. Facilities include:
  - shared user zones with low speed limits
  - shade
  - drinking fountains
  - high quality paving, seating and wayfinding signage.

**Advocacy**
- Ongoing advocacy for improved integrated transport in the region through the Eastern Transport Coalition and South Eastern Integrated Transport Group.
  - The Eastern Transport Coalition, Transport Summit was hosted by the City of Greater Dandenong in April 2014.
  - Council has long advocated for the grade separation of the railway line in Springvale, as demonstrated through the 2007 report prepared by Council: The Time is Now – Rail Grade Separation at Springvale.
  - As of April 2014 the level crossing has been removed. Council is continuing to work with VicRoads and Public Transport Victoria to complete works at the Springvale station, including bus interchange facilities and a new public space.
  - A media release by the Minister for Transport, the Honourable Terry Mulder on the 12 of December 2012, stated that “more than 25,000 vehicles and 230 trains pass through the Springvale Road level crossing each day, with the boom gates down for more than 40 percent of the morning peak.”
  - “This is an exciting step forward for all who have been frustrated by the congestion and the huge amount of time that the boom gates are down, particularly during the peak hours.”

**Provision of transport services**
- The City Shuttle (formerly called the Courtesy Bus) is a free service provided by the City of Greater Dandenong, taking residents and visitors to the main shopping areas of central Dandenong, allowing them to enjoy everything the city has to offer.
  - The service was introduced in December 1996 to encourage people to visit the Dandenong shopping precinct and hence improve the local economy. The bus does 17 trips each day and has an average of 3800 passengers per month. Further information can be found on Council’s website: http://www.greaterdandenong.com/document/20719/free-dandenong-city-shuttle
  - A Community Bus service is provided by Council for eligible aged, frail or disabled members of the community.

**Public Education**
- TravelSmart map – a guide for walking, cycling and public transport in CGD to encourage sustainable transport use. This has been prepared by Council’s Infrastructure Planning team in conjunction with the Department of Transport. This map can be found at the following Council website: http://www.greaterdandenong.com/document/18608/greater-dandenong-travel-smart-map

**STRATEGIC ACTIONS TO BE UNDERTAKEN:**
- Continue to monitor community public transport needs and advocate to DoT and Public Transport Victoria for improvements to services where appropriate.
  - Ongoing – Infrastructure Planning
- Implement actions identified in the Dandenong Railway Precinct Station Action Plan 2011 – 2018, which aims to improve safety in and around the Station.
  - Ongoing – Responsible Departments
5. CLIMATE CHANGE – MITIGATION AND ADAPTATION

COUNCIL’S GOAL:
To both minimise greenhouse gas emissions and increase resilience to the impacts of climate change across the municipality.
We work to create a healthy environment and by reducing our greenhouse gas emissions and preparing for the unavoidable impacts of climate change by acting to increase the community’s resilience.

STRATEGIC OBJECTIVES

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Reduce the consumption of energy and improve energy use efficiency across Council’s operations to reduce its corporate greenhouse gas emissions.</td>
<td>5.1.1 Council’s Corporate greenhouse gas emissions.</td>
</tr>
<tr>
<td>5.3 Council actively demonstrates measures to reduce both energy use and greenhouse emissions across its operations and facilities.</td>
<td>5.2.1 Report on measures undertaken to reduce the Council’s corporate greenhouse gas emissions.</td>
</tr>
<tr>
<td>5.5 Assist state and federal governments in their efforts to reduce community greenhouse gas emissions.</td>
<td>5.3.1 Report on measures undertaken to reduce the community’s greenhouse gas emissions.</td>
</tr>
<tr>
<td>5.6 Increase the Municipality’s resilience to climate change impacts.</td>
<td>5.4.1 Report on measures undertaken to increase the community’s resilience to climate change impacts.</td>
</tr>
</tbody>
</table>

5.1 BACKGROUND CONTEXT

Earth’s climate is changing. These changes are attributed largely to the observed increases in human induced greenhouse gases. Greenhouse gases are a natural part of Earth’s atmosphere. These gases help maintain the Earth’s temperature and allow life on Earth to exist. The most abundant greenhouse gas is water vapour - human activity has limited ability to directly influence its concentration in the atmosphere. The next most abundant greenhouse gas, Carbon Dioxide (CO2), is the main greenhouse gas generated by human activity. Other greenhouse gases (GHGs) generated by human activity include Methane (CH4), Nitrous oxide (N2O) and manufactured gases such as fluorinated gases and Chlorofluorocarbons. Human activities that produce greenhouse gases include:

- the burning of fossil fuels, such as gas, oil or coal to create energy
- some farming activities, such as the growing of some crops, the use of fertilisers and the raising of sheep and cattle
- land clearing, including logging
- the breakdown of organic material such as sewage, food and plant wastes
- particular industrial processes, such as the making of cement and aluminium.

The Federal Department of Climate Change and Energy Efficiency’s web page “What is Climate Change?” states that “Over the last 800,000 years, the amount of carbon dioxide in the atmosphere has varied between approximately 172 and 300 parts per million (ppm). Since industrialisation, carbon dioxide levels have risen sharply to about 386 ppm. Even in these amounts, the extra carbon dioxide is largely responsible for the increase in global temperatures of about 0.7°C.”

The Intergovernmental Panel on Climate Change (IPCC) completed its Fifth Assessment Report in 2013, of which is the most recent comprehensive assessment on our planet’s climate and the potential impacts in the short and long term. Three separate research reports form part of The Fifth Assessment Summary, with a summary document for policymakers for each report. The 5th Assessment Report – Physical Science Basis - Summary for Policymakers report states on page 11 that:

Warning of the climate system is unequivocal, and since the 1960s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased. It then goes on to state on page 15 that:
The atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased to levels unprecedented in at least the last 800,000 years. Carbon dioxide concentrations have increased by 40% since pre-industrial times, primarily from fossil fuel emissions and secondarily from net land use change emissions.

It concludes on page 17 that:

Human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes...... This evidence for human influence has grown since AR4 [4th Assessment Report]. It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century.

In Australia, average air temperatures have increased by around 0.9 degrees Celsius since 1910, and each decade has been warmer than the previous decade since the 1950s. Reducing the risks associated with climate change requires a dual approach - mitigation and adaptation. These responses are both essential and complementary.

5.2 MITIGATION - REDUCING GREENHOUSE GAS EMISSIONS

As stated on page 173 of the Garnaut Climate Change Review:

“Climate change is a global problem that requires a global solution.”

“Mitigation effort is increasing around the world, but too slowly to avoid high risks of dangerous climate change.”

Potential impacts on areas such as food production, water, ecosystems, and extreme weather conditions are projected to increase significantly with increases in temperatures, as well as the risk of major irreversible impacts”.

The IPCC has been working towards a global approach to reducing greenhouse gas emissions. The Kyoto Protocol first adopted in Kyoto, Japan, in 1997, aims to reduce global GHG emissions by requiring developed countries to meet internationally agreed emission reduction or limitation targets for the period 2008–2012. Australia signed the Protocol in 2007, with a target limiting its GHG emissions over this period to 108 per cent of the levels they were in 1990.

The 5 year implementation period of emissions accounting for Australia’s Kyoto target concluded in July 2012. Over these 5 years Australia’s net emissions averaged 103 per cent of the base year level meaning that Australia achieved its Kyoto protocol target. This target continues to be achieved beyond the official Kyoto target, with annual emissions overall the year 2013 being 0.8 per cent less than the previous year.

Australia’s contribution to global GHG emissions is only about 1.5 per cent, however, on a per capita basis, Australia’s greenhouse gas emissions are amongst the highest in the world. In 2005, Australia’s per capita emissions were more than four times the world average.

Our reliance on coal for energy (electricity generation is the main reason for our high per capita emissions). The Australian Government has committed to reduce the nations emissions by between 5 and 25 per cent below 2000 levels by 2020, depending on other countries’ commitments. We all have our role to play if Australia is to meet its current targets and any that are established in the future. As part of its efforts to reduce Australia’s greenhouse gas emissions, the Federal Government’s Clean Energy legislation was passed by the Senate in November 2011. It is stated on the Department of Climate Change and Energy Efficiency website that: “The Clean Energy Future legislation will put a price on pollution, foster renewable energy technologies, encourage energy efficiency and create opportunities to reduce pollution on the land.”

Following the 2013 election of the Liberal-National coalition, the Australian Government is preparing to repeal the Clean Energy Legislation and plans to implement a Direct Action Plan which it states is designed to efficiently and effectively source low cost emissions reductions.

The City of Greater Dandenong has long recognised the need to contribute to global efforts to reduce GHG emissions. An important step in managing GHG emissions is a comprehensive and accurate calculation of Council’s corporate emissions. These are determined by calculating the total emissions of carbon dioxide equivalent (CO2e) generated from activities such as the purchase of electricity or the use of fuel. This includes carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O), which are converted to carbon dioxide equivalents and added together.

As part of Council’s participation in the ICLEI Cities for Climate Protection (CCP) program, inventories of Council’s corporate GHG emissions for the years 1997 and 2001 were undertaken and a Greenhouse Action Plan (2002) was adopted by Council. The 1997 inventory provided the benchmark by which a target of a 20 per cent reduction of GHG emissions by 2010 was set. Systematic monitoring of energy use data over the last few years has enabled Council’s GHG emissions to be more readily determined. The methodology used to determine GHG emissions in this report is in accordance with steps outlined in the National Carbon Offset Standard. The data from the earlier inventories has not been incorporated into this report due to different parameters (compared with ICLEI inventories) and methodologies. A broad comparison with these earlier inventories does indicate however that Council’s GHG emissions appear to have increased since 1997 and 2001 levels.

Council’s corporate GHG emissions have been broken down into two broad categories, based on Council’s level of operational control of facilities and operations. These are:

1 – Council corporate emissions with direct operational control:

Where Council is directly responsible for the operation of the asset and payment for the energy usage, these have been categorised as being under direct operational control. Corporate emissions where Council has direct operational control include:

• Buildings
• Fleet
• Public street lighting (which Council owns and maintains, such as car parks and reserves).

2 – Council corporate emissions with no direct operational control:

Corporate emissions where Council does not have direct operational control include:

• public street lighting that Council is responsible for but the asset is owned and maintained by electricity distribution businesses, such as lighting for council managed public roads – which is the majority of Council’s public street lighting.

• Council owned facilities where Council is not directly responsible for payment of energy used, such as the leisure centres as well as some sporting pavilions and kindergartens.

• fleet emissions associated with outsourced services such as the municipal household waste collection services.

Greenhouse emissions associated with Council’s larger leisure facilities are intended to be incorporated into future ScE reports where data is readily available. GHG emissions associated with the generation of corporate waste (for example, waste from Council offices, the operations centre etc.) have not been included due to the difficulties associated with collecting accurate and reliable data. Waste collected as part of Council’s municipal household waste collection service is deposited in landfills not owned and operated by Council. Therefore the associated emissions are not considered to be Council’s corporate emissions and accordingly have not been included in this report.

Table 5.1 shows that between 2008 and 2013 (before offsets are considered) there has been a reduction in the emissions that Council is responsible for. The emissions for these different sectors are discussed in greater detail in the following pages.
Table 5.1: Council's corporate greenhouse gas emissions

<table>
<thead>
<tr>
<th>CORPORATE EMISSIONS</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buildings Total tonnes of Carbon Dioxide Equivalent (t CO2e) emissions (Scope 1, 2 and 3)*</td>
<td>5,910</td>
<td>5,955</td>
<td>6,016</td>
<td>6,035</td>
<td>5,925</td>
<td>5,991</td>
</tr>
<tr>
<td>Fleet Total t CO2e (Scope 1)</td>
<td>1,463</td>
<td>1,484</td>
<td>1,503</td>
<td>1,520</td>
<td>1,497</td>
<td>1,514</td>
</tr>
<tr>
<td>Public Street lighting Total t CO2e (Scope 2 and 3)*</td>
<td>557</td>
<td>662</td>
<td>615</td>
<td>434</td>
<td>410</td>
<td>480</td>
</tr>
<tr>
<td>Public Street lighting Total t CO2e (Scope 2 and 3)*</td>
<td>8,624</td>
<td>8,009</td>
<td>7,627</td>
<td>7,675</td>
<td>7,935</td>
<td>7,791</td>
</tr>
<tr>
<td>Corporate Emissions</td>
<td>16,554</td>
<td>16,110</td>
<td>15,761</td>
<td>15,664</td>
<td>15,797</td>
<td>15,776</td>
</tr>
<tr>
<td>Carbon Offsets Purchased</td>
<td>-332</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>For small buildings (less than 160MWh p.a.) (scope 2)</td>
<td>4,158</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>For Public Street lighting (Scope 2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporate Emissions Less Offsets</td>
<td>12,064</td>
<td>16,110</td>
<td>15,761</td>
<td>15,664</td>
<td>15,797</td>
<td>15,776</td>
</tr>
</tbody>
</table>

Source of data: Reports generated through Council's use of Sustainability Victoria's Utility Tracker™ software program. *Please note: Figures for Buildings Total and Public Street Lighting are based on categories of accounts for ease of ongoing reproducibility of data provided through Council's use of Utility Tracker™. Some variations may occur due to changes in account details and responsibility for these accounts. Definitions: Scope 1 emissions: The release of greenhouse gas into the atmosphere as a result of activities at a facility. Scope 2 emissions: The release of greenhouse gas as a result of electricity generation, heating, cooling or steam that is consumed by a facility. Scope 3 emissions: Greenhouse gases emitted as a consequence of a facility’s activities but by another facility.

Carbon Offsets

Corporate emissions can be reduced through the purchase of carbon offsets. These offsets are provided through the investment in a project that reduces greenhouse gas emissions, usually in the form of renewable energy, resulting in ‘credits’ being created. These ‘credits’ are then available for other companies to purchase to offset their calculated emissions.

As illustrated in Table 5.1, in 2008 Council purchased carbon offsets to reduce Council’s total corporate emissions from public street lights and small facilities (those using less than 160MWh per annum). This purchase of offsets (2001 to 2008) was at a premium to the costs associated with the energy used to power these streetlights and small buildings. Increases in electricity charges and a decision to focus directly on reducing Council’s energy use resulted in the decision to cease purchasing of carbon offsets.

5.3.1 BUILDINGS

The GHG emissions identified for Council’s buildings are based upon the amount of electricity and gas used at the facility. GHG emissions for Council’s buildings under its direct operational control are outlined in Figure 5.1.

As illustrated in Figure 5.1, emissions over the last six years have remained relatively stable. This is in part due to the plan to build a new municipal building. This new building, The Greater Dandenong Civic Centre, which Council moved into in March 2014, has replaced both the Dandenong and Springvale Municipal Offices and the Dandenong Library. These buildings were amongst Council’s highest energy using buildings. While energy audits showed that the buildings were inefficient, only a few measures to reduce energy use were undertaken, due to their planned replacement. As the new Civic Centre has been designed to achieve a five star Green Star rating, the energy efficiency of this building is expected to be a significant improvement on the buildings it replaced. The outcome will be reported in future SoE reports.

The increasing cost of electricity and gas is illustrated in Figure 5.1. The results of two price increases since the start of the 2008–09 financial year has resulted in increases in electricity and gas charges of around 45 per cent for 2013 when compared with 2008, even though GHG emissions have remained steady. Undertaking actions to reduce these emissions also provides opportunities for the ongoing reduction of energy use costs.

Selected measures undertaken to reduce Council building’s GHG emissions are listed below:

- Gaelian Street housing project
- Municipal building replacement
- Greater Dandenong Civic Centre
- Energy efficient lighting
- Energy efficient air conditioning
- Energy efficient water heating
- Energy efficient appliances
- Renewable energy generation
- Carbon offsets

Selected measures undertaken to reduce Council building’s GHG emissions are listed below:

Figure 5.1 GHG emissions and cost of energy for Council’s buildings and facilities that are under direct operational control

Source of data: Reports generated through Council’s use of Sustainability Victoria’s Utility Tracker™ software program.
KEY SELECTED MEASURES INCLUDE:

Improving monitoring

Council is recognised for demonstrating best practice in the area of utility usage monitoring and tracking of data across Council’s facilities, through measures such as:

- the use of Sustainability Victoria’s Utility Tracker software to monitor and report on Council’s utility bills.
- the use of interval meters and sub meters that provide virtually live utility usage data via mobile communications and the web.

Energy efficiency is a key consideration in the design and refurbishment of new buildings. Recent examples include:

Greater Dandenong Civic Centre:

Council has moved into its new municipal offices at the corner of Lonsdale and Walker Streets. The new Civic Centre also incorporates the new Dandenong Library and the outdoor civic plaza.

Building efficiency and sustainable design is a key attribute of the building, with it designed to achieve both a 5 Star Green Star rating (Australian Excellence) for public buildings and a 4.5 Star NABERS rating for public buildings. The latter ensures ongoing monitoring of energy, water, and even waste data once in operation.

The building has incorporated a significant number of energy saving measures contributing to the Green Star rating including:

- double glazing and strategically designed shading devices to windows
- internal design to maximise daylight beyond best practice standards.
- chilled beams to provide heating and cooling
- energy efficient lighting controlled by motion and daylight sensors
- a building management system to monitor energy consumption.

The new Civic Centre is one of the first facilities to be connected to the recently completed Precinct Energy Project (PEP) located in Revitalising Central Dandenong (RCD) precinct. The PEP will generate electricity from natural gas with the waste heat captured to produce hot water which will supply the Greater Dandenong Civic Centre and future development in the RCD precinct.

The Noble Park Aquatic Centre (NPAC)

Measures include:

- solar hot water heating
- mechanical units with heat recovery which are 30 per cent more efficient.
- operable tilt up doors to the pool hall to provide natural ventilation
- shaded windows including motorised louvres on the facade
- natural lighting throughout to reduce reliance on artificial lighting
- high performance double glazing and insulated walls and roof well above building code requirements
- a cogeneration unit to generate electricity, with the excess heat recovered to heat water for the pool.

Reducing Energy Use

Council is increasing the number of solar hot water systems to reduce daily energy use for hot water. In 2013–14, solar hot water systems were installed at:

- Springer’s Leisure Centre
- Yarraman Childcare Centre
- Dandenong North Senior Citizens Centre

The new Greater Dandenong Civic Centre is the first building in the RCD precinct to be connected to the PEP (see above).

The cogeneration plant installed at NPAC (see above).

STRATEGIC ACTIONS TO BE UNDERTAKEN:

| STRATEGIC ACTIONS TO BE UNDERTAKEN: | TIMEFRAME / RESPONSIBILITY |
| - Undertake a climate change risk assessment to identify the most significant areas of risk and establish priorities as the first stage of the development of a climate change mitigation and adaptation strategy. | 2014–15 – City Design and Sustainability Planning, Organisational Sustainability |
| - Ongoing consideration and implementation of measures to reduce energy use and increase efficiency across Council’s operations. | Ongoing – All |
| - Continue program to identify and implement energy saving measures, including use of energy audits at appropriate Council facilities. | Ongoing – Engineering Services, City Design and Sustainability Planning |
| - Actively promote measures undertaken by Council where appropriate. | Ongoing – Responsible Departments |
| - Monitor funding opportunities for implementation of energy efficiency measures and apply where appropriate. | Ongoing – Responsible Departments |

5.3.2 Fleet

Council’s vehicle fleet is operated to support its various programs, provide services to the community and to ensure that there is an appropriate vehicle pool for transport purposes. Purchasing vehicles with low fuel consumption and driving them efficiently can make a real difference in reducing fuel usage, costs and greenhouse gas emissions. Fleet emissions are based on the Council fleet that is directly under Council’s operational control. Where Council does not have direct operational control, these emissions are not included. The municipal household waste collection service, which is contracted out, is an example of where Council does not have direct operational control.

Petrol has higher energy content than LPG, but also produces around 45 per cent more greenhouse gas emissions per litre of fuel consumed. Therefore equivalent vehicles travelling a given distance tend to consume less petrol than LPG, but LPG cars produce less GHG emissions. Diesel fuel produces over 15 per cent more emissions per litre than petrol, but diesel engines tend to be far more fuel efficient than petrol engines15. In 2008, Council’s fleet vehicles total fuel use was 603Kl, increasing to 633Kl by 2011 (a jump of 5 per cent). This remains the highest year for fuel consumption for operational fleet before decreasing by 2.5 per cent to 618KL in 2013. Over this time, Council’s petrol use decreased by around 42 per cent while diesel and LPG use increased. These changes have resulted in greenhouse gas emissions increasing by around 4.9 per cent to 2011, reducing 2.5 per cent in 2012 before increasing in 2013 to the levels just below that seen in 2011. Over this time, greenhouse gas emissions have increased at a lower rate than the increase in fuel use. This indicates that measures undertaken to reduce Council’s fleet greenhouse gas emissions are making an impact. Key selected measures undertaken are listed below.
Figure 5.2 City of Greater Dandenong’s fleet emissions

<table>
<thead>
<tr>
<th>Year</th>
<th>Petrol</th>
<th>Diesel</th>
<th>LPG</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td></td>
<td></td>
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<tr>
<td>2009</td>
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<td>2012</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Source of data: Reports generated through Council’s use of Sustainability Victoria’s Utility Tracker™ software program.

KEY SELECTED MEASURES INCLUDE:

- Introduction of green rebate into motor vehicle code of practice which financially rewards employees in level 1-3 for green vehicle selection.
- Selection of vehicles to reduce emissions while still meeting operational needs, including:
  - Low emission trucks - EURO 4 / EURO 5 technology
  - Vehicle selection type i.e. LPG, Diesel, Hybrid and vehicle size.
- Purchase of hybrid electric car for Council’s fleet as part of an evaluation trial. This has informed the continual participation in electric / hybrid vehicles over time (see below).
- Participation in a trial of electric cars by 7 local governments with the Department of Transport. Cars that have been trialled by Council are:
  - Round 1 – Mitsubishi i-Miev
  - Round 2 – Nissan Leaf
  - Round 3 – Nissan Leaf

5.3.3 Public Street lighting

Local Government Sector

Local governments have a legal obligation to provide a safe environment for its community through the provision of street and public place lighting15. Local governments17 are responsible for the provision of public lighting on local roads, while VicRoads’ responsibility is for highways and arterial roads. Across Victoria, local roads account for approximately 72 per cent of all public street lighting. Most public street lighting assets are owned by electricity distribution businesses, with councils paying the distributors to provide the street lighting service on their behalf. There is a significant financial and environmental cost to councils for providing this community service. Inefficient mercury vapour (MV) lamps account for the majority of the lamps used in public street lighting. The local government sector has been seeking to introduce more sustainable public lighting technologies to replace the existing 80W MV lights to achieve both carbon reductions and financial savings through reduced energy consumption14. The efforts of the sector have been frustrated by the complexities of the regulatory framework that sets out the market arrangements. This has led the then Department of Sustainability and Environment in 2008 to convene the high-level Public Lighting Taskforce. A 2009 report set out the critical issues and further actions to be undertaken to facilitate a state wide roll out of more energy efficient public lighting technology and a number of these findings are still valid today.

Strategic Actions to be Undertaken

| Ongoing consideration and implementation of measures to reduce energy use and increase efficiency across Council’s operations. | Ongoing – All |
| Integrate recently available fleet data and implement appropriate KPI’s for Council’s fleet that enable comprehensive monitoring to be undertaken and targets to be established. | 2014-15 – Fleet |
| Consideration of programs aimed at improving fuel efficiency for Council’s passenger fleet. | Ongoing – Fleet |

City of Greater Dandenong

The emissions for public street lighting provided by the City of Greater Dandenong have been broken down into two separate categories:

1. Where Council owns and manages the public lighting and therefore is considered to be under Council’s direct operational control.
2. Where Council does not own and manage the public street lighting and therefore is considered to be not under Council’s direct operational control.

Council owned and managed public lighting

The provision of public lighting owned and managed by Council contributed to 480t of CO2e in 2013, down from over 600t in the years 2008–09. This figure has increased since last year however this is due to the incorporation of new lighting to public areas such as that surrounding the new Greater Dandenong Civic Centre. These lights are principally located in open space reserves, car parks and along paths. Council has also trialled energy efficient lighting over a number of years to assess their performance in relation to energy use and longevity. Some of these trials have contributed to a reduction in energy use over the years and play a valuable part in implementing energy efficient lighting in new areas. While Council has been trialling energy efficient lighting, a significant component of the reduction recorded over the last two years is due to Council no longer being responsible for the electricity accounts for the Dandenong Market carpark. It is intended that these emissions will be included in future SoE reports as appropriate data from this and other facilities where Council does not have direct operational control becomes more readily available.

Non Council owned and managed public street lighting

The majority of public lighting across the municipality is owned and managed by the electricity distributors and therefore Council does not have direct operational control over these corporate emissions. The provision of this public street lighting cost Council over $1.4M for 2013 (See Figure 5.3) and accounts for 7,800t of CO2e (See Figure 5.4).

The electricity distributors own the poles and the lights (housing, bulb, concentrator, switching gear, light sensor) and charge Councils a yearly per-pole ‘operation, maintenance, replacement and repair’ (OMR) charge. Councils are also charged an estimate of the electricity used per light. The cost to Council of providing this service has increased significantly over the last few years (see Figure 5.3). While the electricity usage costs have increased by around 45 per cent since 2008, OMR costs have increased by nearly 70 per cent.

Sustainable public street lighting in Keysborough.
While the bulk of these increases are associated with increased charges, there has also been an increase in the number of street lights installed across the municipality as new residential and industrial estates are developed. The electricity and OMR costs associated with these new estates has been minimised through the requirement to install sustainable street lighting where appropriate.

Increasing the use of sustainable lighting technology for public lighting will lead to a reduction in ongoing costs and greenhouse emissions. It will also reduce the potential impacts that future increases to energy prices will have on Council’s public lighting costs. To facilitate this process, Council has been successful with its application for federal funding to enable a bulk change over to sustainable street lighting. This is a three year, $3 million dollar project, half of which will be funded through Round 2 of the federal government’s Community Energy Efficiency Program. The project is expected to result in better lighting outcomes for the community as well as savings of around 25 per cent each year to both Council’s costs and greenhouse emissions associated with the provision of public street lighting. Further details are provided later in the report.

Public Lighting Greenhouse Gas Emissions
From 2001 to 2007–08, the City of Greater Dandenong offset nearly 100 per cent of its carbon emissions for public lighting. This resulted in Council being recognised as a leader in the sector, with an estimated reduction in greenhouse gas emissions of around 7,500 tonnes of CO₂e per year over this time. This was undertaken to achieve Council’s target of a 20 per cent reduction in greenhouse gas emissions. This actually assisted Council to achieve a 45 per cent reduction in total corporate emissions in 2001 when compared to 1997 emissions. Since 2007–08, the City of Greater Dandenong’s aim has been to directly reduce the energy used by public lighting to reduce its greenhouse gas emissions through the use of sustainable public lighting technology.

Sustainable lighting technology
At the end of 2013, there were 12,001 streetlights in the City of Greater Dandenong that are largely owned by United Energy and maintained by Alinta Asset Management19. The majority (55 per cent) of these lights are standard 80Watt (W) Mercury Vapour (MV) lights. The 80W MV lights use 96 watts whereas suitable efficient lighting replacements can use considerably less, T5 Fluorescent lights, as an example, use 30.5W – a saving of nearly 70 per cent on electricity used per light. A comparison with the energy efficient lights also shows that the new lights can provide better lighting for residents.

Council is committed to reducing its public lighting greenhouse emissions through identified technological solutions. The key challenge is in the long term cost-effective replacement of the existing lighting stock with reliable, safe technologies that are acceptable to all stakeholders.
CLIMATE

KEY SELECTED MEASURES INCLUDE:

Leadership
From 2001 to 2007–08, the City of Greater Dandenong purchased carbon offsets for 100 per cent of energy used for public lighting throughout the municipality.

Regional approach
Council is a member of a working group consisting of a number of local governments and consultants established to facilitate increased sustainable public lighting across the region.

Requirement for the installation of energy efficient street lighting in new developments such as:

- the LOGIS Eco industrial development
- new industrial areas in Lynnhurst and Keysborough
- new residential areas in Keysborough

All 40 council owned traffic control signals (street intersections and pedestrian lights) have been changed to LED lights.

Over the last three years, over 400 Mercury Vapour 80Watt street lights in Springvale, Noble Park and Keysborough have been replaced with energy efficient street lights. This initiative continues to be implemented when faulty streetlights require replacement.

Local Action
The Council developed a business case for a bulk replacement of approximately 6500 80W MV lamps in residential streets with either Twin 14W T5 lamps or 32W compact fluorescent lamps, which reduce energy usage by 68 per cent and 62 per cent respectively.

Financial and environmental savings from a bulk change are significant. In total, the project would be expected to cost $2.93 million before potential subsidies. Net cost savings to 2030 (after project costs) are projected to be between $6.87 million and $7.83 million.

Environmental benefits from the project are expected to be:
- around 2,300 tonnes of GHG emissions saved per year
- up to 43,600 tonnes of GHG emissions saved during the life of the new assets (over 20 years).

In addition, the new lights provide better lighting outcomes for the community, including:
- greater uniformity of light across and along the street
- better colour rendering and visibility with lower glare
- maintain light quality over time

Council was successful in its Round 2 funding application of the Community Energy Efficiency Program (CEEP) for approximately $1.5 million in funding. This round was focused on supporting low socio-economic and other disadvantaged communities. Planning is complete and replacements are scheduled to commence in 2014–15. The replacement program is expected to be completed by June 2016.

STRATEGIC ACTIONS TO BE UNDERTAKEN:

- Implement the bulk street light replacement project.
  - 2015–16 – Engineering Planning
- Monitor changes to sustainable public lighting, including policy, regulations, advances in technology and best practice across the sector.
  - Ongoing – Engineering Planning
- Monitor sustainable public lighting funding opportunities and apply where appropriate.
  - Ongoing – Engineering Planning
- Continue to replace traditional Mercury Vapour lamps with energy efficient lamps as required when globe operation expires.
  - Ongoing – Engineering Planning

TIMEFRAME / RESPONSIBILITY

5.4 CITY OF GREATER DANDENONG - COMMUNITY EMISSIONS

Objective:
5.3 Assist state and federal governments in their efforts to reduce community greenhouse gas emissions.

Indicator:
5.3.1 Report on measures undertaken to reduce community greenhouse gas emissions.

Target:
Consider climate change as part of the review of the 2010 Environmental Sustainability Strategy in 2014–15.

Community GHG emissions refer to those emissions from various sectors of the local community, including:

- Residential - GHG emissions produced through the use of energy (electricity and gas) such as to heat and cool buildings, provide hot water and power appliances.
- Commercial / Industrial - GHG emissions produced through the use of energy (electricity and gas) to heat and cool buildings, provide hot water and power appliances.
- Waste - GHG emissions produced from solid waste disposed into landfill.
- Agriculture - GHG emissions can be produced by a range of agricultural activities.

It is important to note that Council does not have control over these emissions nor responsibility. Council can however facilitate progress towards a reduction in these GHG emissions through leadership, advocacy and its programs.

There is a paucity of information regarding local community GHG emissions as it is difficult to obtain standard, accurate and reliable data at the local level. Data is collected by electricity and gas distributors for billing purposes, but there is a lack of policy drivers to make this data readily available for the local level.

To accurately identify the emissions for a municipal area is a substantial task and has not been undertaken at this time by the City of Greater Dandenong.

In the absence of this data, other more readily available alternate data may be considered. One potential indicator for community greenhouse gas emission reductions is the amount of renewable electricity generated on a site specific basis within the municipality. Renewable energy systems utilise alternative sources of energy such as wind, solar, hydro, geothermal and biomass. The most common renewable energy system installed is photovoltaic (PV) solar systems.

5.4.1 Solar PV Systems

Energy generation
Due to community concerns of the impacts of climate change and rising energy costs, the development of various incentives by federal and state governments and energy retailers have been implemented to increase uptake of small scale renewable energy systems. This has resulted in a significant increase in the number of small scale solar PV panel installations over the last few years. Solar PV panels have a number direct benefits to the community and end-user, these include:

- reducing electricity bills
- reducing peak electricity demand, which lessens the need to upgrade infrastructure to meet these peak demands.

Solar PV panels utilise the sun’s rays to generate electricity to supply power to the building that the panels are attached. These systems usually also feed excess electricity generated back into the electricity grid. All systems have a capacity rating in Kilowatts-KW. For every kilowatt of electricity generated by a PV system means that one less kilowatt is required from the electricity supply network, the majority of which is produced through carbon intensive sources such as brown coal.

The federal government has developed a registry of small generation units (including solar PV systems) installed by post code. The registry includes the number of systems installed from 2001–April 2014 and their rated output capacity (KW). This enables council to monitor the number of solar PV units installed within our municipality and compare them against other locations and averages.

The ‘Energy Centre’ in central Dandenong houses the cogeneration engines, which provide the electricity and hot water for the Precinct Energy Project. THE ‘ENERGY CENTRE’ IN CENTRAL DANDELONG HOUSES THE COGENERATION ENGINES, WHICH PROVIDE THE ELECTRICITY AND HOT WATER FOR THE PRECINCT ENERGY PROJECT.
Figure 5.5 shows that the suburbs of Dandenong and Dandenong North have the highest number of PV installations recorded, followed up by Keysborough. The figure also shows us that the year 2012 had the highest number of PV installations compared to any other year, with Noble Park, Springvale and Springvale South installing nearly the same number of PV units in 2012 compared to the previous 10 years. The lowest number of solar panel installations occurs in Dandenong South. This would be expected due to the prominence of industrial and commercial development compared to residential and the existing green wedge area. The uptake of solar panels is increasing in this area as more developments recognise the benefits solar energy provides.

As the federal and state governments continue to reduce solar panel funding programs and rebates in conjunction with a reduction in the electricity feed-in tariff, the number of solar panel installations is reducing. In spite of this, over 4,700 units have been installed since 2001 with a combined capacity of over 12,300kW. If the average sunlight in Melbourne is 4 hours per day\(^2\), this means that nearly 50,000 kilowatt hours of clean electricity is generated per year - removing at least 65 tonnes of CO\(_2\) per annum from the atmosphere each year. This is represented in figure 5.5, where the municipal PV capacity will continue to incrementally increase. However this increase will not be in-proportion to the number of units installed due to the varying sizes of the solar systems installed.

Figure 5.6 shows that compared to surrounding municipalities there are less PV systems installed, however this is generally consistent with population levels for these municipalities except for that of the City of Frankston. It is difficult to identify why there is a greater uptake of solar panels in Frankston as there has been no council wide schemes (such as bulk buy programs) implemented. Census data indicates a number of factors could be responsible for this including a greater number of detached houses and fewer apartments / units in Frankston compared to Dandenong. Frankston also has a lower number of renters occupying dwellings and a higher weekly disposable income compared to Greater Dandenong residents\(^3\).

Councillors first Sustainability Festival at the Dandenong Market provided the community with information through a range of activities, displays and demonstrations.
5.4.2 Measures undertaken by Council to reduce community emissions

While local governments do not have control over community emissions nor responsibility, the City of Greater Dandenong has undertaken a range of measures that either directly or indirectly reduce community greenhouse gas emissions. Examples of measures undertaken are listed below.

KEY SELECTED MEASURES INCLUDE:

Education
- Working with Places Victoria (previously VicUrban) on the Precinct Energy Project (PEP) as part of the Revitalising Central Dandenong project. The PEP (the first of its kind in Australia), uses cogeneration from natural gas and is a new model for the sustainable delivery of energy to the precinct's buildings. The gas turbines generate electricity, with the excess heat being recovered and used to provide hot water to new developments around the precinct.

- The new municipal offices recently completed in Dandenong have been designed to be a 5-Star Green Star rated building. This building is the first to be connected to the hot water distribution network built as part of the PEP.

- The municipal offices also include a number of energy efficient initiatives aimed at significantly reducing energy consumption and greenhouse gas emissions.

- As previously outlined, a range of energy efficiency measures have been installed at the Noble Park Aquatic Centre (NPAC), including the installation of a cogeneration plant.

Demonstration and leadership
- Council is the most recent member of the South East Councils Climate Change Alliance (SECCCA). This alliance is a network of councils implementing a regional response to climate change, focusing on greenhouse abatement, sequestration and adaptation. Other SECCCA members are:
  - Bass Coast Shire
  - Bayside
  - Casey
  - Cardinia
  - Kingston
  - Bass Coast Shire
  - Baw Baw Shire
  - Mornington Peninsula

Regional collaboration
- Council is a member of the Council Alliance for a Sustainable Built Environment (CASBE). Membership provides council with access to various resources that benefit council's efforts to improve the environmental performance of the built environment. CASBE also undertakes advocacy on planning matters involving sustainability, including energy efficiency and climate change.

- CASBE councils implement the Sustainable Design Assessment in the Planning Process (SDAPP) to improve the environmental performance of residential and non-residential buildings. This program has been formally implemented by over 10 councils, with other councils also trialling this program.

- The Victorian governments Planning Panels Victoria formed an advisory committee which recently approved the integration of an Environmentally Sustainable Development (ESD) policy into the planning scheme of a number of councils. Energy efficiency is one of the categories that must be addressed.

- Council has been trialling the implementation of SDAPP for over two years. Based on the outcomes of the trial and the recommendation of the Planning Panels report, Council is reviewing its approach with the intent to formally implement the program.

Planning applications
- Promotion of sustainability measures on Council's websites, publications and programs.

- In March 2014, Council hosted its first Sustainability Festival at the Dandenong Market. The event was aimed at educating and celebrating environmental sustainability with the community and there were over 2,000 visitors on the day. A number of activities, displays and demonstrations were present that related to climate change, these included:
  - displays and expert advice on energy efficiency lighting and solar panels
  - information on energy efficient subsidies by the Dandenong Community Advisory Bureau
  - interactive bicycle energy generation activity and pedal blended bike smoothies.

- The City of Greater Dandenong is a participating council in SECCCA's "Scoring for the Environment" project, which was funded through the federal government's Energy Efficiency Information Grant. The project is aimed at reducing operating energy costs of sporting clubs through education and behaviour change initiatives. The project commenced in late 2013 and is on track for completion in 2015.

Waste
- Investigate and implement where possible opportunities by Council to reduce community greenhouse gas emissions. In early 2013, council organised and hosted a tour for CASBE members to Dandenong to highlight a number of recent sustainable building initiatives that have occurred within the municipality. Council will continue to host similar tours of leading examples in the municipality when the opportunity arises.

- Council recently published its first annual environmental sustainability newsletter for the community. This includes a snap-shot of current and future projects to keep the community informed including information on initiatives relating to climate change and energy efficiency.

- Participating with SE Water in the Showerhead Exchange program. Efficient showerheads result in lower hot water and energy use.

Residents
- Significant reduction in community GHG emissions through the increase in waste diverted from landfill through municipal kerbside collection of recyclable material and green waste. This reduction is expected to continue further with the implementation of our new initiative “The Great Bin Swap” (see the waste section for further information).

STRAIGHT ACTIONS TO BE UNDERTAKEN:

<table>
<thead>
<tr>
<th>KEY SELECTED MEASURES INCLUDE:</th>
<th>TIMEFRAME / RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>2014–15 – Planning and Design</td>
</tr>
<tr>
<td>Undertake a climate change risk assessment to identify the most significant areas of risk and establish priorities as the first stage of the development of a climate change mitigation and adaptation strategy.</td>
<td>2014–15 – City Design and Sustainability Planning, Organisational Sustainability</td>
</tr>
<tr>
<td>Consider climate change as part of the review of the 2010 Environmental Sustainability Strategy.</td>
<td>2014–15 – City Design and Sustainability Planning</td>
</tr>
<tr>
<td>Continue and expand community awareness programs through Council's media and publications.</td>
<td>Ongoing – Responsible Departments</td>
</tr>
<tr>
<td>Increase community engagement through the delivery of new and engaging initiatives including:</td>
<td>Ongoing – City Design and Sustainability Planning</td>
</tr>
<tr>
<td>• the Sustainability Festival and other community events</td>
<td></td>
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<tr>
<td>• the annual Environmental Sustainability Newsletter.</td>
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</tr>
<tr>
<td>Work with SECCCA in the identification and implementation of programs that will reduce emissions and better equip the community to adapt to the impacts of climate change.</td>
<td>Ongoing – Planning and Design, Community Care and Library Services</td>
</tr>
<tr>
<td>Identify opportunities to monitor community greenhouse gas emissions where possible.</td>
<td>Ongoing – City Design and Sustainability Planning</td>
</tr>
<tr>
<td>Investigate and implement where possible opportunities by Council to reduce community greenhouse gas emissions.</td>
<td>Ongoing – City Design and Sustainability Planning</td>
</tr>
</tbody>
</table>
5.5 ADAPTATION – INCREASING RESILIENCE TO THE UNAVOIDABLE IMPACTS OF CLIMATE CHANGE

Global mitigation efforts are increasing, but too slowly to avoid the risks of dangerous climate change. With the increase in global temperatures that have been observed and further increases already locked in, Australians are faced with the need to adapt to the impacts of climate change. The impacts we face currently from natural events such as drought, flood and bushfires show how vulnerable we can be to our variable climate and climatic extremes. Adaptation, by adjusting existing activities and practices, will be required to increase our resilience to the unavoidable impacts of climate change. Adaptation will need to be undertaken by all sectors of the community, from individuals, businesses, industry and government and it will be in many forms, through adjustments to technology, institutions, structures and behaviours24. Examples include:

### IMPACT ADAPTATION MEASURES

#### Increasing temperatures
- Changes to building design standards
- Increased shading ventilation and site permeability
- Self energy sufficiency to reduce peak electricity demand
- Altering farming practices and crop use
- Rescheduling sporting activities to avoid the heat of the day.

#### Decreasing rainfall
- Appropriate plant selection and use of efficient irrigation practices
- An integrated approach to the management of our water resources
- Increased use of alternative water supplies.

#### Increases in extreme weather events
- Increase monitoring and maintenance of drainage systems
- Ongoing review of stormwater drainage systems
- New development carefully designed in areas subject to inundation.

#### Sea level rise
- A planned retreat from coastal areas
- Construction of sea walls.

Local Government’s Role

Climate change adaptation responses required across Australia will vary, depending on the region, the projected impacts and local demographics. Local government’s role in adaptation responses is evolving over time. The Victorian Government’s Climate Change Act 2010 recognises that Victoria’s climate is changing and part of the Act requires a number of key government decision-makers to take climate change into account when making specified decisions. The Act identified local government as one of the decision-makers that must consider climate change when preparing a municipal public health and wellbeing plan25. One of the 5 priority areas identified in Council’s 2013–17 Community Wellbeing Plan (CWP) is ‘Building Healthy and Sustainable Communities’. Responding to climate change is one of the objectives identified under this priority area.

The Victorian Government’s 2013 Victorian Climate Change Adaptation Plan identifies local government as a key partner in achieving local climate resilience26. Responses will include assessing and managing risks, making changes to urban infrastructure and meeting community needs as they change. Determining priorities and appropriate responses will create challenges27. Adding to the complexity is that many of local government’s climate change obligations are shared, implemented or defined by other authorities and levels of government28. For instance, local government’s consideration of sea level rises and coastal inundation are defined by the objectives outlined in the Victorian State Planning Provision Framework, and guided by the Victorian Coastal Strategy 2008 and the state government’s coastal climate change vulnerability mapping.

#### 5.5.1 City of Greater Dandenong’s adaptation responses

**Objective:**

Increase the Municipality’s resilience to climate change impacts.

**Indicator:**

Report on measures undertaken to increase the municipality’s resilience to climate change impacts.

**Target:**

 Undertake a climate change risk assessment in 2014–15 to enable development of climate change mitigation and adaptation strategy.
The City of Greater Dandenong recognises it has a role to play and in response has undertaken a range of measures that either directly or indirectly increase the resilience of the local community. Examples of measures undertaken are listed below.

**KEY SELECTED MEASURES INCLUDE:**

- **Working with the aged and frail**
  Council provides assistance to local aged and frail residents to reduce the impacts of climate change as part of its Home and Community Care program.

  As stated in Council’s 2009–10 Heatwave Plan, a “heatwave” is an episode of extreme hot weather. While there is no standard definition, they are typically described in terms of temperature ranges over a prescribed threshold that is likely to impact on the health of the community.

  In Melbourne, daily average temperatures greater than 30°C and daily minimum temperatures greater than 24°C, have been found to be associated with increased mortality rates for those aged 64 years or older. It has been shown that hospital admissions for heart attacks increase with an average temperature of 30°C. In Victoria, heatwaves can be as short as a single day.

  Climate change is expected to increase the frequency and intensity of heatwaves in Victoria.

  CGD’s Heatwave Plan is a sub-plan of the Greater Dandenong Municipal Emergency Management Plan. The aim of the Heatwave Plan is to “detail the arrangements for managing the risks associated with heatwaves and the response and recovery actions”.

- **Reducing impacts of heatwaves on the local community**
  Council’s actions to reduce water use, improve water efficiency and increase the use of alternative sources of water are all efforts to improve the resilience of both Council and the community to the future impacts of climate change. For example, the conversion of Council’s playing fields to warm season grasses provides a number of specific benefits in regards to climate change:  
  - Warm season grasses require less water – therefore reducing Council’s demand on Melbourne’s water supplies.
  - The reduced requirement for irrigation lessens Council’s exposure to the increasing cost of water supplies – the funds saved can be directed to other areas of Council’s operations.

  As outlined in the Water section of this report, Council is working towards an integrated water management approach that includes consideration of water related climate change impacts such as reduced rainfall.

- **Integrated Water Management Planning**
  SEHCP (trading as Enliven Victoria) is a voluntary alliance made up of around 30 health and community services in south east metropolitan area. The catchment comprises of the Cities of Greater Dandenong, Casey and the Shire of Cardinia. They are a Primary Care Partnership (PCP), established by the Victorian Government to develop solutions to service fragmentation. They aim to enable partnerships of health and social service organisations to be more effective in collectively improving the health and well being of the population.

  Climate change is one area of focus for Enliven Victoria, which has resulted in a number of reports being prepared to guide the alliance’s actions in this area. Since 2009 Enliven has developed several strategic documents on climate change mitigation and adaptation, with the most recent being a report on the impacts of adverse weather events on people with a disability and their carers.

  Climate change adaptation has been integrated into Enliven’s Strategic Operational Plan 2014-17, thus continuing to be part of Enliven’s key strategic focus for the coming years. The City of Greater Dandenong is a key participant in the implementation of initiatives developed by Enliven Victoria, in particular capacity building and extreme weather event strategies.

**South East Councils Climate Change Change Alliance (SECCCA)**

SECCCA is a network of councils implementing a regional response to climate change, focusing on greenhouse abatement, sequestration and adaptation. They consist of a number of south eastern (metro and rural) councils working in partnership with the community, industry and other tiers of government responding to climate change.

Councils roles are to direct the projects implemented by SECCCA and act as a representative and communication mode between SECCCA and community sectors.

Since joining SECCCA in 2012–13, the City of Greater Dandenong is participating in two projects which will result in direct benefits to the municipality. One of these is the development of a framework to assist Councils in the region understand and address climate change risks and build adaption into their financial planning. This project was funded through the Victorian Government’s Victorian Adaptation and Sustainability Partnership.

**STRATEGIC ACTIONS TO BE UNDERTAKEN:**

**TIMEFRAME / RESPONSIBILITY**

- **Continue Council assistance to local aged and frail residents to reduce the impacts of climate change as part of its Home and Community Care Program.**
  - Ongoing – Community Care and Library Services

- **Maintain preparedness for heatwaves through the Municipal Heatwave Plan.**
  - Ongoing – Community Care and Library Services

- **Implement climate change measures outlined in the 2013–2017 Community Wellbeing Plan.**
  - Ongoing – Responsible Departments

- **Continue Council support for Enliven Victoria.**
  - Ongoing – Community Care and Library Services

- **Continue and expand community awareness programs through the Council’s media and publications.**
  - Ongoing – Responsible Departments

- **Increase community engagement through delivery of new initiatives such as:**
  - the Sustainability Festival and other community events
  - an annual Environmental Sustainability Newsletter

- **Undertake climate change risk assessment to identify the most significant areas of risk and establish priorities as the first stage of the development of a climate change mitigation and adaptation strategy.**
  - 2014–15 – City Design and Sustainability Planning, Organisational Sustainability

- **Work with SECCCA in the identification and implementation of programs that will reduce emissions and better equip the community to adapt to the impacts of climate change.**
  - Ongoing – Planning and Design, Community Care and Library Services