PLACE MAKING ADVISORY COMMITTEE

WEDNESDAY 20 APRIL 2016
Council Chambers, Ballan
3.00pm – 4.00pm

Attendees
Cr Pat Toohey (Chair) Woodlands Ward
Cr Tom Sullivan West Moorabool Ward
Cr John Spain East Moorabool Ward
Mr Phil Jeffrey General Manager Infrastructure
Mr Satwinder Sandhu General Manager Growth & Development

AGENDA

1 Meeting Opening Page 2
2 Declaration of Conflicts of Interest Page 2
3 Confirmation of Minutes Page 2
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4 Infrastructure Reports Page 3
4.1 Draft Urban Tree Management Policy Page 3
4.2 Energy Efficient Street Lighting Page 6
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1. MEETING OPENING

1.1 Present & Apologies

2. DECLARATION OF CONFLICTS OF INTEREST

2.1 Conflicts of Interest

3. CONFIRMATION OF MINUTES

3.1 Confirmation of Minutes – Wednesday 15 March 2016

Recommendation:

That the Place Making Advisory Committee confirm the minutes of the meeting held on Wednesday 15 March 2016.
4. INFRASTRUCTURE REPORTS

4.1 Draft Urban Tree Management Policy

Author: Glenn Townsend
General Manager: Phil Jeffrey

Background

Urban street trees provide significant social, environmental and aesthetic benefits to our communities and assist in the creation of neighbourhood character in urban streets. The Council recognises trees as a living asset, and understands ongoing maintenance, renewal and management is required for long-term sustainability and community benefit.

Council is responsible for the maintenance and management of trees located on Council land. As such, a key action from the 2015/16 Council Plan, was to develop a Tree Management Policy to provide a basis to make decisions on the management of trees with a particular vision to balance amenity and risk.

Whilst there are many benefits to having street trees, they come with some public risk that needs to be managed. Previous audits on street tree management have highlighted that there is a lack of policies and systems to support staff in managing urban trees.

In the last 18 months, an inventory of trees has been developed that includes species, age, physical properties and condition. The inventory contains approximately 17,000 trees and has been used to inform maintenance programs over the last 12 months.

The aim of this policy is to formalise the Moorabool Shire Council’s commitment to the preservation and enhancement of its urban environments through providing and maintaining high quality trees in urban areas whilst implementing prudent management practices to manage risk.

Proposal

The draft policy addresses the risk to public safety whilst taking into account the amenity, environmental and heritage value of the trees. A copy of the policy forms the attachment to this report.

The purpose of the policy is to:

- Provide a basis to make decisions on trees
- Establish clear guidelines and principles for trees
- Provide guidance to Council and officers regarding trees
- Establish criteria for prioritising work on trees within the scope of the Council budget
- Identify the resourcing needs to implement the Policy
- Engage the community with the issue of trees

The objective is to handle tree management in a proactive, rather than reactive manner. The Council has limited resources so is unable to remove all risks associated with trees but these resources need to be directed towards those public areas that expose the community to the greatest risk.
The policy and appendices have been developed for consideration, and include preferred tree species lists and precinct plans for urban areas.

**Policy Implications**

The 2013 - 2017 Council Plan provides as follows:

**Key Result Area**

Enhanced Infrastructure and Natural and Built Environment

**Objective**

Management of Assets and Infrastructure

**Strategy**

Proactive maintenance of Council owned and managed parks, gardens, trees, playgrounds, open space and town entrances at appropriate standards.

The proposal is consistent with the 2013-2017 Council Plan.

**Financial Implications**

There are no financial implications associated with the recommendation within this report.

**Risk & Occupational Health & Safety Issues**

<table>
<thead>
<tr>
<th>Risk Identifier</th>
<th>Detail of Risk</th>
<th>Risk Rating</th>
<th>Control/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupational</td>
<td>High risk equipment in use (eg. wood chipper, chainsaw, polesaws, pruning</td>
<td>High</td>
<td>Safe Work Procedures and Job Safety Analysis’, certificates of competency, licences and risk assessments current and in place.</td>
</tr>
<tr>
<td>Health &amp; Safety</td>
<td>saws)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial</td>
<td>Overspend of recurrent budget</td>
<td>Low</td>
<td>Review and analysis of regular (monthly) budget reporting.</td>
</tr>
<tr>
<td>Public Liability</td>
<td>Failing trees and/or limbs</td>
<td>Medium</td>
<td>Proactive inspections are undertaken and maintenance works scheduled appropriately.</td>
</tr>
</tbody>
</table>

**Communications Strategy**

There is no formal communications strategy associated with the recommendation within this report. Following adoption of the policy, a copy will be placed on Council’s website for information.

**Victorian Charter of Human Rights and Responsibilities Act 2006**
In developing this report to Council, the officer considered whether the subject matter raised any human rights issues. In particular, whether the scope of any human right established by the Victorian Charter of Human Rights and Responsibilities is in any way limited, restricted or interfered with by the recommendations contained in the report. It is considered that the subject matter does not raise any human rights issues.

**Officer's Declaration of Conflict of Interests**

Under section 80C of the Local Government Act 1989 (as amended), officers providing advice to Council must disclose any interests, including the type of interest.

*General Manager – Phil Jeffrey*
In providing this advice to Council as the General Manager, I have no interests to disclose in this report.

*Author – Glenn Townsend*
In providing this advice to Council as the Author, I have no interests to disclose in this report.

**Conclusion**

It is recognised that trees are a living asset, and ongoing maintenance, renewal and management is required for long-term sustainability and community benefit. A draft Tree Management Policy has been developed to provide a basis to make decisions on the management of trees with a particular vision to balance amenity and risk. It is recommended that the draft policy be presented to Council for formal adoption.

**Recommendation:**

That the Place Making Advisory Committee:

1. Receives the draft Tree Policy for the purpose of review and feedback to the officers.
2. Recommends that the Draft Tree Management Policy (with any amendments identified) be presented to Council for formal adoption.
4.2 Energy Efficient Street Lighting

Author: John Miller  
General Manager: Phil Jeffrey

Upgrading to Light Emitting Diode (LED) lighting will save $134,000 on running costs, reduce greenhouse emissions in year one and the project could be cash flow positive in 7-10 years.

Background

Council has a responsibility to provide a safe environment for its community through the provision street and public place lighting. Council's Street and Public Place Lighting Policy establishes the guidelines for the provision of lighting.

The most common street lamp throughout Moorabool is the 80-Watt Mercury Vapour street light (80WMV), however over recent years, technology around street lighting has improved considerably. This has resulted in the opportunity for significant cost savings for Councils through the upgrade of the existing 80WMV street lights. In Victoria, 68 of the 79 Councils have already completed a bulk changeover of existing lighting.

In this regard, one of the actions in the 2015/16 Council Plan is to ‘resolve Council’s position in relation to energy efficient street lighting.’ Officers engaged Ironbark Sustainability to prepare a business case on energy efficient lighting, which forms the basis of this report.

Proposal

All street and public place lighting is managed by distribution company Powercor. Council pays an annual service charge for maintenance (OMR) of the light and pole over its life, in addition to charges for electricity usage.

At last count, Council has a total 2,069 streetlights, of which 1,950 are able to be replaced with a more energy efficient option as outlined below. This number changes as new developments are completed.

<table>
<thead>
<tr>
<th></th>
<th>Non Decorative</th>
<th>Decorative</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>80WMV</td>
<td>1,919</td>
<td>25</td>
<td>1,944</td>
</tr>
<tr>
<td>125WMV</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>1,925</td>
<td>25</td>
<td>1,950</td>
</tr>
</tbody>
</table>

These streetlights can be replaced by T5, Compact Fluorescent or LED streetlights, which reduce energy usage by 68%, 62% and 77% respectively, compared to the existing Mercury Vapour streetlights that are currently installed. In addition to offering lower costs, energy consumption and greenhouse emissions, the new lights can provide better lighting outcomes including lower glare, better colour and visibility and less depreciation of light output over time.

The 80WMV street lights that are in use, cost 437% more in electricity compared to LEDs. Even when you take into account the capital cost of the materials (new lights), installation costs, project management and other costs (such as residual value of old lights), bulk replacement projects demonstrate high returns on investment and can pay themselves back in as little as eight years.

Technology Options
There are currently 3 streetlight replacement options for Council to choose from being T5, Compact Fluorescent or LED streetlights, which reduce energy usage by 68%, 62% and 77% respectively, compared to the existing Mercury Vapour. However, given the advancement in LED technology, the price of LEDs is rapidly decreasing and is becoming more and more affordable. As shown below, although T5 has a lower cost than LED, the cumulative net savings is about 50% more for LED and the greenhouse saving is approximately 10% more.

As a result, it would make sense for Council to adopt LED technology instead of T5.

Savings

Total OMR for 80WMVs is around $50/luminaire/year and the LED around $20/luminaire/year. This equates to an annual saving of $57,000 and coupled with reduce energy costs of $77,000 amounts to an annual operating cost saving in the order of $134,000. Based on modelled scenarios for an LED implementation over 1 year, the total cumulative savings for OMR and energy cost over 20 years is approximately $3,332,000, subtracting the initial outlay of $858,000, this will give Council a net cash flow of $2,474,000. The project would become cash flow positive at year 7. Please note that these figures do not include any interest payments related to borrowings for this project.

Greenhouse Emissions

LED lamps are substantially more efficient than current Mercury Vapour lamps. It is estimated that the total savings in greenhouse emissions over 20 years is approximately 14,149 tonnes. This is equivalent to taking 3,290 cars off the road per year or running 6,738 fridges. The greenhouse savings are expected to decline the longer Council delays the program. This is as a result of the overall electricity system becoming less reliant on fossil fuels over time.

Procurement

On 1st September 2012 MAV Procurement set up a bulk procurement panel for lighting materials on behalf of 40 of the 79 Victorian councils. This was a public competitive tender process on behalf of these 40 councils for the Appointment of a Panel of Providers for Approved Energy Efficient Street Lighting Hardware (Luminaires and associated PE Cells).

Effective 22 June 2014, Ministerial approval has now been granted under section 186(5)(c) of the Local Government Act 1989 in relation to all contracts entered into by councils through MAV Procurement. Approval was granted on the basis that contracts entered through MAV Procurement will provide councils access to suppliers selected through a competitive process, and that leveraging the combined purchasing power of councils will result in economies of scale and long term savings. As a result, Victorian Councils can receive discounted prices for energy efficient lights such as LEDs and compact fluorescents lights with no tender process required to be undertaken.

The Process for Councils

The standing panel of approved lights allows Councils to purchase directly without going out to tender, even if it's over the Local Government Act threshold. The panel was free for Councils to join and access and there are no obligations to use the panel (i.e. Councils may still tender for lights separately).
Councils receive an excel spreadsheet with all the lighting prices at bulk discount rates. They are then able to contact the supplier directly and purchase lights, even if the total amount is above Council’s tender threshold, as MAV Procurement have already completed the tender process on each Council’s behalf. Councils are not required to seek quotations or go to tender. The panel contains all currently approved energy efficient street lights and is refreshed regularly as new lighting becomes approved or if suppliers wish to reduce their prices. It only covers to hardware, and does not include installation, project management or maintenance of lights.

**Funding**

There are currently no available grants for such a program so two funding options available:

1. The Clean Energy Finance Corporation (CEFC) is a financing mechanism for energy efficiency projects. It has been in operation since 2012 and provides financing to businesses and Councils for energy efficiency projects. Energy efficient street lighting projects have been approved by the CEFC over the past 4 years. The CEFC has also partnered with larger lending institutions and banks who indicated that they are ready to provide finance for these types of projects because of the guaranteed energy savings and relatively low risk profile.
2. Source a loan from Council’s preferred financial institution.

The savings in electricity, operations and maintenance can be used to service the loan repayments.

**Policy Implications**

The 2013 - 2017 Council Plan provides as follows:

<table>
<thead>
<tr>
<th>Key Result Area</th>
<th>Enhanced Infrastructure and Natural and Built Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective</td>
<td>Management of Assets and Infrastructure</td>
</tr>
<tr>
<td>Strategy</td>
<td>Proactive maintenance of buildings, structures, public amenities and community facilities.</td>
</tr>
</tbody>
</table>

The proposal is consistent with the 2013-2017 Council Plan.

**Financial Implications**

Although the LED project will be cash flow positive in 10 years (including interest payments on borrowings for the project) it needs to be considered in light of funding options and the impact on borrowing levels. Based on an analysis, the project is considered extremely viable and warrants consideration. Given large capital projects that Council is recently undertaken, debt levels are relatively high therefore it is being recommended that its implementation be referred to the 2017/18 budget process as a new initiative. This will also enable it to be included in the 2017/18 SFP.

The table below summarise the difference between the scenarios for T5s and LEDs with a 1-year implementation period (excluding interest).

<table>
<thead>
<tr>
<th></th>
<th>T5</th>
<th>LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cumulative Project Cost</td>
<td>$547,033</td>
<td>$857,901</td>
</tr>
<tr>
<td>Cumulative Simple Net Savings</td>
<td>$1,608,785</td>
<td>$2,474,057</td>
</tr>
</tbody>
</table>
The table below summarise the cash flow projection over a 20-year period for a 1-year implementation for LED lights and may be subject to change. Projections are based on average price modelling from Government information papers.

Please note that these figures do not include any costs associated with borrowings for this project (ie. interest).

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual OMR Cost Saving</th>
<th>Annual Energy Cost Saving</th>
<th>Council Project Cost</th>
<th>Annual Net Cash Flow</th>
<th>Cumulative Project Cash Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2016</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2017</td>
<td>57.69</td>
<td>77.86</td>
<td>857.90</td>
<td>-722.35</td>
<td>-722.35</td>
</tr>
<tr>
<td>2018</td>
<td>59.42</td>
<td>77.32</td>
<td>0.00</td>
<td>136.74</td>
<td>-585.62</td>
</tr>
<tr>
<td>2019</td>
<td>61.20</td>
<td>76.77</td>
<td>0.00</td>
<td>137.98</td>
<td>-447.64</td>
</tr>
<tr>
<td>2020</td>
<td>63.04</td>
<td>76.24</td>
<td>0.00</td>
<td>139.28</td>
<td>-308.36</td>
</tr>
<tr>
<td>2021</td>
<td>64.93</td>
<td>75.70</td>
<td>0.00</td>
<td>140.63</td>
<td>-167.73</td>
</tr>
<tr>
<td>2022</td>
<td>66.88</td>
<td>75.17</td>
<td>0.00</td>
<td>142.05</td>
<td>-25.68</td>
</tr>
<tr>
<td>2023</td>
<td>68.88</td>
<td>79.27</td>
<td>0.00</td>
<td>148.15</td>
<td>122.47</td>
</tr>
<tr>
<td>2024</td>
<td>70.95</td>
<td>83.59</td>
<td>0.00</td>
<td>154.54</td>
<td>277.01</td>
</tr>
<tr>
<td>2025</td>
<td>73.08</td>
<td>88.15</td>
<td>0.00</td>
<td>161.22</td>
<td>438.24</td>
</tr>
<tr>
<td>2026</td>
<td>75.27</td>
<td>92.95</td>
<td>0.00</td>
<td>168.22</td>
<td>606.46</td>
</tr>
<tr>
<td>2027</td>
<td>77.53</td>
<td>98.01</td>
<td>0.00</td>
<td>175.54</td>
<td>782.00</td>
</tr>
<tr>
<td>2028</td>
<td>79.85</td>
<td>103.36</td>
<td>0.00</td>
<td>183.21</td>
<td>965.21</td>
</tr>
<tr>
<td>2029</td>
<td>82.25</td>
<td>108.99</td>
<td>0.00</td>
<td>191.24</td>
<td>1,156.45</td>
</tr>
<tr>
<td>2030</td>
<td>84.72</td>
<td>114.93</td>
<td>0.00</td>
<td>199.65</td>
<td>1,356.10</td>
</tr>
<tr>
<td>2031</td>
<td>87.26</td>
<td>121.19</td>
<td>0.00</td>
<td>208.45</td>
<td>1,564.55</td>
</tr>
<tr>
<td>2032</td>
<td>89.88</td>
<td>127.80</td>
<td>0.00</td>
<td>217.67</td>
<td>1,782.22</td>
</tr>
<tr>
<td>2033</td>
<td>92.57</td>
<td>131.44</td>
<td>0.00</td>
<td>244.02</td>
<td>2,006.24</td>
</tr>
<tr>
<td>Risk Identifier</td>
<td>Detail of Risk</td>
<td>Risk Rating</td>
<td>Control/s</td>
<td>Financial Cost savings to Council are not as anticipated</td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>----------------</td>
<td>-------------</td>
<td>-----------</td>
<td>--------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Occupational Health &amp; Safety</td>
<td>Risk of physical injury</td>
<td>Low</td>
<td>Replacement to be undertaken by a contractor with suitable OH&amp;S systems and procedures in place.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Communications Strategy**

Should a bulk replacement be approved, the initiative would be promoted to residents through social and local print media.

**Victorian Charter of Human Rights and Responsibilities Act 2006**

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**Officer's Declaration of Conflict of Interests**

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*General Manager – Phil Jeffrey*

In providing this advice to Council as the General Manager, I have no interests to disclose in this report.

*Author – John Miller*

In providing this advice to Council as the Author, I have no interests to disclose in this report.

**Conclusion**

Over recent years, technology around street lighting has improved considerably, resulting in the potential for savings on both maintenance and usage costs to Council.

A business case has been prepared and determined that upgrading to LED lighting will save Council on running costs and reduce Greenhouse emissions from year one, and the project will be cash flow positive in 7-10 years, providing even greater savings into the future for the community.
As such, it is recommended that Council approves a bulk changeover project to the more energy efficient street light option and refers its funding to the 2017/18 budget process.

**Recommendation:**

That the Place Making Advisory Committee:

1. Provides in principle support to the upgrade of street and public place lighting to LED technology where practicable.

2. Recommends to Council that it adopt a 1-year implementation strategy and that it refers funding for bulk street light change over to the 2017/18 annual budget process.
5. GROWTH & DEVELOPMENT REPORTS

5.1 Draft Moorabool Sustainable Environment Strategy

Introduction

Author: Justin Horne
General Manager: Satwinder Sandhu

Background

A draft Moorabool Sustainable Environment Strategy (MSES) has been developed to assist Moorabool Shire Council to address the following its role in relation to meeting current Federal, State and Council legislative, strategic and policy statements in the areas of natural environment, pest plants and animals and sustainability.

The draft Strategy aims to identify key priority actions in the management of Council assets to improve our local environment and to reduce water and energy consumption within Council and the local community.

The Strategy also aims to identify current initiatives that are being implemented by Council to reduce our water and energy consumption, and to provide Council with policy and operational directions that are measureable, realistic and relevant to Moorabool Shire Council and local communities.

The purpose of this Strategy is to demonstrate how Council will work to protect and enhance the environment over the next ten years. It will also consider the interaction between community well-being and the natural environment, with a focus on the sustainability of the built environment and community resilience.

The development of the Strategy is in keeping the adopted practice of local government, community expectations and aims to provide recommendations that are provide a cost benefit or are cost neutral to Council, either through process improvement or direct action (e.g. energy efficient street lighting).

The Strategy will be the key document for guiding Council planning, decision-making and activities that impact on the natural environment and sustainability in Moorabool Shire.

Figure 1 shows the role of the Strategy has within the Integrated Planning Delivery Framework as identified within ‘The Way Forward - 2015’
The Strategy has been developed to comprise of two components:

- Strategic Direction 2016 - 2026
- Implementation Plan 2016 - 2021

**Progress to Date**

Workshops have been held with internal and external stakeholders providing input as to the actions Council have previously undertaken in relation to sustainability and environmental management and to develop a vision and targets for the new Strategy.

Stakeholders providing input to the draft strategy included:

<table>
<thead>
<tr>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td>Department of Environment, Water, Land &amp; Planning (DELWP)</td>
</tr>
<tr>
<td>Capital Works</td>
<td>Department of Economic Development, Jobs, Transport &amp; Resources (DEDJTR)</td>
</tr>
<tr>
<td>Finance</td>
<td>Moorabool Landcare Network</td>
</tr>
<tr>
<td>Recreation Development</td>
<td>Melbourne Water</td>
</tr>
<tr>
<td>Strategic Planning</td>
<td>Port Phillip &amp; Westernport Catchment Management Authority</td>
</tr>
<tr>
<td>Statutory Planning</td>
<td>Sustainability Victoria</td>
</tr>
<tr>
<td>Environment</td>
<td>Grow West</td>
</tr>
<tr>
<td>Parks &amp; Gardens</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 1: Role of the Sustainability & Environment Strategy within the Integrated Planning Delivery Framework (source: The Way Forward - 2015, pg 8)**
The Strategy considers the natural values and assets of the Shire, the threats to these values and the actions Council can take to protect and enhance the natural environment both directly and by working with others. It sets directions and priorities to ensure community wellbeing and resilience through making the built environment more liveable and protection of the natural environment.

Additional work was also undertaken as part of the Strategy to identify Council’s current energy and water consumption and to identify cost saving actions that Council could undertake. The report also included a benchmarking exercise reflecting on the performance of Baw Baw Shire Council and Macedon Ranges Shire Council.

At the February meeting of Council’s Place Making Advisory Committee the following edits were recommended to the strategy and implementation plan:

- Ensure photos are correctly referenced
- Include reference to minor waterways
- Update graph on page 32 of the Strategy so that data is presented in two separate figures
- Update ‘Measures’ component in Strategic Direction 1 and 2 to indicate how improvements will be measured

These edits have been considered and the documents updated accordingly, for consideration by the Place Making Advisory Committee prior to approval for public consultation

Proposed Strategy Vision, Strategy Directions and Priority Areas

During the consultation process, a Strategy Vision, four Strategy Directions and twelve Priority Areas (figure 2) were developed.

The proposed vision for the Strategy is:

Moorabool Shire will work to ensure the Shire has healthy ecosystems, productive landscapes, sustainable communities and the capacity to adapt to future environmental challenges.

This vision forms the direction of the strategic directions, priority areas and the actions listed in the implementation plan.
Figure 2: Proposed strategic directions and priority areas for the Moorabool Sustainability and Environment Strategy

Implementation Plan 2016 - 2021

As stated previously, the intention of the Strategy is to also provide an implementation plan to assist Council departments with the delivery of programs to ensure that the vision is achieved.

The implementation plan will have a five year lifespan, and aims to assist Council with operational actions to be delivered by 2021. These will be reviewed against the objectives of the Strategy and a new implementation plan will be developed for the period 2022-2026.

During the consultation phase, the need to ensure that the implementation actions were specific, measureable and achievable. The intent is that the implementation plan is feasible to accomplish.

Proposal

To ensure that the Moorabool Sustainable Environment Strategy is in alignment with the expectations of the community it is proposed that the MSES is made available to the community for comment.

A copy of the draft Strategy is attached to this report for information.

Policy Implications

The 2013 - 2017 Council Plan provides as follows:

Key Result Area | Enhanced Infrastructure and Natural and Built Environment
Objective | Enhance and protect the long term integrity and biodiversity of the natural environment
Strategy

Pursue initiatives to reduce greenhouse gases, energy and water consumption

Work with Landcare networks, government and community to implement and support environmental and sustainability initiatives

The proposal is consistent with the 2013 - 2017 Council Plan.

Financial Implications

There are no financial implications associated with the recommendation within this report. However, with the potential implementation of the listed actions especially Strategic Direction 3, it is expected that Council expenditure on electricity and fleet will decrease.

Risk & Occupational Health & Safety Issues

There are no direct Risk or Occupational Health and Safety issues associated with the recommendation within this report.

Communications Strategy

It is intended that the following methods be utilised to achieve a high level of response to the survey:

- Newspaper advertising
- Social Media Links (Facebook and Twitter)
- Council website
- Have Your Say website
- Media release


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General Manager – Satwinder Sandhu
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Author – Justin Horne
In providing this advice to Council as the Author, I have no interests to disclose in this report.

Conclusion
The draft Moorabool Sustainable Environment Strategy provides Council with policy direction and an implementation plan relating to its role in managing the local environmental assets and promoting sustainability through a variety of actions.

The actions identified in the Strategy, have been developed and reviewed internally by operational departments to ensure that they are achievable and provide a direct financial benefit to Council and ratepayers.

Recommendation:

That the Place Making Advisory Committee:

1. Receives the draft Moorabool Sustainable Environment Strategy for the purpose of feedback to officers.

2. Requests that the draft Moorabool Sustainable Environment Strategy (with any amendments identified) be presented to the June 2016 Ordinary Meeting of Council for endorsement for the purposes of public exhibition for a period of four weeks.

3. Requests that a further report be presented to the Place Making Advisory Committee at the conclusion of the public consultation period.
6. CLOSED SESSION OF ADVISORY COMMITTEE

Nil

7. NEXT SCHEDULED MEETING

Wednesday 15 June 2016

8. MEETING CLOSURE
MEETING OPENING

The Chair welcomed all and opened the meeting at 1.06pm.

ATTENDANCE

Cr Pat Toohey, Chair  Councillor – Woodlands Ward
Cr Tom Sullivan   Councillor – West Moorabool Ward
Cr John Spain   Councillor – East Moorabool Ward
Mr Phil Jeffrey   General Manager Infrastructure
Ms Sam Romaszko  Manager Engineering Services
Mr Glenn Townsend  Manager Operations
Ms Lace Daniel   Minute Taker

Melbourne Water Representatives:

YC Chia    Principal of Schemes
James Hodgens   Senior Engineer, Waterway & Land, Development Services
Daniel Garzia  Student Catchment Planner, Development Services (North)
Erin Carpenter  Waterways Officer, Werribee Rover Corridor
Michael Prior  Statutory Planner

APOLOGIES

Mr Satwinder Sandhu   General Manager Growth & Development

CONFLICTS OF INTEREST

No conflicts of interest were declared at the meeting.

CONFIRMATION OF MINUTES

3.1 Confirmation of Previous Minutes (Wednesday 17 February 2016)

Resolution:

That the Place Making Advisory Committee confirm the minutes of the meeting held on Wednesday 17 February 2016.

Moved:      Cr Sullivan
Seconded:   Cr Spain
CARRIED
3.2 Confirmation of Previous Minutes (Wednesday 14 October 2015)

**Resolution:**
That the Place Making Advisory Committee confirm the minutes of the meeting held on Wednesday 14 October 2015.

Moved: Cr Sullivan
Seconded: Cr Toohey
CARRIED

**INFRASTRUCTURE REPORTS**

4.1 Development Services Schemes and Drainage Strategy within the Ballan Township

Melbourne Water presented to the group in relation to the schemes and strategy.

**Resolution:**
That the Place Making Advisory Committee requests officers prepare a report to the April Ordinary Meeting of Council recommending that:

1. in principle support be provided to the three Development Services Schemes listed below:
   a) Ballan North West DSS
   b) Ballan South West DSS
   c) Gillespies Lane DSS
2. the Gosling Street Drainage Strategy proposal be received.

Moved: Cr Sullivan
Seconded: Cr Spain
CARRIED

4.2 Community Survey – Greenwaste Disposal

**Resolution:**
That the Place Making Advisory Committee recommends to Council that:

1. A non-compulsory kerbside greenwaste collection be implemented within the urban (residential zoned) areas of Bacchus Marsh and Ballan.
2. The service be provided for a trial period from January 2017 to June 2019 at a cost of approximately $85-100 per tenement including corporate overheads.
3. A further report be presented to Council regarding the feasibility for a continued service at least 6 months prior to the completion of the trial period.
4. An amendment to the existing Waste & Resource Recovery Policy be made to include the additional service.
5. Refers the costs associated with the implementation of the service to the annual budget process.
Moved: Cr Spain
Seconded: Cr Sullivan
CARRIED

4.3 Community Survey – Hardwaste Disposal

Resolution:

That the Place Making Advisory Committee recommends to Council that:

1. it not proceed with the implementation of a hardwaste service at this time
2. officers write to Grampians Central West Waste Management Group in relation to a regional procurement approach for a potential future on call service.

Moved: Cr Sullivan
Seconded: Cr Spain
CARRIED

GROWTH & DEVELOPMENT REPORTS

Nil

CLOSED SESSION OF THE MEETING

Nil

DATE OF THE NEXT MEETING

Wednesday 20 April 2016

MEETING CLOSURE

The Chair thanked all and closed the meeting at 3.03pm.
1. Purpose

This policy provides the direction for planting and continued management of trees located on Council managed land. It will provide a basis to make decisions on the management of trees with a particular vision to balance amenity and risk.

Trees provide significant economic, social, environmental, ecological and aesthetic benefits to our communities and assist in the creation of neighbourhood character and identity of our urban streets. The Council recognises trees as a living asset, and understands ongoing maintenance, renewal and management is required for long-term sustainability and community benefit.

The aim of this policy is to formalise MSC’s commitment to the preservation and enhancement of its urban environments through providing and maintaining high quality trees in Urban Zones.

2. Introduction

Trees are highly valued asset to the Moorabool Shire environment. Mature trees are a dominant feature in tree lined avenues, streets, parks and reserves. Trees improve air quality by absorbing air pollutants, releasing oxygen and sequestering carbon dioxide. Collectively trees add beauty by softening the harsh lines of urban development, help screen unsightly views, provide privacy and create a sense of identity and security within the community. Trees also provide great economic benefits to the community including increasing property value, reducing building heating and cooling costs and reducing heat stress for people and infrastructure by providing shade and shelter.

Issues relating to tree management have a high profile and can generate considerable public debate and passion and as a consequence, planning is required in order to facilitate effective tree management.

This policy outlines Council’s tree management processes in line with relevant legislative requirements, strategic policies and accepted tree care practices. Best practice tree management benefits the landscape and environment and meets the expectations of the local community. Trees located on private property are not included in this policy.

The following definitions apply within the context of this policy:

“Urban Zones” – The parameters of Urban Zones are determined by to be equal to the commencement of speed limits zones at township or urban boundaries.
Infrastructure Services

“Council Tree Asset” – Any tree planted or self-sown within the road reserve, open space area or floodway zones of the Urban Zone boundaries, and contained within Council’s Tree Register are maintained by MSC. Referred to as tree or trees in this policy.

This Policy should be read in conjunction with MSC’s Approved Street Tree Species Guide.

3. Policy

Council will maintain urban street and park trees within the Municipality with a particular emphasis on mitigating risk to person and property whilst also ensuring that amenity, environmental and heritage values are equally considered, including:

- Appropriate siting and species selections for all new trees
- Appropriate protection, maintenance and management of trees
- Co-ordination of council policy and strategy documents/to assist
- Sufficient resources be allocated to allow for best practice tree management
- Effective risk management
- To provide parameters for development sites as per AS 4970 - 2009

Tree Management

Council will ensure that the management of its trees is consistent with best practice at all times and are maintained at a high standard. It will:

- Develop formal management guidelines and improve existing documentation for the management of Council’s tree assets in line with accepted tree care practises and relevant legislative requirements to maintain and enhance the tree population.
- Provide adequate resources to ensure tree management is undertaken to mitigate risk potential
- Maintain an inventory of urban street trees under its control.

Significant Tree Management

The tree register will identify significant, exotic, native and indigenous trees on public land that have special significance. They would be identified because of their horticultural value, location or context. Some of these trees would already be included on the National Trust of Australia (Victoria) Register of Significant Trees.

- Significant trees within MSC shall be appropriately managed and protected.
- All significant trees shall be managed in accordance with all relevant legislation
- Flagging of significant trees in the Moorabool Shire Tree Inventory

Tree Protection

Council will endeavour to ensure trees will be protected from development, construction, temporary works and other activities as far as practicable, that may have a negative impact upon tree health

- Whilst maintaining a balance between risk/safety and project outcomes, where possible, Council owned or managed trees are to be protected from civil works or maintenance activities that could place trees under stress or at risk. The retaining of trees will be an important factor when considering applications for new development or where implementing infrastructure works.
- Cost associated with private works that impact on trees will be borne by the person/s undertaking the works.
Tree Inspection Program

- Council shall undertake street, park and council facility’s tree inspections and data collection in Urban Zones every five (5) years.
- Council shall undertake street, park and council facility’s tree inspections and data collection in high risk areas such as the CBD, every three (3) years.

It is acknowledged that resources restrict the capacity of the Council to inspect and maintain all trees to the same level at all times. It is the Council’s intention however to ensure that an appropriate and duly diligent proportion of each annual tree management budget be allocated to high risk tree inspection and maintenance issues.

Tree Pruning

- Council shall be responsible for undertaking tree pruning of all trees as required that are owned and maintained by the Council.
- All pruning undertaken on trees within the MSC municipality Urban Zones shall be accordance with AS 4373-2007 Pruning of Amenity Trees and the Street Tree Pruning Guidelines.
- All tree pruning shall be carried out by appropriately trained Council staff or an independent contractor who shall be appointed by Council.
- All tree pruning shall be carried out in accordance with all relevant legislation which may include; Heritage Act 1995, Flora and Fauna Guarantee Act 1988, Catchment and Land Protection Act 1994, Planning and Environment Act 1987.
- Residents are not permitted to prune or remove council trees.

Tree Removal

Poor performing, dead and hazardous trees will be removed and/or replaced subject to funding. While all other options will be explored, tree removal may be required to ensure public health and safety, to protect infrastructure, to facilitate approved development and infrastructure improvements.

- Trees will only be removed after investigation and assessed for removal by Council’s arborist, appropriately trained Council staff or a council engaged independent Arborist on a ‘case by case’ basis.
- All tree removal shall be carried out in accordance with all relevant Legislation Consult and inform the community about all major projects involving tree removal and plantings
- Pursue unauthorised tree removal and investigate enforcement action under the jurisdiction of general Local law 2010
- Council may be obliged to remove unauthorised plantings, without compensation of the person/s who planted without permission.

Tree Roots

- Subject to budget, Council will investigate tree root damage claims involving infrastructure where practical, council will minimise the impact to infrastructure caused by roots from trees situated on council managed land
- Tree roots can cause conflict with infrastructure resulting in damage to assets. Council deals with this conflict on a case by case basis and explores all options to mitigate the conflict, with tree removal being the last option.

Tree Planting

Council will proactively carry out tree planting in road reserves, open space and other Council managed land.
All new tree stock selection and planting shall be in accordance with the MSC approved tree species list, or approved by Council's Parks & Gardens unit.

- Council will plant advanced trees within urban streetscapes and parks that it is responsible for maintaining and provide guidance for suitable planting within any asset Council will maintain, where practical, Council shall replace trees after they have died or been removed.
- Purchasing and planting shall be scheduled to allow for optimum seasonal conditions that are conducive to the long term survival of trees.
- All new developments shall be designed to accommodate trees where possible and in such a way as to allow for improved asset management and long-term community benefit
- Tree protection zones shall be incorporated with regard to all developmental sites.
- Residents must first seek and obtain permission from Council before planting trees and shrubs within nature-strips or other council managed open space environments.
- Residents can request that Council undertake planting within their street or reserve.
- Residents will be notified in advance, of tree removals and/or plantings in the immediate area.

**Power Line Pruning**

Council has the responsibility to maintain its trees in accordance with the Electricity Safety (Electric Line Clearance) Regulation 2015 within the declared area of the Moorabool Shire.

Powercor has the responsibility to maintain Council trees in accordance with the Electricity Safety (Electric Line Clearance) Regulation 2015 within the undeclared area of the Moorabool Shire.

- In the declared areas, Council shall prepare an approved Electrical Line Clearance Management Plan in accordance with the requirements of Energy Safe Victoria which shall be subject to all provisions (including audit) of the relevant Legislation which is the Electricity Safety Act 1998.
- In all such declared areas Council shall be responsible for appointing a Powerline Pruning Contractor to undertake tree pruning in accordance with the Guidelines to the Electricity Safety (Electric Line Clearance) Regulations 2015
- Contractors must at all times where possible trim trees in accordance with the amenity tree pruning standards

**Pest and Disease**

Tree pests and diseases are a component of tree management and Council recognises that control measures will be required at times to maintain healthy trees. A range of methods will be utilised in the management of pest and disease outbreaks

- Monitor tree population to enable timely and appropriate responses
- Identify damage and initiate the implementation of a pest and disease control program
- Determine if further action is required if there are signs of excessive damage and/or insect infestation

**Community Consultation**

The Moorabool Shire manages trees on Council managed land on behalf of the community. Consultation with affected and interested members of the local community is paramount.

- The community will be provide advance information and consulted about all major projects involving tree removal, tree planting and other major tree management programs.
- Day to Day management and emergency works which involved public safety would not require consultation
4. Related Legislation / Policies / Guidelines

- Aboriginal Heritage Act 2006
- AS 4970:2009 Protection of Trees on Development Sites
- AS 4373-2007 Pruning of Amenity Trees and the Street Tree Pruning Guidelines
- Crown land (Reserves) Act 1978
- Department of Environment and Primary Industries Committees of Management Responsibilities and Good Practice Guidelines 2014
- Electricity Safety (Electric Line Clearance) Regulations 2015
- Electricity Safety Amendment (Bushfire Mitigation) 2014
- Victorian Heritage Register H2238, Heritage Victoria
- Bacchus Marsh Avenue of Honour Management Plan 2004
- Bacchus Marsh Avenue of Honour Conservation Management Plan
- Moorabool Electric Line Clearance Management Plan
- Moorabool Recreation and Leisure Strategy 2015 - 2021Moorabool 2041

5. Council Plan Reference – Key Performance Area

Key Result Area: Enhanced Infrastructure and Natural and Built Environment

Objective: Management of Assets and Infrastructure

Strategy: Proactive maintenance of Council owned and managed parks, gardens, trees, playgrounds, open space and town entrances at appropriate standards.

6. Review

This policy will be reviewed in 2021.

7. Attachments

- MSC Approved Street Tree Species Guide

8. References

<table>
<thead>
<tr>
<th>Dept</th>
<th>Parks and Gardens Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSC</td>
<td>Moorabool Shire Council</td>
</tr>
</tbody>
</table>
Climatic zones.

For the purpose of tree selection, Moorabool shire has been divided into 3 distinct zones. These zones reflect the climatic, geological and related ecological forces that effect tree development around the shire.

The approved street trees have been selected to suit particular zones within these selections.

The zones are defined as per the adjoining map.

Zone Key:
- Zone 01: Good conditions
- Zone 02: Moderate conditions
- Zone 03: Challenging conditions
Angophora costata
Smooth-barked Apple Myrtle
Cedrus deodara
Cedar of Lebanon
Cedrus libani
Cedar of Lebanon
Corymbia citriodora
Lemon-scented Gum
Corymbia maculata
Spotted Gum
Deodar Cedar
Eucalyptus baueriana
Eucalyptus sideroxylon
Cedrus libani
Eucalyptus microcarpa
Eucalyptus microcarpa
Eucalyptus melliodora
Eucalyptus melliodora
Grey Box
Red Ironbark
Red Ironbark
Yellow Box
Quercus canariensis
Quercus cerris
Spanish Oak
Holm Oak
Pin Oak
Pin Oak
English Oak
Horse Chestnut
Platanus orientalis
Platanus x acerifolia
London Plane
Quercus palustris
Quercus ilex
Quercus robar
Turkey Oak
Quercus cerris
Turkey Oak
Turkey Oak
English Oak
Pin Oak
Pin Oak
English Elm
English Oak
English Oak
English Oak
English Oak
English Oak
Turkey Oak
Turkey Oak
Turkey Oak
Quercus palustris
Quercus palustris
Quercus palustris
Quercus palustris
Quercus palustris
Quercus palustris
Quercus palustris
Quercus palustris
Quercus palustris
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Quercus palustris
Quercus palustris
Quercus palustris
Quercus palustris
<table>
<thead>
<tr>
<th>Species Name</th>
<th>Common Name</th>
<th>Height</th>
<th>Zone</th>
<th>Deciduous</th>
<th>Native</th>
<th>Under Powerlines</th>
<th>Minimum nature strip width (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Angophora costata</strong></td>
<td>Smooth-barked Apple Myrtle</td>
<td>12-30m</td>
<td>1, 2</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
<td>5</td>
</tr>
<tr>
<td><strong>Cedrus deodara</strong></td>
<td>Deodar Cedar</td>
<td>20m</td>
<td>1, 2</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>5</td>
</tr>
<tr>
<td><strong>Cedrus libani</strong></td>
<td>Cedar of Lebanon</td>
<td>20m</td>
<td>1, 2</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>5</td>
</tr>
<tr>
<td><strong>Corymbia citriodora</strong></td>
<td>Lemon-scented Gum</td>
<td>30m</td>
<td>1, 2</td>
<td>x</td>
<td>✓</td>
<td>x</td>
<td>3</td>
</tr>
<tr>
<td><strong>Corymbia maculata</strong></td>
<td>Spotted Gum</td>
<td>30m+</td>
<td>1, 2</td>
<td>x</td>
<td>✓</td>
<td>x</td>
<td>3.5</td>
</tr>
<tr>
<td><strong>Eucalyptus baueriana</strong></td>
<td>Blue Box</td>
<td>20m</td>
<td>2, 3</td>
<td>x</td>
<td>✓</td>
<td>x</td>
<td>5</td>
</tr>
<tr>
<td><strong>Eucalyptus melliodora</strong></td>
<td>Yellow Box</td>
<td>30m</td>
<td>2, 3</td>
<td>x</td>
<td>✓</td>
<td>x</td>
<td>5</td>
</tr>
<tr>
<td><strong>Eucalyptus microcarpa</strong></td>
<td>Grey Box</td>
<td>25m</td>
<td>2, 3</td>
<td>x</td>
<td>✓</td>
<td>x</td>
<td>5</td>
</tr>
<tr>
<td><strong>Eucalyptus sideroxylon</strong></td>
<td>Red Ironbark</td>
<td>20m</td>
<td>1, 2</td>
<td>x</td>
<td>✓</td>
<td>x</td>
<td>3</td>
</tr>
<tr>
<td><strong>Maclura pomifera ‘Wichita’</strong></td>
<td>Osage Orange</td>
<td>15-20m</td>
<td>2, 3</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>3.5</td>
</tr>
<tr>
<td><strong>Platanus orientalis</strong></td>
<td>Oriental Plane</td>
<td>30m</td>
<td>1, 2</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>3</td>
</tr>
<tr>
<td><strong>Platanus x acerifolia</strong></td>
<td>London Plane</td>
<td>30m</td>
<td>1, 2</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>3</td>
</tr>
<tr>
<td><strong>Quercus canariensis</strong></td>
<td>Algerian Oak</td>
<td>20m</td>
<td>1, 2</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>3.5</td>
</tr>
<tr>
<td><strong>Quercus cerris</strong></td>
<td>Turkey Oak</td>
<td>20m</td>
<td>1, 2</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>3.5</td>
</tr>
<tr>
<td><strong>Quercus ilex</strong></td>
<td>Holm Oak</td>
<td>30m</td>
<td>1, 2</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>3.5</td>
</tr>
<tr>
<td><strong>Quercus palustris</strong></td>
<td>Pin Oak</td>
<td>25m</td>
<td>1, 2</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>3.5</td>
</tr>
<tr>
<td><strong>Quercus robat</strong></td>
<td>English Oak</td>
<td>20-30m</td>
<td>1, 2</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>3.5</td>
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<tr>
<td><strong>Ulmus procera</strong></td>
<td>English Elm</td>
<td>25m</td>
<td>1, 2</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>3.5</td>
</tr>
</tbody>
</table>
### Medium Trees

**APPROVED STREET TREE SPECIES GUIDE**

<table>
<thead>
<tr>
<th>Species Name</th>
<th>Common Name</th>
<th>Height</th>
<th>Zone</th>
<th>Deciduous</th>
<th>Native</th>
<th>Under Powerlines</th>
<th>Minimum nature strip width (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Acer campestre</em></td>
<td>Hedge Maple</td>
<td>15m</td>
<td>1, 2</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>2.5</td>
</tr>
<tr>
<td><em>Aesculus x carnea</em></td>
<td>Red Horse Chestnut</td>
<td>12-15m</td>
<td>1</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>2.5</td>
</tr>
<tr>
<td><em>Agonis flexuosa</em></td>
<td>Willow Myrtle</td>
<td>10m</td>
<td>1, 2, 3</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
<td>2.5</td>
</tr>
<tr>
<td><em>Brachychiton acerifolius</em></td>
<td>Illawarra Flame Tree</td>
<td>12-15m</td>
<td>2, 3</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
<td>2.5</td>
</tr>
<tr>
<td><em>Brachychiton populneus x acerifolius</em></td>
<td>Hybrid Kurrajong</td>
<td>9-11m</td>
<td>2, 3</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
<td>3</td>
</tr>
<tr>
<td><em>Callistemon viminalis 'Dawson River Weeper'</em></td>
<td>Dawson River Bottlebrush</td>
<td>6-12m</td>
<td>1, 2, 3</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
<td>3</td>
</tr>
<tr>
<td><em>Corymbia eximia</em></td>
<td>Yellow Bloodwood</td>
<td>15m</td>
<td>2, 3</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
<td>3</td>
</tr>
<tr>
<td><em>Eucalyptus leucoxylon</em></td>
<td>Yellow Gum</td>
<td>10-15m</td>
<td>2, 3</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
<td>3.5</td>
</tr>
<tr>
<td><em>Eucalyptus polyanthemos</em></td>
<td>Red Box</td>
<td>15m</td>
<td>2, 3</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
<td>3.5</td>
</tr>
<tr>
<td><em>Jacaranda mimosifolia</em></td>
<td>Jacaranda</td>
<td>10m</td>
<td>2, 3</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>2.5</td>
</tr>
<tr>
<td><em>Lophostemon confertus</em></td>
<td>Queensland Brush Box</td>
<td>10-15m</td>
<td>1, 2</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
<td>2.5</td>
</tr>
<tr>
<td><em>Melia azedarach ‘Elite’</em></td>
<td>Elite White Melia</td>
<td>12m</td>
<td>2, 3</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>2.5</td>
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<tr>
<td><em>Olea europaea</em></td>
<td>European Olive</td>
<td>6-8m</td>
<td>2, 3</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>2.5</td>
</tr>
<tr>
<td><em>Pyrus calleryana</em></td>
<td>Callery Pear</td>
<td>15m</td>
<td>1, 2</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>2</td>
</tr>
<tr>
<td><em>Quercus agrifolia</em></td>
<td>Californian Live Oak</td>
<td>10-25m</td>
<td>1, 2, 3</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>3.5</td>
</tr>
<tr>
<td><em>Ulmus glabra ‘Lutescens’</em></td>
<td>Golden Elm</td>
<td>12m</td>
<td>1, 2</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>3.5</td>
</tr>
<tr>
<td><em>Ulmus parvifolia</em></td>
<td>Chinese Elm</td>
<td>12m</td>
<td>1, 2, 3</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>3.5</td>
</tr>
<tr>
<td><em>Zelkova serrata</em></td>
<td>Zelkova</td>
<td>15m</td>
<td>1, 2</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>2</td>
</tr>
<tr>
<td>Species Name</td>
<td>Common Name</td>
<td>Height</td>
<td>Zone</td>
<td>Deciduous</td>
<td>Native</td>
<td>Under Powerlines</td>
<td>Minimum nature strip width (m)</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>----------------------</td>
<td>--------</td>
<td>------</td>
<td>-----------</td>
<td>--------</td>
<td>------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Acer bergerianum</td>
<td>Trident Maple</td>
<td>9m</td>
<td>1, 2</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
<td>1</td>
</tr>
<tr>
<td>Aesculus californica</td>
<td>California Buckeye</td>
<td>8m</td>
<td>1, 2</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
<td>2.5</td>
</tr>
<tr>
<td>Angophora hispida</td>
<td>Dwarf Apple</td>
<td>5m</td>
<td>1, 2</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>1.5</td>
</tr>
<tr>
<td>Arbutus x andrachnoides</td>
<td>Hybrid Strawberry Tree</td>
<td>9m</td>
<td>1, 2</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
<td>2</td>
</tr>
<tr>
<td>Brachychiton rupestris</td>
<td>Queensland Bottle Tree</td>
<td>6m</td>
<td>2, 3</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>2</td>
</tr>
<tr>
<td>Ceratonia siliqua</td>
<td>Carob</td>
<td>8-10m</td>
<td>2, 3</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>2</td>
</tr>
<tr>
<td>Corymbia ficifolia</td>
<td>Red Flowering Gum</td>
<td>10m</td>
<td>1, 2, 3</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>3</td>
</tr>
<tr>
<td>Eucalyptus forestiana</td>
<td>Fuchsia Mallee</td>
<td>8m</td>
<td>2, 3</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>2</td>
</tr>
<tr>
<td>Eucalyptus Kitsoniana</td>
<td>Gippsland Mallee</td>
<td>5-9m</td>
<td>1, 2</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>2</td>
</tr>
<tr>
<td>Eucalyptus macrandra</td>
<td>River Yate</td>
<td>7m</td>
<td>2, 3</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>2</td>
</tr>
<tr>
<td>Eucalyptus platypus</td>
<td>Moort</td>
<td>10m</td>
<td>1, 2</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>2</td>
</tr>
<tr>
<td>Eucalyptus torquata</td>
<td>Coral Gum</td>
<td>10m</td>
<td>1, 2</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>2</td>
</tr>
<tr>
<td>Geijera parviflora</td>
<td>Wilga</td>
<td>8m</td>
<td>2, 3</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
<td>1</td>
</tr>
<tr>
<td>Hakea laurina</td>
<td>Pincushion Hakea</td>
<td>6m</td>
<td>2, 3</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
<td>1</td>
</tr>
<tr>
<td>Koeleria paniculata</td>
<td>Golden Rain Tree</td>
<td>12m</td>
<td>2</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
<td>2</td>
</tr>
<tr>
<td>Lagerstroemia indica x L. fauriei</td>
<td>Crepe Myrtle</td>
<td>8m</td>
<td>1, 2</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
<td>1</td>
</tr>
<tr>
<td>Metrosideros excelsa</td>
<td>New Zealand Christmas Tree</td>
<td>10m</td>
<td>1, 2</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
<td>2</td>
</tr>
<tr>
<td>Pistacia chinensis</td>
<td>Chinese Pistachio</td>
<td>10m</td>
<td>1, 2</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
<td>1.5</td>
</tr>
</tbody>
</table>
About Ironbark Sustainability

Ironbark Sustainability is a specialist local government consultancy that works with councils around Australia by assisting them to reduce energy and water usage through sustainable asset and data management and on-the-ground implementation.

Ironbark has been operating since 2005 and brings together decades of technical and financial analysis, maintenance and implementation experience in the areas of energy & water auditing, and public lighting technologies and management.

Ironbark provides public lighting support nationally including technology advice, technology approvals, business cases and project management. Ironbark delivers strategic and specific advice and support for the establishment of effective environmental management systems for government and business clients. We pride ourselves on supporting our clients to manage their operations more sustainably.

Our Mission

Ironbark’s mission is to facilitate progressive sustainability outcomes through practical and realistic support for councils and their communities.
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Definitions

AER……………………… Australian Energy Regulator

AS/NZS 1158 ……… Australian and New Zealand standards for lighting for roads and public spaces.

Category P……………… Pedestrian Category Roads

Category V……………… Vehicle Category Roads

CFL……………………… Compact fluorescent lamps are a fluorescent lamp designed to replace HID (High-intensity Discharge Lamps) and incandescent lamps

Colour temperature…… The measurement of light colour expressed in Kelvin (K). The lower the Kelvin rating the “warmer” or more yellow the light is. The higher the Kelvin rating the “cooler” or more blue the light is.

Control gear……………… An internal component of a street light that ignites the lamp and/or provides a regular flow of electric current to the lamp

HPS………………………… High Pressure Sodium lamp

Lamp (globe)……………… The lamp emits light and is located within the luminaire (lantern).

LED……………………… Light Emitting Diode

Luminaire………………… A device that distributes, filters or transforms the light emitted by a lamp or lamps and which includes all the items necessary for fixing and protecting these lamps.

MH………………… Metal Halide lamp

MV………………… Mercury Vapour lamp

OMR charges……………… Operation, Maintenance and Replacement service charges are charges attributed to each light, covering management and repairs or replacements dues to failures.

PE Cell………………… Photoelectric Cell. Common switching mechanism for street lighting that turns lights on at dusk when ambient light levels drop below a set point. Vice-versa for dawn.

Spacing……………… Spacing refers to the distance between two road lights

TS……………………… A new tubular fluorescent lamp providing lower energy use than most current lamps.

WDV…………………… Written Down Value. A regulated figure that relates to the book value of the existing assets. When the assets are replaced this figure must be paid out.
Summary

Moorabool Shire Council (referred to herein as Council) has engaged Ironbark Sustainability (referred to herein as Ironbark) to produce a Street Lighting Business Case update for the changeover to energy efficient lights (LED and T5), taking into account changes in costs, funding opportunities and updates to maintenance prices. This business case takes into account new LED technology and the latest billing and asset information from Council.

Council has a total of 1,950 streetlights that can be replaced with more energy efficient technologies. This consists of 1,925 non-decorative and 25 decorative streetlights. All lights are owned and managed by the distribution business Powercor. Council pays a service charge to the distributors to maintain the light and pole over its life.

These streetlights can be replaced by T5, Compact Fluorescent or LED streetlights, which reduce energy usage by 68%, 62% and 77% respectively, compared to the existing Mercury Vapour streetlights. In addition to offering lower costs, energy consumption and greenhouse emissions, 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,
- Less depreciation of the light output over time, and
- Lower glare.

Fluorescent T5, compact fluorescent and LED technologies are all viable replacement options and the choice between these technologies as well as the method of procurement is at Council discretion. The cost and greenhouse savings analysis included in this report, however, explores LED and T5 technology only, as requested in the Council’s questionnaire response.

Councils typically have the option of direct procurement from the distributor, collective procurement (regionally or through the Municipal Association of Victoria), or as an individual Council procuring to the market.

The following table summarises the different scenarios covered in this business case. The scenario which includes decorative lights has the highest cumulative net savings, Net Present Value (NPV) and greenhouse savings. However, the difference between the LED 1-year implementation scenario (only non-decorative streetlights) and the LED 1-year scenario which includes decorative lights is negligible since only 25 decorative lights have been identified that have replacement options.

Table 1: Summary of scenarios

<table>
<thead>
<tr>
<th>Scenario</th>
<th>LED (Over 1 yr)*</th>
<th>LED (Over 3 yrs)*</th>
<th>T5 (Over 1 yr)*</th>
<th>LED incl Decorative Lights (Over 1 yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cumulative Project Cost²</td>
<td>$857,901</td>
<td>$830,600</td>
<td>$547,030</td>
<td>$878,952</td>
</tr>
<tr>
<td>Cumulative Simple Net Savings</td>
<td>$2,474,057</td>
<td>$2,411,476</td>
<td>$1,608,785</td>
<td>$2,493,860</td>
</tr>
<tr>
<td>Net Present Value</td>
<td>$1,555,632</td>
<td>$1,510,884</td>
<td>$1,011,321</td>
<td>$1,564,770</td>
</tr>
<tr>
<td>Cumulative Greenhouse Savings from commencement (20 years, tCO₂ –e)</td>
<td>14,149</td>
<td>13,797</td>
<td>12,553</td>
<td>14,333</td>
</tr>
<tr>
<td>Year at which cash flow is positive</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

*Scenario excludes decorative lights

1 If on standard poles. Lights on non-standard poles can still be changed, but would require a separate project.
2 Total project cost includes materials (eg, the lights), labour (the installation), and project management. It does not include community education or Council staffing costs.
In total, the projects considered in this analysis are expected to cost between $547 thousand and $879 thousand. Net lifetime cost savings (after project costs are removed) are projected to be between $1.6 million and $2.5 million, while the project becomes cash flow positive in 8 years in almost all cases. Council has indicated that actual installation would be carried out in 2017/18. An abridged overview of the project costs and savings for the optimistic, average and pessimistic cases for the LED 1 year scenario excluding decorative lights is provided in the table below.

Table 2: Summary of LED modelling scenarios – implementation over 1 year, excluding decorative lights

<table>
<thead>
<tr>
<th></th>
<th>LED Optimistic</th>
<th>LED Average</th>
<th>LED Pessimistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cumulative Project Cost(^3)</td>
<td>$857,901</td>
<td>$857,901</td>
<td>$857,901</td>
</tr>
<tr>
<td>Cumulative Simple Net Savings</td>
<td>$3,524,048</td>
<td>$2,474,057</td>
<td>$1,650,217</td>
</tr>
<tr>
<td>Net Present Value</td>
<td>$2,253,979</td>
<td>$1,555,632</td>
<td>$1,008,745</td>
</tr>
<tr>
<td>Cumulative Greenhouse Savings from commencement (20 years, tCO(_2) –e)</td>
<td>14,149</td>
<td>14,149</td>
<td>14,149</td>
</tr>
<tr>
<td>Year at which the project is cash flow positive</td>
<td>7</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

\(^3\) Total project cost includes materials (eg, the lights), labour (the installation), and project management. It does not include community education or Council staffing costs.
2 Background to Council’s Street Lighting Assets

Council has a total of 2,069 MV streetlights in Category P (residential) streets that are owned and operated by local Distribution Network Service Provider (DNSP) Powercor. Council pays a service charge to the distributor to maintain the light and pole over its life. The following table shows the breakdown of these lights:

Table 3: Summary of Council’s full cost MV streetlight

<table>
<thead>
<tr>
<th>Current Light</th>
<th>Non-Decorative</th>
<th>Decorative</th>
<th>Total # of lights</th>
</tr>
</thead>
<tbody>
<tr>
<td>80W MV</td>
<td>1919</td>
<td>140</td>
<td>2059</td>
</tr>
<tr>
<td>125W MV</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>250W MV</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>400W MV</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1929</strong></td>
<td><strong>140</strong></td>
<td><strong>2069</strong></td>
</tr>
</tbody>
</table>

Of the lights listed above, Council has a total of 1,950 lights that can be replaced with more energy efficient technologies.

Based on a review of Council’s data, the streetlights listed below were excluded from consideration for replacement:

- 250W and 400W MV streetlights were excluded because there is currently no approved LED replacement, although this is currently being negotiated with the DNSPs.
- Of the 140 decorative lights identified, only 25 have replacement options. The rest were excluded.
- Any lights that are operated on a cost-share basis (as requested by Council).

Therefore, the summary of the lights that are the subject of this business case are:

Table 4: Streetlight lamp numbers found in Council’s project

<table>
<thead>
<tr>
<th>Current Light</th>
<th>Non-Decorative</th>
<th>Decorative</th>
<th>Total # of lights</th>
</tr>
</thead>
<tbody>
<tr>
<td>80W MV</td>
<td>1919</td>
<td>25</td>
<td>1944</td>
</tr>
<tr>
<td>125W MV</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1925</strong></td>
<td><strong>25</strong></td>
<td><strong>1950</strong></td>
</tr>
</tbody>
</table>
2.1 Mercury Vapour Technology

High Intensity Discharge (HID) street lighting makes up the majority of Australia’s current street lighting inventory. There are three common varieties of HID lamps: High Pressure Sodium (HPS), Metal Halide (MH) and Mercury Vapour (MV). Of these, Mercury Vapour is the most energy inefficient.

Energy efficient alternatives to MV technology include High Pressure Sodium for major roads and Fluorescent and LED technology for residential streets. The most common MV light is the 80-Watt Mercury Vapour street light (80W MV).

80W MV lights are the current standard for residential street lighting. In Australia they number in the hundreds of thousands. When considering that as much as 77% in energy savings can be realised for these lights, they are obvious target for replacement.

Table 5: Mercury Vapour: B2224 Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Technical Data</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>The B2224 is the most common 80W MV in Australia, having been the category P light of choice for around two decades. It is expected that B2224 make up in excess of 90% of all 80W MV streetlights. Most B2224 currently in operation will be nearing or beyond their typical life-span of 20 years.</td>
<td>Manufacturer: Sylvania</td>
<td></td>
</tr>
<tr>
<td>Lamp</td>
<td>80W MV</td>
<td></td>
</tr>
<tr>
<td>System wattage</td>
<td>96W</td>
<td></td>
</tr>
<tr>
<td>Life Span</td>
<td>20 Yrs</td>
<td></td>
</tr>
<tr>
<td>Max P5 Spacing</td>
<td>75.6m</td>
<td></td>
</tr>
<tr>
<td>Max P4 Spacing</td>
<td>54.6m</td>
<td></td>
</tr>
</tbody>
</table>

Table 6: Mercury Vapour: Suburban Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Technical Data</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>By the late 1990s the Suburban replaced the B2224 for new installations. Better light distribution and spacing was achieved. Usually 5-10% of overhead power networks have these lights in Vic. In underground powered areas they are more frequently found.</td>
<td>Manufacturer: Sylvania</td>
<td></td>
</tr>
<tr>
<td>Lamp</td>
<td>80W MV</td>
<td></td>
</tr>
<tr>
<td>System wattage</td>
<td>96W</td>
<td></td>
</tr>
<tr>
<td>Life Span</td>
<td>20 Yrs</td>
<td></td>
</tr>
<tr>
<td>Max P5 Spacing</td>
<td>81.5m</td>
<td></td>
</tr>
<tr>
<td>Max P4 Spacing</td>
<td>58.8m</td>
<td></td>
</tr>
</tbody>
</table>
### 2.2 Energy Efficient Technologies – Luminaires

Standard luminaire replacement options are limited to a select range of approved technologies. This is due to the combined effects of limited competition, stringent Australian Standards and meticulous approvals processes. Alternate luminaires are added periodically to the approved lists.

The following table provides an overview of the current “standard” energy efficient replacement options for 80-Watt Mercury Vapour street lights.

<table>
<thead>
<tr>
<th>Table 7: Compact Fluorescent specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>32W/42W Suburban Eco HE CFL</strong></td>
</tr>
<tr>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>The 32W Suburban Eco HE is currently the CFL replacement of choice in Victoria. The 42W unit is used when higher light output is desired (for high profile locations).</td>
</tr>
<tr>
<td>Lamp</td>
</tr>
<tr>
<td>System wattage</td>
</tr>
<tr>
<td>Max P5 Spacing</td>
</tr>
<tr>
<td>Max P4 Spacing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 8: T5 specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>T5</strong></td>
</tr>
<tr>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>The T5 provides an alternative (and more energy efficient) option to the CFL. There are now 3 alternative T5 products. T5’s are currently the energy efficient replacement option of choice in Victoria (around 80-90% of installations over the past few years – or 30-40,000 units).</td>
</tr>
<tr>
<td>Lamp</td>
</tr>
<tr>
<td>System wattage</td>
</tr>
<tr>
<td>Max P5 Spacing</td>
</tr>
<tr>
<td>Max P4 Spacing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 9: LED specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LED (example using the StreetLED 22W)</strong></td>
</tr>
<tr>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>LEDs are now approved for use in the Powercor, Ausnet Services, United Energy and Citipower distribution areas. There are several being considered with the StreetLED the first confirmed as approved. The StreetLED is a P Category LED which is the lowest Wattage option but also the highest cost. It has a serviceable lifespan of 20 years, including the LED chips themselves.</td>
</tr>
<tr>
<td>Lamp</td>
</tr>
<tr>
<td>System wattage</td>
</tr>
<tr>
<td>Max P5 Spacing</td>
</tr>
<tr>
<td>Max P4 Spacing</td>
</tr>
</tbody>
</table>
3 Bulk Change Business Case

The business case models costs and savings for residential street lighting energy efficiency projects, comparing:

1. Two installation scenarios for LEDs: Implementation over 1-year and implementation over 3 years.
2. Technology scenarios comparing LED, with T5 using the 1-year implementation scenario.
3. The impact of including decorative streetlights using the 1-year implementation scenario.
4. Optimistic, average and pessimistic price rise scenarios modelling the cost of replacing all lights to LED technology.
5. Cash flow graphs for the optimistic, average and pessimistic price rise scenarios

Please note that all figures are estimates based on the information provided in Appendix 1. These figures should be reviewed during any procurement process undertaken to implement the program in order to confirm outcomes. Many variables model conditions over a 20-year period and do not model actual outcomes but are the best estimates of the range of outcomes that could occur over that time period.

Refer to Appendix 2 for detailed annual cash flows of every scenario covered in this report.

Important Note

It is recommended not to choose a technology of choice until Council is ready to procure the project. Technology costs and benefits change rapidly – so the best time to choose the technology choice is just before it is purchased.

Prices for these lights change often and without notice. This business case is based on the current prices at time of writing. In the case of a multi-year program, it is important to reassess the costs and any approved comparison technologies before each phase of implementation. The cost of this assessment has not been included by Ironbark.

3.1 Environmental Implications

LED and T5 lamps are substantially more efficient than current Mercury Vapour lamps. The table below illustrates the greenhouse abatement delivered by LED and T5 lights.

<table>
<thead>
<tr>
<th>Light Type</th>
<th>Lifetime greenhouse savings (tCO₂-e)</th>
<th>Annual greenhouse savings (tCO₂-e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED</td>
<td>14,149</td>
<td>740</td>
</tr>
<tr>
<td>T5</td>
<td>12,553</td>
<td>657</td>
</tr>
</tbody>
</table>

The greenhouse savings are expected to decline the longer council delays a program. This is as a result of the overall electricity system becoming less reliant on fossil fuels over time, such that a kWh saved today will save more greenhouse emissions than a kWh saved in 3 years.
3.2 LED 1-3 year Implementation Scenarios

Based on Council’s chosen implementation period, the project’s cost, cumulative savings, NPV and greenhouse gas savings can vary.

The table and figure below summarises the implementation periods from a 1 to 3 year timeframe, comparing the average scenarios for non-decorative LED implementations (Refer to Appendix 2 for detailed cash flows).

Table 11: Summary of implementation scenarios

<table>
<thead>
<tr>
<th></th>
<th>LED 1 year</th>
<th>LED 3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Cumulative Project Cost</strong></td>
<td>$857,901</td>
<td>$830,600</td>
</tr>
<tr>
<td><strong>Cumulative Simple Net Savings</strong></td>
<td>$2,474,057</td>
<td>$2,411,476</td>
</tr>
<tr>
<td><strong>Net Present Value</strong></td>
<td>$1,555,632</td>
<td>$1,510,884</td>
</tr>
<tr>
<td><strong>Cumulative Greenhouse Savings from commencement (20 years, tCO₂-e)</strong></td>
<td>14,149</td>
<td>13,797</td>
</tr>
<tr>
<td><strong>Year at which the project is cash flow positive</strong></td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

Figure 1: Cumulative cash flows of implementation scenarios

![Simple Cumulative Cashflow](image-url)
3.3 Technology scenarios

At the request of Council, we have included the T5 option in the business case analysis. However, given the advancement in LED technology, the price of LEDs is rapidly decreasing and is becoming more and more affordable. As shown below, although T5 has a lower cost than LED, the cumulative net savings is around 50% more for LED and the greenhouse savings is approximately 10% more.

Hence, it would make sense for Council to adopt LED technology instead of T5. The table and figure below summarise the differences between the average scenarios for T5s and LEDs with a 1-year implementation period.

<table>
<thead>
<tr>
<th></th>
<th>T5</th>
<th>LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cumulative Project Cost</td>
<td>$547,030</td>
<td>$857,901</td>
</tr>
<tr>
<td>Cumulative Simple Net Savings</td>
<td>$1,608,785</td>
<td>$2,474,057</td>
</tr>
<tr>
<td>Net Present Value</td>
<td>$1,011,321</td>
<td>$1,555,632</td>
</tr>
<tr>
<td>Cumulative Greenhouse Savings from commencement (20 years, tCO₂ –e)</td>
<td>12,553</td>
<td>14,149</td>
</tr>
<tr>
<td>Year at which the project is cash flow positive</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

Figure 2: Cumulative cash flows of technology scenarios with a 1 year implementation period
3.4 Including Decorative Streetlights in Changeover

This section shows the difference between a 1 year implementation scenario changing only standard streetlights versus a scenario which includes the changeover of decorative streetlights, based on an average cost scenario. Given that only 25 of the 140 decorative 80MV streetlights identified have replacement options, the additional savings are insignificant, as shown in the following table and figure.

Table 13: Summary of standard lights versus additional decorative lights (1 year implementation period, LED lights)

<table>
<thead>
<tr>
<th></th>
<th>Only Standard Lights</th>
<th>Including Decorative Lights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cumulative Project Cost</td>
<td>$857,901</td>
<td>$878,952</td>
</tr>
<tr>
<td>Cumulative Simple Net Savings</td>
<td>$2,474,057</td>
<td>$2,493,860</td>
</tr>
<tr>
<td>Net Present Value</td>
<td>$1,555,632</td>
<td>$1,564,770</td>
</tr>
<tr>
<td>Cumulative Greenhouse Savings from commencement (20 years, tCO₂-e)</td>
<td>14,149</td>
<td>14,333</td>
</tr>
<tr>
<td>Year at which the project is cash flow positive</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

Figure 3: Cumulative cash flow of standard lights vs additional decorative lights (1 year implementation)
3.5 LED Implementation Outcomes

In order to better understand the costs and savings for a choice of LED lighting we have modelled several scenarios for LED implementations. These are discussed further below.

3.5.1 LED Scenario modelling

Depending on variables such as the rate of energy price increases, and increase in OMR charges, the savings of the LED option will vary.

This section considers a range of outcomes when choosing LED street lights to demonstrate to Council the possible range of outcomes from the project. There are nearly endless scenarios you could apply, however to keep it simple we have specifically modelled three distinct scenarios:

1. Optimistic
2. Average
3. Pessimistic

The variables considered and the differences in each scenario are summarised in Table 8 below.

Table 8: Implementation scenarios

<table>
<thead>
<tr>
<th>Variable</th>
<th>Optimistic</th>
<th>Average</th>
<th>Pessimistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance price rises</td>
<td>6%</td>
<td>3%</td>
<td>0%</td>
</tr>
<tr>
<td>Energy price rises</td>
<td>High</td>
<td>Average</td>
<td>Low</td>
</tr>
<tr>
<td>Technology choice</td>
<td>LED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual LED OMR costs above</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>pricing offer</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 9 below summarises the overall outcomes from the three modelled LED scenarios. Note that the project cost and greenhouse savings are the same for all scenarios and the implementation timeframe used is 1 year. Only standard non-decorative lights are considered in the following analysis.

Table 9: LED replacement 1 year implementation using different scenarios (excluding decoratives)

<table>
<thead>
<tr>
<th></th>
<th>LED Optimistic</th>
<th>LED Average</th>
<th>LED Pessimistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cumulative Project Cost</td>
<td>$857,901</td>
<td>$857,901</td>
<td>$857,901</td>
</tr>
<tr>
<td>Cumulative Simple Net Savings</td>
<td>$3,524,048</td>
<td>$2,474,057</td>
<td>$1,650,217</td>
</tr>
<tr>
<td>Net Present Value</td>
<td>$2,253,979</td>
<td>$1,555,632</td>
<td>$916,300</td>
</tr>
<tr>
<td>Cumulative Greenhouse Savings</td>
<td>14,149</td>
<td>14,149</td>
<td>14,149</td>
</tr>
<tr>
<td>from commencement (20 years, tCO₂-e)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year at which the project is</td>
<td>7</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>cash flow positive</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

4 Energy price rises detailed in Appendix 1.
5 Total project includes materials (eg, the lights), labour (the installation), and project management. It does not include community education or Council staffing costs.
3.5.2 **Cash Flow Analysis**

In order to get a sense of the cash flows for the project we have prepared the following graph of an LED bulk change for optimistic, average and pessimistic scenarios for the project using the 1-year implementation scenario.

The following graph illustrates the cumulative cash flow of the different project options (using the simple savings model). The far-left dip in the graph represents the initial capital outlay. Maintenance and energy savings for each subsequent year results in a gradual erosion of the initial capital outlay until cash flow is positive. After this point “profit” is accumulated.

**Figure 4: LED scenario cash flows (1 year implementation period)**

![Simple Cumulative Cashflow](image)

- **Optimistic**
- **Average**
- **Pessimistic**
4 Social Implications

The energy efficient options all perform comparably under a range of social criteria. All are a significant improvement on the existing 80W Mercury Vapour lamps, particularly in terms of evenness of light spread and reduced mercury content.

Many are manufactured in Australia and are Australian owned technologies.

**Safety and amenity for pedestrians and cyclists**

Generally, it is undesirable to light residential streets above the minimum required standard. Doing so creates unnecessary cost and greenhouse emissions. In many areas, residents have a preference for low levels of lighting.

However, in some areas, higher levels of lighting may be desirable to encourage walking, cycling and use of public transport. In areas where there are concerns about safety at night, it may improve perceptions of safety and residential amenity to exceed the Australian Standards for lighting levels. Council may also have specific policy objectives (such as pedestrian connectivity between transport nodes and shopping centres) that can be supported with higher levels of light in strategic locations.

Extra lights or higher wattage lights incur extra cost to purchase and to operate. Because consultation has not yet been undertaken to determine priority areas, Ironbark cannot accurately estimate the cost implications of this approach. However, it is very likely that the cost of these brighter lights would be insignificant in the context of the wider changeover with significant opportunity to take advantage of improved social outcomes.

This can be planned for in the standard bulk replacement program.

**Public Awareness**

The majority of residents and visitors are unlikely to notice the outcomes of an energy efficient street lighting upgrade scheme. Complaints for LED installations are low as there is minimal light spill with these fittings so it would be very unusual to have to install glare shields.

However, it is recommended that during the bulk replacement program a communication process for dealing with any glare issues is implemented.

Council may deem it appropriate to provide communications about the program to residents via mailouts, local newspapers, the web and other media outlets. This will raise Council’s position as a leading player in the promotion of energy efficient practices in the community.
5 Project Procurement

Councils are generally required by Local Government Act Section 186 to tender any projects of this scale. However, distributors have sometimes indicated concern about the risk implications of allowing contractors not under their direct supervision to undertake works on and around their assets. Some have been vocally opposed to contestability. This position runs contrary to the Australian Energy Regulator’s advice that “The upfront installation cost of a luminaire is negotiable between distributors and public lighting customers. Customers can obtain these services from a party other than the distributor and therefore the AER does not assess a charge for the initial installation cost of a luminaire.”

In the course of Ironbark’s work with 68 councils around Victoria and with all distribution businesses, the distributors have clarified their approach to councils tendering for implementation of luminaire changeover programs.

MAV Procurement

Councils can now access a contestable procurement process through the MAV street lighting support program. The procurement process and options described above provide a simplified summary of a complicated set of strategic and business decisions. To assist councils in managing the complex procurement landscape associated with the transition to energy efficient street lighting, MAV (Municipal Association of Victoria) Procurement, working in partnership with Ironbark Sustainability, offers procurement services to any councils seeking assistance with this process.

In facilitating the procurement process on behalf of councils, MAV Procurement and Ironbark seek to achieve better financial outcomes for members by leveraging economies of scale and a streamlined and efficient process, while simplifying the resource requirements and ensuring full compliance with the Act.

Powercor

Current process
The approach through which Ironbark currently works with councils and Powercor is as follows:

- Council prepares all documentation and design work for the program (allow 3-6 months);
- Council requests Powercor to tender the project management and installation works on Council’s behalf;
- Council separately tenders for the supply of all materials for the project;
- Powercor prepares tender documentation to its satisfaction and to Council’s requirements, and runs the tender process, including providing a tender evaluation
- Council selects the contractor and supplier/s;
- Powercor engages the contractor and comprehensively manages their performance during implementation
- Council manages the assets purchase and delivery.

For providing these services, Powercor will charge a fee. The costs within this business case are indicative of Powercor expected costs as provided to the other Powercor councils.

However, the costs supplied by Powercor for this service seem reasonable, and it is much simpler for Council to engage Powercor for this work.

It is recommended that Council purchase the lights as this avoids a Powercor overall project management surcharge for this part of the project.

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By undertaking a process such as this other councils in Powercor’s area have been able to deliver savings of around 20% of total budget as compared to simply accepting the standard Powercor offer.

If Council would like to pursue this model, please contact Ironbark first to discuss in further detail.

**Future processes**

It is possible, that as the requirements of the Local Government Act are clarified that Powercor will be required to have a more contestable approach. If this was the case then it would be expected that the procurement process would be similar to that in other distribution areas (specifically SP Ausnet and United Energy) where councils can independently tender for the installation and project management of the changeover.

### 6 External funding

Over the last 5 years, there have been a range of funding and financing opportunities available for street lighting projects and Ironbark has been assisting councils with these options. Many of these are no longer running (such as the Community Energy Efficiency Program (CEEP)) or funding was cancelled by the government (such as the Green Light Plan). One avenue that may be available to council is the Federal Government’s Emissions Reduction Fund (ERF).

**Emissions Reduction Fund (ERF)**

- **Funding type:** Reverse-auction carbon abatement scheme
- **Funding Amount:** Depends on auction process and bid (the average price for the first auction in April 2014 was $13.95 per tonne of greenhouse emissions)
- **Amount per Council:** Limited by emission reductions
- **Jurisdiction:** Australia
- **Availability:** from 2015
- **Information:**

  Often referred to as the “centerpiece” of the Federal Government’s Direct Action Plan, the Emissions Reduction Fund (ERF) is a fund dedicated to the purchase of carbon emissions reductions from a wide range of sources. The ERF is underpinned by a series of “reverse auctions” where the Clean Energy Regulator (CER) will purchase emissions reductions from businesses, land owners and other organisations at the lowest available cost.

  It is not direct energy efficiency funding. Councils could submit a street lighting project, along with analysis, data, plans and the level of abatement expected to achieve. If successful in this reverse auction, then Council would receive payment for this abatement.

  In many ways this is similar to “white certificate schemes” such as VEET. The scheme will favour lowest cost of abatement projects so bigger projects with economies of scale and lower transaction costs will be more attractive. Street lighting project are covered by one of the approved methodologies, however the project must also satisfy a range of “additionality” criteria. This means the project must be “new” (the project has not begun or project implementation has not yet begun); it cannot be something that a council is legally obliged to undertake; and it cannot be part of another government program such as the NSW Energy Savings Scheme (ESS) or Victorian Energy Efficiency Target (VEET). Finally, the Government has set a minimum bid size of 2,000 tonnes of CO2-e per year over the life of the contract.
Ironbark has developed a free Emissions Reduction Fund (ERF) Guide for Australian Councils as well as the ERF Street Lighting Calculation Tool where you can type in an estimate of the “reverse auction” bid price that Council could bid in an upcoming ERF auction. The tool will then calculate the potential funding.

**CEFC and Other Financing**

The Clean Energy Finance Corporation (CEFC) is a financing mechanism for energy efficiency projects. It has been in operation since 2012 and provides financing to businesses and councils for energy efficiency projects. Energy efficient street lighting projects have been approved by the CEFC over the past 4 years. The CEFC has also partnered with larger lending institutions and banks who indicated that they are ready to provide finance for these types of projects because of the guaranteed energy savings and relatively low risk profile.

### 7 Recommended Next Steps

Based on the information provided within this preliminary business case and Ironbark’s experience with bulk changes in Victoria, the following steps are recommended to progress the bulk change further:

1. **Prepare financial analysis** *(complete)*
   a. Develop clear business case.
   b. Present business case to Council to gauge interest in the program. This can also be the right time to check timeframes for the roll out.

2. **Apply for funding and or financing** *(complete)*
   a. Investigate all internal and external avenues.

3. **Define Council’s requirements for the program**
   a. Develop Lighting Design Plan to drive the bulk change.
   b. Consult around the requirements for the new lights (in particular around safety and the treatment of public transport).
   c. Assess current lighting treatment within this context and compile the final design and specification for Council’s required replacement program.

4. **Procure the bulk change**
   a. Consider options for procurement including tendering or direct engagement with the relevant distribution authority (taking into consideration the Local Government Act and the best cost solution).
   b. Procure based on this consideration.

5. **Manage the bulk change**
   a. Ensure clear communication during the bulk change program occurs including consideration of media, complaints, timelines, variations, invoicing and incident provisions.
   b. Post-project follow-up.

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7 The ERF Guide for Australian Councils is available at [http://goo.gl/gFY3vN](http://goo.gl/gFY3vN) and the ERF Street Lighting Calculation Tool available from [http://goo.gl/CikSHR](http://goo.gl/CikSHR)

8 See for example [http://goo.gl/A3fny4](http://goo.gl/A3fny4)
Appendix 1: Assumptions for Modelling

Assumptions – Energy Price Projections

As with any long-term economic projections, the modelling of energy price increases over the next two to four decades is difficult. Any number and combination of factors can render projections obsolete within a number of years, if not months.

Ironbark relies on relatively conservative price modelling. The sources of information used in this business case are as follows:

- Energy Price increases from 2015 to 2022 are based on the data on page 5-29 Australian Energy Market Operator’s (AEMO) 2013 Economic outlook information paper.
- Energy Price increases from 2023 onwards are based on the data provided on Page 123 Australian Government 2011, Strong Growth, Low Pollution: Modelling a Carbon Price

Price increases can be based upon low energy price rise (conservative) or the high price in the model above. An average of the two is also used. The initial electricity price is based on invoice data provided by councils.

Technology Power Consumption

The true power consumption wattage of a light is different to the nominal lamp rating. For example an 80W MV has a power consumption of 95.8 Watts. All data is sourced from the AEMO Public Lighting Load Table, except LED where an estimate has been used based on manufacturer data.

Table 14: Technology Power Consumption (for your reference)

<table>
<thead>
<tr>
<th>Light</th>
<th>Wattage</th>
<th>% less than 80W MV</th>
<th>% less than T5</th>
</tr>
</thead>
<tbody>
<tr>
<td>2x14W T5</td>
<td>30.2</td>
<td>68%</td>
<td>0%</td>
</tr>
<tr>
<td>22W LED</td>
<td>22.0 Approx.</td>
<td>77%</td>
<td>28%</td>
</tr>
<tr>
<td>32W CFL</td>
<td>36.6</td>
<td>62%</td>
<td>21% higher</td>
</tr>
<tr>
<td>80W MV</td>
<td>95.8</td>
<td>0%</td>
<td>314% higher</td>
</tr>
</tbody>
</table>

Assumptions – Other

- OMR (maintenance) prices are for 2015 as stipulated in the 2015 Public Lighting Charges Schedule.
- All savings and cost figures are GST exclusive.
- Capital costs (hardware) are based on MAV hardware tender “SL9311(R1) Energy Efficient Street Lighting Hardware” using the prices as of December 2014 for 1,000 – 5,000 units. This information is commercial in confidence. Council may have access to these numbers if they are party to the panel.
- Capital costs (installation) are based on Ironbark’s involvement in public tenders for installation throughout Victoria, projects where councils have tendered directly through distribution businesses, and discussions with relevant stakeholders in the sector (for example, councils, installers, distribution businesses, the Public Lighting Approvals Network or PLAN). This information is commercial in confidence.
- Total project costs include materials (e.g. the lights), labour (the installation), project management, potential expertise and/or consultants. It does not include community education or Council staffing costs.
- Operating hours of lights are averaged out to 11.94 hrs per day in Vic.
- Emission factor is 1.26 kg CO2-e per kWh.
- The energy price is calculated at 12.7c per kWh for 2015. It is modelled to drop slightly every year between 2015 and 2022, and then increase steadily from then on.
- For energy costs (from Council billing data) we include all of the per/kWh costs, which is what will change once the project is implemented.
- NPV Discount Rate is 3% (based on 10 Yr Australian Government Bond Rate).
- Written Down Value and Avoided Costs are regulated values.
Appendix 2: Cash Flow Numbers

The following tables provide cash flow data for all the scenarios in this study. Note that all variations are compared against this scenario: LED implementation over 1 year (average case).

LED IMPLEMENTATION SCENARIOS

Table 15: LED Implementation over 1 year

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual OMR Cost Savings</th>
<th>Annual Energy Cost Savings</th>
<th>Council Project Cost</th>
<th>Annual Net Cash Flow</th>
<th>Cumulative Project Cash Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>2016</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>2017</td>
<td>$57.69</td>
<td>$77.86</td>
<td>$857.90</td>
<td>-$722.35</td>
<td>-$722.35</td>
</tr>
<tr>
<td>2018</td>
<td>$59.42</td>
<td>$77.32</td>
<td>$0.00</td>
<td>$136.74</td>
<td>-$585.62</td>
</tr>
<tr>
<td>2019</td>
<td>$61.20</td>
<td>$76.77</td>
<td>$0.00</td>
<td>$137.98</td>
<td>-$447.64</td>
</tr>
<tr>
<td>2020</td>
<td>$63.04</td>
<td>$76.24</td>
<td>$0.00</td>
<td>$139.28</td>
<td>-$308.36</td>
</tr>
<tr>
<td>2021</td>
<td>$64.93</td>
<td>$75.70</td>
<td>$0.00</td>
<td>$140.63</td>
<td>-$167.73</td>
</tr>
<tr>
<td>2022</td>
<td>$66.88</td>
<td>$75.17</td>
<td>$0.00</td>
<td>$142.05</td>
<td>-$25.68</td>
</tr>
<tr>
<td>2023</td>
<td>$68.88</td>
<td>$74.27</td>
<td>$0.00</td>
<td>$148.15</td>
<td>$122.47</td>
</tr>
<tr>
<td>2024</td>
<td>$70.95</td>
<td>$83.59</td>
<td>$0.00</td>
<td>$154.54</td>
<td>$277.01</td>
</tr>
<tr>
<td>2025</td>
<td>$73.08</td>
<td>$88.15</td>
<td>$0.00</td>
<td>$161.22</td>
<td>$438.24</td>
</tr>
<tr>
<td>2026</td>
<td>$75.27</td>
<td>$92.95</td>
<td>$0.00</td>
<td>$168.22</td>
<td>$606.46</td>
</tr>
<tr>
<td>2027</td>
<td>$77.53</td>
<td>$98.01</td>
<td>$0.00</td>
<td>$175.54</td>
<td>$782.00</td>
</tr>
<tr>
<td>2028</td>
<td>$79.85</td>
<td>$103.36</td>
<td>$0.00</td>
<td>$183.21</td>
<td>$965.21</td>
</tr>
<tr>
<td>2029</td>
<td>$82.25</td>
<td>$108.99</td>
<td>$0.00</td>
<td>$191.24</td>
<td>$1,156.45</td>
</tr>
<tr>
<td>2030</td>
<td>$84.72</td>
<td>$114.93</td>
<td>$0.00</td>
<td>$199.65</td>
<td>$1,356.10</td>
</tr>
<tr>
<td>2031</td>
<td>$87.26</td>
<td>$121.19</td>
<td>$0.00</td>
<td>$208.45</td>
<td>$1,564.55</td>
</tr>
<tr>
<td>2032</td>
<td>$89.88</td>
<td>$127.80</td>
<td>$0.00</td>
<td>$217.67</td>
<td>$1,782.22</td>
</tr>
<tr>
<td>2033</td>
<td>$92.57</td>
<td>$131.44</td>
<td>$0.00</td>
<td>$224.02</td>
<td>$2,006.24</td>
</tr>
<tr>
<td>2034</td>
<td>$95.35</td>
<td>$135.20</td>
<td>$0.00</td>
<td>$230.55</td>
<td>$2,236.79</td>
</tr>
<tr>
<td>2035</td>
<td>$98.21</td>
<td>$139.06</td>
<td>$0.00</td>
<td>$237.27</td>
<td>$2,474.06</td>
</tr>
<tr>
<td>Total</td>
<td>$1,449</td>
<td>$1,883</td>
<td>$858</td>
<td>$2,474</td>
<td></td>
</tr>
</tbody>
</table>

Table 16: LED implementation over 3 years

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual OMR Cost Savings</th>
<th>Annual Energy Cost Savings</th>
<th>Council Project Cost</th>
<th>Annual Net Cash Flow</th>
<th>Cumulative Project Cash Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>2016</td>
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# Including Decorative Streetlights in Changeover

## Table 18: Including additional decorative streetlights

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## LED Scenario Modelling

The following are based on the 1 year implementation scenario. Refer to Table 15 for the average case.

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ATTACHMENT 5.1; Draft Moorabool Sustainable Environment Strategy
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Executive Summary

Moorabool Shire contain some of Victoria’s best environmental assets including the Long Forest Nature Conservation Reserve, Brisbane Ranges National Park and the Lerderderg State Park. In addition to these large reserves, within the municipality there are smaller areas of significant remnant vegetation and species, streetscapes and roadsides, forested mountains, rural valleys and waterways.

Council has a role in maintaining these significant and valued areas for the community and encouraging the community to experience these places. This occurs through Council directly managing its own land, influencing private land management through its planning responsibilities, and partnering with other public land managers.

Much of the work undertaken by Council, Landcare and other land owners focuses on the threats to our local environmental and agricultural assets. These include: weed invasion; declining water quality; urban development; urban stormwater; climate change; and bushfire.

By understanding what the threats are and what the community values, Council is able to make better decisions that strengthen our environment. A healthy environment provides an enormous range of benefits to the community. Some of these benefits are economic and are linked to our productive agricultural sector. There are also social and cultural benefits that encourage physical activity; allow for social interaction; and create a stronger community identity.

The Moorabool Sustainable Environment Strategy (MSES) aims to provide a framework for environmental program planning and decision making for the next ten years. To achieve this the MSES is organised into the following four strategic directions, which arose through the Strategy consultation process:

1. ENVIRONMENTAL STEWARDSHIP
2. SUSTAINABLE COUNCIL
3. SUSTAINABLE BUILT ENVIRONMENT
4. LIVE AND WORK SUSTAINABLY

This draft Environment Strategy aligns with Council’s other high level strategies and sets the direction for Council’s diverse range of activities and services.
1 INTRODUCTION

Protecting the natural environment and reducing our environmental impacts can only be achieved through partnership. The Strategy’s success depends on the combined efforts of the region’s many local conservation and sustainability groups, households, businesses, industry and other government and non-government organisations. The intent of the Strategy is to support, complement and promote these efforts.

The Moorabool Shire Sustainable Environment Strategy sets the framework for Council to work towards improving the natural environment and community resilience through to 2041. It is the guiding document for Council planning, decision-making and activities that impact on the Moorabool Shire environment.

The natural environment in Moorabool Shire provides the foundation for diverse social, cultural and economic values. Council recognises the intrinsic value of the natural environment in Moorabool Shire and thus the importance of taking a considered management approach. This is particularly important in the context of climate change, population growth and land use changes.

Moorabool Shire Council has a history of environmental planning and management, developing its first Environment Policy in 2004. This Strategy is the next iteration and builds on existing work by Council, State Government agencies and the community. It is the result of an extensive process of research and consultation to develop a shared vision that will guide Council’s work. Research included an examination of Council’s previous efforts and a review of the trends and issues influencing Moorabool Shire’s future.

This Strategy sets directions to work with other agencies and stakeholders to ensure the protection and enhancement of the natural environment. Council recognises that protecting the natural environment and making the built environment more liveable is important to enhancing community wellbeing and resilience.

The Strategy has been developed in consideration of the Council Plan 2013 - 17, and will assist to achieve the overall vision of “vibrant and resilient communities”. The Strategy is also supported by other Council documents such as the Integrated Planning Framework, Urban Growth Strategy, Rural Growth Strategy and Waste Strategy.

The Strategy is organised into the following four strategic directions, which arose through the Strategy consultation process:

5. ENVIRONMENTAL STEWARDSHIP
6. SUSTAINABLE COUNCIL
7. SUSTAINABLE BUILT ENVIRONMENT
8. LIVE AND WORK SUSTAINABLY

Within each of these themes a number of priority areas are identified for Council action. The activities that Council will undertake within each of the priority areas are identified in the Implementation Plan. The Implementation Plan should therefore be read in conjunction with this Strategy. The Implementation Plan will be reviewed after five years, and a new Implementation Plan developed for the period.

The Strategy acknowledges that Council can only have direct control over some issues, for example its own resource efficiency. It can indirectly influence other issues where it’s partners share or have greater responsibility, and there are some issues it cannot influence and so can only take an advocacy role. As such the actions in the Implementation Plan are identified as Control, Influence, or Advocacy actions.
1.1 Strategy Vision

*Moorabool Shire Council* will work in partnership to ensure healthy ecosystems, productive landscapes, sustainable communities and the capacity to adapt to future environmental challenges.

The Strategy assists in delivering a number of the strategic objectives identified within the Moorabool Shire Council Plan 2013-17 (Table 1).

**Table 1. Strategic objectives identified for key result areas in the Moorabool Shire Council Plan 2013-17 that are relevant to the Sustainable Environment Strategy**

<table>
<thead>
<tr>
<th>Key Results Areas</th>
<th>Strategic objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Wellbeing</td>
<td>Community self-reliance and resilience.</td>
</tr>
</tbody>
</table>
| Enhanced Infrastructure and Natural and Built Environment | Effective and integrated strategic planning in place to create sustainable communities.  
Ensure current and future infrastructure meets the needs of the community.  
Enhance and protect the long-term integrity and biodiversity of the natural environment.  
Promote and enhance places of heritage, landscape and environmental significance.  
Effective and efficient land use planning and building controls. |
1.2 Purpose of the Strategy

The purpose of this Strategy is to demonstrate how Council will work over the next ten years to protect and enhance the environment for 2041. It also considers the interaction between community well-being and the natural environment, with a focus on the sustainability of the built environment and community resilience.

The Strategy is the key document for guiding Council planning, decision-making and activities that impact on the natural environment and sustainability in the Moorabool Shire.

1.3 Strategy development

1.3.1 Scope & implementation

The Strategy considers the natural values and assets of the Shire, the threats to these values and the actions Council can take to protect and enhance the natural environment (both directly and by working with others). The Strategy also sets directions and priorities to ensure community wellbeing and resilience through making the built environment more liveable and protecting the natural environment.

The Strategy will be one of the main guiding documents for other Council plans and strategies. Figure 1 shows where the Strategy fits with other council policies, plans and strategies. Waste is a key issue that Council manages for its community. Waste issues are not covered in this document as they have been recently addressed through the Moorabool Shire Waste Strategy.

The Environment Unit at Moorabool Shire will drive implementation of this Strategy as outlined in the Implementation Plan, however many of the actions will be the responsibility of other areas of Council. Indeed, the success of the Strategy will depend on the contribution of all areas of Council as part of a whole-of-Council approach to sustainability.

There will be a mid-term review of the Strategy after five years (2021) to determine progress against measurable targets and desired outcomes and to identify areas for improvement and adaptation. This review will coincide with a review of the first Implementation Plan 2016 - 21 and the development of a new Implementation Plan for the period 2021 - 26.

Review of the Strategy will be completed in 2021 and 2031 to ensure that it is still in alignment with Council and community expectations and State and Federal legislation.
Consultation was undertaken with community, agency stakeholders, and Council staff. This ensured that the strategy has been developed within a local context, and is relevant and practical.
Consultation activities included a stakeholder and Council staff workshop, stakeholder and staff interviews, a community workshop at Gordon, a Moorabool 2041 listening post in Bacchus Marsh, two workshops with the Moorabool Landcare Advisory Committee at Ballan and a meeting of the Moorabool Environment Group committee.

1.3.3 Policy and legislative context

State and federal government policies related to the natural environment, agriculture, economy, urban growth, transport and tourism are likely to have the most impact on the future of the local environment.

Victoria has more than 25 pieces of legislation and over 30 strategies that relate to environmental management. In addition, there are a large number of applicable federal laws (in particular the Environment Protection and Biodiversity Conservation Act 1999) and programs as well as international frameworks and conventions to consider. The main Victorian environmental legislative and planning instruments include:

- Environment Protection Act 1970 and subordinate (State Environment Protection Policies)
- Environmental Protection and Biodiversity Conservation (EPBC) Act 1999
- Victorian Local Government Act 1989
- Victorian Flora and Fauna Guarantee Act 1988
- Victorian Catchment and Land Protection Act 1994
- Climate Change and Environment Protection Amendment Act 2012 and Victorian Climate Change Adaptation Plan 2013
- Pollution of Waters by Oils and Noxious Substances Act 1986
- Planning and Environment Act 1987 and Planning and Environment Amendment (General) Act 2013
- Victorian Waste and Resource Recovery Policy 2014
- Invasive Plants and Animals Policy Framework

A more detailed overview of relevant policy and legislation is provided in Appendix 1.

There are also local plans and strategies that have relevance to this Strategy and include:

- Regional Catchment Strategies (RCS) for the Corangamite and Port Phillip and Westernport CMA regions. These RCS were released in early 2013 and identify each region’s key assets and threats and set priorities for environmental investment.
- Melbourne Water’s Healthy Waterways Strategy. This Strategy outlines the role that Melbourne Water will play in managing these waterways to improve waterway health over the next five years.
- Corangamite Waterway Strategy 2014-2022, which provides a new plan for managing the region’s waterways for the next eight years.
- Grow West Implementation Plan 2013, which outlines the process of revegetating land in the Bacchus Marsh to Ballan area to create biolinks between the Brisbane Ranges National Park, Lerderderg State Park and Werribee Gorge State Park.
- Western Alliance for Greenhouse Action (WAGA) (2012), *Climate Change Adaptation Strategy 2013-2020*, which assesses the risks to the region west of Melbourne (including Moorabool) of climate change impacts and proposes strategies to prepare and adapt to them.

- Western Alliance for Greenhouse Action (WAGA) (2014), *Low Carbon West: A Strategy for a Transition to a Low Carbon Economy in the WAGA Region*, which assesses the greenhouse emissions of the region west of Melbourne (including Moorabool) and provides a strategy to reduce emissions by 2020.

Environmental policy and associated funding opportunities are impacted by changes occurring at all levels of government. This Strategy will be flexible in responding to, and accommodating, these changes.

### 1.3.4 Significant stakeholders

Effective implementation of the Strategy will require a partnership between Council and other natural resource management organisations and groups, as well as the broader community. Table 2 identifies the main stakeholders that Council will work with in delivering this Strategy.

**Table 2. Main stakeholders Council will work with in delivering the Sustainable Environment Strategy**

<table>
<thead>
<tr>
<th>Stakeholder group</th>
<th>Stakeholder name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Catchment Management Authorities</td>
<td>Corangamite Catchment Management Authority (CCMA)</td>
</tr>
<tr>
<td></td>
<td>Port Phillip and Westernport Catchment Management Authority (PPWCMA)</td>
</tr>
<tr>
<td></td>
<td>North Central Catchment Management Authority (NCCMA)</td>
</tr>
<tr>
<td>2 Government departments and agencies</td>
<td>Department of Environment, Land, Water and Planning (DELWP)¹</td>
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<tr>
<td></td>
<td>Parks Victoria</td>
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<tr>
<td></td>
<td>Environment Protection Agency</td>
</tr>
<tr>
<td></td>
<td>VicRoads</td>
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<tr>
<td></td>
<td>VicRail</td>
</tr>
<tr>
<td></td>
<td>VicTrack</td>
</tr>
<tr>
<td></td>
<td>Sustainability Victoria</td>
</tr>
<tr>
<td>3 Water authorities</td>
<td>Melbourne Water</td>
</tr>
<tr>
<td></td>
<td>Central Highlands Water</td>
</tr>
<tr>
<td></td>
<td>Barwon Water</td>
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<td></td>
<td>Goulburn Murray Water</td>
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<tr>
<td></td>
<td>Southern Rural Water</td>
</tr>
<tr>
<td></td>
<td>Western Water</td>
</tr>
<tr>
<td>4 Indigenous community</td>
<td>Dja Dja Wurrung Clans Aboriginal Corporation</td>
</tr>
<tr>
<td></td>
<td>Wathaurung Aboriginal Corporation</td>
</tr>
<tr>
<td></td>
<td>Wurundjeri Tribe Land and Compensation Cultural Heritage Council</td>
</tr>
<tr>
<td>5 Community-based groups and organisations</td>
<td>Moorabool Landcare Advisory Committee</td>
</tr>
<tr>
<td></td>
<td>Moorabool Environment Group</td>
</tr>
<tr>
<td></td>
<td>Moorabool Landcare Catchment Network</td>
</tr>
<tr>
<td></td>
<td>Landcare groups</td>
</tr>
</tbody>
</table>

¹ Formerly the Department of Environment and Primary Industries (DEPI)
<table>
<thead>
<tr>
<th>Stakeholder group</th>
<th>Stakeholder name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Community and Friends Of Groups</td>
</tr>
<tr>
<td></td>
<td>Victorian Farmers Federation</td>
</tr>
<tr>
<td></td>
<td>Country Fire Authority</td>
</tr>
<tr>
<td></td>
<td>Community Garden groups</td>
</tr>
<tr>
<td>6 Community &amp; Business</td>
<td>Residents</td>
</tr>
<tr>
<td></td>
<td>Small to large businesses</td>
</tr>
</tbody>
</table>
2  COUNCIL’S ROLES AND RESPONSIBILITIES

2.1 Sphere of influence

Council’s ability to directly control or influence environmental and sustainability outcomes varies. In some cases Council has direct accountability, or control over an issue. In other cases Council may have limited ability to directly control or positively change a situation. This varying ability to control, influence or advocate for a situation or issue is referred to as Council’s “sphere of influence” and is demonstrated in Figure 3.

In developing the Environment Strategy, actions have been identified that reflect where Council can control, influence and advocate for positive action for the natural environment within the Shire.

Control

Council has direct responsibility for (or control over) a range of activities relating to the management of the natural environment. Activities within Council’s sphere of control include developing and implementing planning policy (in alignment with State Planning Policy), ensuring sustainable development in the Shire, managing Council reserves in a way that protects and enhances biodiversity values, undertaking community education and delivering support to specific environmental programs that will protect and enhance environmental assets.
Influence

In many cases, direct responsibility for the use and management of the natural environment sits with State and Federal agencies and organisations. Organisations such as the Department of Environment, Land, Water and Planning (DELWP), the Catchment Management Authorities (CMAs), Melbourne Water, Parks Victoria and VicRoads have primary responsibility for administering environmental legislation, developing strategies and plans and managing large areas of land with high environmental significance within the Shire. In these cases, Council has an important role in influencing all relevant National, State, regional, local and non-government agencies to achieve the best environmental outcomes for Moorabool Shire.

Council can influence sustainable land management through developing and administering planning policy that seeks to protect the Shire’s natural environment, such as managing development near waterways and vegetation management controls. Council can also influence land management practices of private land managers such as assisting landowners to develop and implement land and farm management plans.

Advocate

Council can also play the role of advocate. This includes sharing information about and promoting the programs of other government organisations and community groups, for example CMAs, Melbourne Water and Landcare to the general community. Collaboration and coordination with other stakeholders can increase the reach of these programs. Council can offer resource efficiencies and through combined effort can result in outcomes that contribute to the vision of this Strategy, and those of other organisations and groups and the needs of the community. Council can also advocate to State Government agencies for increased funding and on ground action that lead to improved outcomes for the local community.

2.1.1 Tools and resources available to achieve desired outcomes

Council has a range of tools and resources to achieve its desired outcomes in environmental management, these include:

- Moorabool Shire Council Plan 2013 – 2017 (Revised 2014)
- Various State, regional and Council strategic plans, management plans and policies
- Planning and Environment Act 1987
- The Moorabool Planning Scheme
- The ability to source and provide resources and funds
- Skilled staff to prepare and implement suitable projects and programs
- Leading by example in its own management of the natural environment
- Support of local community and volunteer groups including Landcare, ‘Friends Of’ groups and other local community groups.
3 SETTING THE SCENE

Looking South over Bacchus Marsh towards the You Yangs Photo: Allen Moore

3.1 Moorabool Shire

Moorabool Shire is a fast-growing, peri-urban municipality covering a geographical area of 2,112 sq. km. The Shire is centrally located with easy access to Melbourne, Ballarat and Geelong. There are 64 localities, hamlets and towns across the municipality, including the townships of Bacchus Marsh, Ballan, Gordon and Blackwood (Figure 4).

More than 74% of the Shire is protected within national and state parks and water supply catchments. Some of the major national and state parks in the Shire include:

- Brisbane Ranges National Park
- Lerderderg State Park
- Wombat State Forest
- Werribee Gorge State Park
- Long Forest Nature Conservation Reserve
- Lal Lal State Forest.

Three major rivers traverse the Shire: the Lerderderg River, Moorabool River (East and West Branches) and Werribee River. With many minor tributaries such as Parwan Creek, Korkuperrimul Creek, Granite Creek, Tea Tree Creek, Lal Lal Creek and Williamsons Creek provide social, ecological and agricultural benefits.
Figure 4: Moorabool Shire

Outside the main townships and the protected natural areas, much of the rural area is used for agriculture including horticulture, sheep and beef farming, cropping, timber production, and more recently, viticulture (ABS 2011). There is also some clay, mineral and coal mining undertaken in the Shire. Grazing and cropping dominate large areas and intensive horticulture occurs where there is access to irrigation water and fertile soils, such as the alluvial soils on the floodplain of the Lerderderg and Werribee Rivers at Bacchus Marsh. There are also potato growing areas in the western region of the Shire.

The rivers are also an important source of potable water. Subsequently significant areas of the shire are in Special Water Supply Catchments that supply water for the residents of Moorabool Shire as well as surrounding areas. Large reservoirs in the Shire include the Lal Lal, Pykes, Moorabool, Bolwarrah and Merrimu.

Moorabool Shire is predominately located within two catchment management areas. The Port Phillip and Westernport catchment extends across the eastern half of the municipality, and the Corangamite catchment occupies the western half. A small area in the northeast of the shire is within the North Central catchment.
3.2 Challenges and drivers of change

Several ‘drivers of change’ will influence the natural environment in Moorabool Shire. A fast growing urban and semi-rural population, a changing demographic, rural land uses and an increasing demand for natural resources will all shape the natural environment, creating challenges, as well as opportunities.

There are also other drivers that have the potential to influence change to the natural environment in Moorabool. Some of these drivers are outside Council’s direct control, such as changes in government priorities and legislation and larger influences like climate change.

The major drivers of change and the macro-context for Council’s response include:

Climate Change

Climate impacts such as extreme heat waves, bushfires and drought are becoming more frequent and dangerous. Council needs to plan for this in the following ways:

- Understand the climate risks to council and its community and plan and mitigate for these
- Reduce Council’s corporate greenhouse emissions to reduce it’s own climate impacts (and costs) and utilise renewable energy production at Council owned facilities to reduce emissions and ongoing costs
- Assist the community and business to cut their emissions and energy costs and access renewable energy
- Reduce its water consumption and improve efficiency and alternative sources of water to mitigate for future drought and low water supplies
- Ensure a more localised food supply including households growing some of their own food.

Peak Oil

Peak oil is where the cost of oil becomes more expensive as oil reserves diminish, resulting in the cost of oil-based fuels and products rising sharply. This has major implications for the cost of transport, which will drive change for people and businesses to shift to less fuel-intensive transport (such as public transport, walking, cycling) or to find more efficient ways to transport goods and people. For example, when petrol prices spiked above $1.80 per litre in the mid 2000s, public transport patronage rapidly increased, leaving transport services struggling to respond\(^2\). Inevitable fuel prices rises need to be planned for. Currently for Moorabool residents, 90% of the daily work commute is by car either as a driver or passenger\(^3\).

Food costs and supplies would also be impacted, as the cost of fertilisers, which are derived from oil, would increase. Fuel costs for machinery and freight would also increase, which may then be passed on to consumers.

Population

Population is a major driver of environmental impacts, both positive and negative. At the local level this is mainly due to increased urban development for housing, services, recreation, transport and employment. Moorabool Shire’s population has grown from 25,197 in 2003 to 30,926 in 2014\(^4\) and in 2041 it is estimated


\(^3\) 2011 Census of Population and Housing, Basic Community Profile - Moorabool

that the total population of the Shire will grow to 54,418\(^5\) with Bacchus Marsh alone predicted to have a population of over 37,000.

To accommodate this population growth, development is likely to impact upon significant agricultural and environmental assets.

### Lifestyles

Related to population growth is another main driver – consumption of resources through the way we live. This is both a local and global issue as the impacts of resource extraction, production and trade in goods and services result from a complex array of local and global inputs (such as water, energy, minerals, land etc.). Our material consumption results in waste, a local issue managed by Council who must supply landfill and recycling facilities. Waste generation can be seen as a proxy for how much we are consuming: over the past decade waste generation has increased more rapidly than population growth across Victoria\(^6\).

The standard measure of the impact of our lifestyles is the ecological footprint, that is, the measure of the amount of land required to provide for all the needs of a human life. The amount of land required by the average Victorian equates to one and a half times the land area available in Victoria. It is also four times more than that which would enable all humans to live sustainably on the planet.

Our energy consumption patterns are the biggest contributor to this footprint, largely due to our reliance on fossil fuel-intensive electricity generation.

### Economic Model

The way we currently live and run our economy is turning natural resources into waste at a faster rate than nature can turn waste back into natural resources. This basic equation threatens the viability of our environment, and in turn undermines the sustainability of the economy and human well-being.

Our challenge is to better understand and value nature’s services, consume in less impactful ways, and to ‘de-couple’ economic activity from environmental degradation. Business and jobs growth needs to be achieved while reducing our per capita fossil fuel and material consumption and waste.

Combined, these macro influences create a number of challenges, as well as some opportunities, for the natural environment.

#### 3.3 Achievements to date

Moorabool Shire has achieved much over the past decade in the area of environment and sustainability. This includes working with the community and other stakeholders to achieve positive environmental management outcomes such as the Grow West and Moorabool River Recovery projects. Achievements have also been made in reducing Council’s resource use in the areas of energy, water and transport. Table 3 includes some of the achievements made by Moorabool Shire over the past decade.


Table 3: Achievements by Moorabool Shire in the area of environment and sustainability

<table>
<thead>
<tr>
<th>Area</th>
<th>Achievements</th>
</tr>
</thead>
</table>
| Environmental Management          | ▪ Grow West. Now in its eleventh year, Grow West is a multi-partner collaboration that aims to protect and enhance indigenous vegetation, control pest plants and animals and create biolinks. Moorabool Shire Council was a founding member and continues to have an active role in Grow West.  
▪ The Moorabool River Recovery Project. This is a joint project between Moorabool Shire Council, Barwon Water and the Moorabool Catchment Landcare Group that is improving the health of the Moorabool River through on-ground action to reduce weed cover, rabbit populations and increase native vegetation cover.  
▪ The ongoing contribution made by Landcare and environment groups to promote improved land management practices, protect key environmental assets on public and private land and provide opportunities for local communities to meet and work together. Currently there are 12 Landcare and 6 ‘Friends of’ groups operating within the Shire, with total membership exceeding 300 members.  
▪ An updated Environment Page on the Council website highlights local biodiversity, including what can be found in residential backyards, and encouraging residents and visitors to explore the Shire’s natural environment. |
| Energy Saving & Renewable Energy  | ▪ CBUS sensor lighting, delamping (e.g. removing lights) and use of energy efficient lights (e.g. T5 fluro lights) at Darley and Llerderderg Library has reduced energy use and costs.  
▪ Ballan Council office ‘informal’ green team has encouraged energy saving through behavioural ‘green’ actions (e.g. turning computers off).  
▪ Blackout blinds on west facing windows in the Darley Council office to reduce energy consumption.  
▪ Bulk purchase of solar panels for the community in 2009 with good uptake.  
▪ Cost benefit analysis undertaken on upgrading streetlights from Mercury vapour to more energy efficient options (T5, T8, LED) – installation still required.  
▪ Major sporting clubs’ are now paying their power bills (previously paid by Council), encouraging energy and water saving measures. One football club saved over $4000 in the first year.  
| Reducing Council Potable Water     | ▪ 75% reduction in open space water consumption by using drought tolerant turf species, water tanks, automated irrigation and other efficiencies in open space areas. Water savings have allowed Council to sell water to users (e.g. market gardeners). The use of ground water via bores has been reduced as a result and there are energy savings from the reduced pumping.  
▪ Water and energy savings through efficient showerheads installed at recreation reserves.  
▪ The current planning system includes water sensitive urban design (WSUD) and water reuse and harvesting; and there are controls to ensure efficiencies in new urban developments e.g. Darley stormwater retarding basin.  
▪ Currently working with Melbourne Water to investigate WSUD options in existing urban areas of Ballan and Bacchus Marsh. |
| Sustainable Transport             | ▪ Reuse of road materials for maintenance works has reduced vehicle movements, fuel and operational costs.  
▪ Council fleet policy encourages more efficient vehicles.  
▪ Trial purchase of an electric car.  
▪ Video conferencing between Darley & Ballan Council offices has reduced staff vehicle travel.  
▪ The Hike & Bike Strategy was developed in 2014 to increase cycling and walking in the Shire through better infrastructure and education. |
<table>
<thead>
<tr>
<th>Food &amp; Community engagement</th>
<th>Development of community gardens has worked well to this point with council supporting positive community action – three community gardens are in operation.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Moorabool Matters Mag has spread information about Council actions.</td>
</tr>
<tr>
<td></td>
<td>Community grants program has provided many grants for positive community action including some environment-related projects.</td>
</tr>
</tbody>
</table>
4 STRATEGIC DIRECTIONS

Four main strategic directions have been identified through the consultation process to guide Moorabool Shire's work in delivering a more sustainable environment over the next ten years. The four strategic directions are:

- ENVIRONMENTAL STEWARDSHIP
- SUSTAINABLE COUNCIL
- SUSTAINABLE PLACES
- LIVE AND WORK SUSTAINABLY.

A number of priority areas have been identified within each strategic direction. There are twelve priority areas in total (Figure 5).
Figure 5. Strategic directions and priority areas for the Moorabool Shire Sustainable Environment Strategy

The following sections present the priority areas in detail within each strategic direction.
4.1 ENVIRONMENTAL STEWARDSHIP

Lerderderg State Park Photo: Allen Moore

Common Rice Flower (Pimelea humilis) Photo: Moorabool Shire
4.1.1 Protect Biodiversity

At a glance

- More than 74% of the Moorabool Shire comprises national parks, state forests, reserves and protected water catchment areas. Some of the important protected areas include the Long Forest Nature Conservation Reserve, Brisbane Ranges National Park, Lerderderg State Park, Werribee Gorge State Park and the Wombat State Forest.
- The Shire spans two bioregions: the Victorian Plains and the Central Victorian Uplands.
- There are 17 threatened fauna species listed under the Australia Environment Protection and Biodiversity Conservation (EPBC) Act 1999.
- There are 15 threatened flora species. Two of these species are critically endangered: the Golden Sun Moth (Synemon plana) and the Plains Rice-flower (Pimelea spinescens subsp. spinescens).
- Five Ecological Vegetation Communities (EVCs) are listed as either critically endangered or endangered under the EPBC Act 1999. These are Grassy Eucalyptus Woodland of the Victorian Volcanic Plain, Natural Temperate Grassland of the Victorian Volcanic Plain, Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains, White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland and the Grey Box Grassy Woodlands and Derived Native Grasslands of South-eastern Australia.
- There are 25 Council managed environmental and bushland reserves, including Lal Lal Falls, Bald Hill, Hopetoun Park Conservation Reserves, Ballan Mineral Reserve, Spargo Creek Mineral Reserve and Werribee River at Bacchus Marsh and Ballan.

Source: DoE 2014, Moorabool Shire Council 2004

Protect Biodiversity vision

There is a measurable improvement in the condition of the natural environment in Moorabool Shire over the next ten years.
Context

Moorabool Shire is characterised by ranges, plains and rugged river gorges providing a diverse and spectacular landscape. The municipality spans two bioregions: the Victorian Plains Bioregion occurs predominately in the south where there is highly productive agricultural land, which also contains highly valuable grasslands and grassy woodlands. The Central Victorian Uplands Bioregion extends across the north of the Shire and includes grassy woodlands and forests. Appendix 2 provides more detail on the bioregions and ecological communities found in Moorabool Shire.

The large areas of protected native vegetation provide highly significant natural resources and nationally important flora and fauna habitat values. They are also important assets for tourism and recreation. Roadside vegetation also comprises high biodiversity values, providing flora and fauna movement corridors between State and National Parks or Forests (DTPLI 2011). In particular, Council roadsides support excellent stands of Victorian Volcanic Plains vegetation (Moorabool Shire Council 2004).

Outside the protected areas and roadsides, much of the remnant vegetation occurs on private land. Much of this has been greatly modified from their pre-European condition through agricultural and urban development and expansion. This is particularly true for grassland communities, the majority of which occur on private agricultural land and in areas of urban development. Council has an important role to play in ensuring that land use planning decisions protect natural resources and areas of high conservation significance.

There are a number of factors which continue to threaten biodiversity values in the Shire, including:

- Pest plants and animals
- Climate change
- Bushfire
- Urban growth
- Other development pressure
- Inappropriate land use and/or land management practices
- Modification and fragmentation of habitat
- Vegetation clearing
- Unsustainable resource use e.g. timber, quarrying, water
- Edge effects around the perimeter of protected areas.

A considerable challenge exists for Council to manage land and biodiversity values and the associated threats in order to sustain healthy, connected ecosystems.

Strategic objectives for protecting biodiversity

1. Increased landscape scale connectivity of remnant and other native vegetation.
2. An increased knowledge of natural assets including understanding and monitoring of changes in condition on Council managed reserves and roadsides.
3. Strengthened local planning policy that recognises and protects existing natural values.
4. Increased monitoring and control of the impacts of pest plants and animals on native vegetation.
4.1.2 Healthy Waterways

At a glance

- The Shire is located within two main Catchment Management Authority (CMA) jurisdictions: the Corangamite CMA in the west and the Port Phillip and Westernport CMA in the east. A small area within the north east of the Shire is within the North Central CMA.

- Large areas of the Shire are in Special Water Supply Catchments providing potable water for local and regional communities.

- Three major rivers flow through the Shire: the Lerderderg, Moorabool and Werribee Rivers.

- The headwaters of the Lerderderg and Werribee rivers, and their associated gorges, are recognised as sites of international and state geomorphological significance.

- There are a number of threatened species listed under the EPBC Act 1999 that are associated with waterways in the Shire. These include:
  - Macquarie Perch (*Macquaria australiasica*)
  - Eastern Dwarf Galaxias (*Galaxiella pusilla*)
  - Australian Greyling (*Prototroctes maraena*)
  - Growling Grass Frog (*Litoria raniformis*).

- Waterways in the Shire provide important ecosystem services including potable water for local and regional communities, water for agriculture and recreation.

Source: DoE (2014)

Healthy Waterways vision

*There is a measurable improvement in the condition of waterways and the quality of water across Moorabool Shire over the next ten years.*
Context

The three major rivers, Moorabool, Lerderderg and Werribee, which intersect the Shire and their tributaries are recognised for their important ecological values, supporting an array of aquatic flora and fauna, many of which are endangered.

The rugged and steep landscapes around the headwaters of the Lerderderg and Werribee Rivers provide breeding habitat for Peregrine Falcons and Wedge-tailed Eagles and house significant species like the Powerful Owl, Common Bentwing Bat and Brush-tailed Phascogale (Melbourne Water 2015). The Moorabool River is recognised for its important habitat values for native fish including river blackfish, Australian smelt, common galaxias and southern pigmy perch (CCMA 2015), as well as other aquatic flora and fauna.

The waterways also provide important cultural Indigenous heritage sites, recreational opportunities, amenity value and economic values for the local community. Agriculture across the Shire is underpinned by access to freshwater and the fertile floodplains at the confluence of the Lerderderg and Werribee Rivers at Bacchus Marsh support productive horticultural enterprises. Large areas of the Shire are in Special Water Supply Catchments providing potable water for local and regional populations. Much of the Special Water Supply Catchment areas contain towns, communities and productive farms (DTPLI 2011). Large reservoirs in the shire include the Lal Lal, Pykes Creek and Merrimu Reservoirs.

The condition of the rivers varies across the Shire. The general trend is that the upper reaches of the river basins are in good condition due to their occurrence in relatively undisturbed environments such as protected water catchments and forested parks and reserves. However the lower reaches show deterioration as they are exposed to more intensive land uses such as agriculture, horticulture and urban development (Moorabool Shire 2004). According to the Corangamite CMA (2009) the Moorabool River is one of the most flow stressed rivers in the State and the lower Moorabool River is in very poor ecological health. Waterways, especially those in the lower reaches, are subject to a number of threats including, but not limited to:

- Altered natural flow regimes
- Barriers to fish migration
- Poor quality streamside vegetation
- Weeds and pest animals
- Litter and rubbish dumping
- Stream bank erosion.

- Soil and nutrient runoff
- Salinity
- Increased stormwater inflows from urban development
- Stock access
- Altered flood and flow paths
Steps are being taken to improve the condition of waterways in the lower reaches. Council has played a supporting role to organisations such as CMAs and Landcare that work with private landholders on riparian protection and rehabilitation works. The Corangamite CMA is also delivering an environmental watering plan on the Moorabool River to restore some of the river’s original ecological function (CCMA 2015). Even though Council has limited ability to take direct action on water related issues, it does have an important function in:

- Stormwater and wastewater management within townships
- Managing Council reserves with waterways
- Demonstrating leadership and action on conserving water use in all areas of Council operations
- Advocating to State Government and local water authorities on behalf of the community on water related issues
- Partnering with relevant organisations, such as water authorities and CMAs to promote best practice in Council and the community.

**Strategic objectives for healthy waterways**

1. Better protected and healthier riparian vegetation within the shire.
2. Increased connectivity of riparian vegetation across the shire.
3. Improved quality of stormwater runoff.
4.1.3 Sustainable Rural Land Management

At a glance

- The natural resources and rural areas of Moorabool Shire support approximately $80 million worth of agricultural production annually.
- The highest quality agricultural land is associated with the floodplain areas at the confluence of the Werribee and Lerderderg Rivers. There are also rich soils in the west of the Shire used for potato production.
- The main primary production enterprises are horticulture, sheep and beef, cropping and timber production.

Sustainable Rural Land Management vision

We will develop agricultural land for agricultural production and preserve rural landscape values and amenity.
Context

Even though there has been a 65% decline in the total workforce employed in agriculture from 2006 to 2011, agriculture remains one of the Shire’s biggest industries, employing approximately 10% of the total working population (ABS 2011). In 2011, agriculture in Moorabool was valued at an estimated $80.4 million (Phillips Agribusiness 2014) and the value of production per hectare is around $760 (Neil Clark & Associates 2010). The rural base of the Shire is also central to attracting people to live and work in the municipality, supporting tourism and maintaining the lifestyle appeal of the area (DTPLI 2009).

Urban and rural lifestyle development poses a number of threats to agriculture and horticulture in the Shire. This includes the loss and fragmentation of land for primary production and an increase in land prices for primary production, driven by urban growth and the demand for residential development.

Residential development within proximity to rural zones can create conflict at the urban / rural interface raising issues such as odour and noise associated with agricultural and horticultural activities. The increase in ‘rural lifestylers’ and hobby farmers occupying small rural blocks also has the potential to create tensions at the interface with primary production land. This occurs where new residents have limited rural experience.

Over time, the intensification of agriculture and horticulture has contributed to the decline in the quality and quantity of native vegetation, land and waterway conditions across the Shire (Moorabool Shire 2004). Specific issues include the loss and fragmentation of native vegetation habitat, species loss, decreasing water quantity and quality, soil erosion, salinity and pest plants and animals. There are projects such as Grow West and various river health and biodiversity programs administered by CMAs and Melbourne Water that aim to improve land management and protect high value natural assets on private property in the Shire. There is also an active and engaged Landcare community that is working on improving land management on private land across the Shire.

Council has an important role to play in ensuring that planning solutions are implemented that effectively integrate rural living and farming activities, enabling farm businesses to operate as agricultural enterprises. It is also important that Council supports urban and rural development where it does not compromise the long-term productive use of rural land for agriculture and horticulture, or the Shire’s natural resources (DTPLI 2009).

Strategic objectives for sustainable rural land management

1. Adopt planning policies that support increased agricultural development of productive farmland.
2. Plan for land use that is respectful of rural landscape values and amenity.
4.1.4 Community as Land Stewards

At a glance

- There is an active and engaged Landcare community in Moorabool Shire. In total there is one Landcare network (the Moorabool Landcare Network) and 12 Landcare and community-based NRM groups.
- Council has supported the Grow West program since it began in 2001, during which time around 2000ha of revegetation and forestry plantations have been established on private land.
- Many people are attracted to live and visit Moorabool Shire by the aesthetic values and access to natural places e.g. for recreation in the parks and reserves.
- People in the shire also rely on healthy ecosystems for their livelihood through activities such as agriculture, horticulture, forestry and mining.

Community as Land Stewards vision

There is a measurable increase in community awareness of the natural environment and participation in NRM based activities in the Shire.
Context

The Shire has an active and engaged Landcare community, demonstrated through the recent and continued growth of the Moorabool Landcare Network. Even though there is a robust network of community based NRM groups. The increase in urban growth has seen a rise in young families who are likely to be ‘time poor’ and have priorities other than connecting with nature. Nearly 19% of the working population commute more than two hours per day (Department of Health 2013) and therefore are unlikely to have time to engage with the environment in which they live.

Local councils are the layer of government that are most closely connected to local communities. Moorabool Shire Council is well positioned to broaden and strengthen community connection to the local natural environment through building on the existing network of community-based NRM groups and other community organisations. There is also an opportunity for Council to increase partnerships with other agencies such as the CMAs and water authorities that deliver community education programs and incentives for land management.

Council can also promote incentives, such as Landcare grant programs, for the implementation of best practice land management activities. According to a recent study by the Corangamite CMA (2013b), Moorabool Shire has the highest proportion of rural landholders who cite cost as the main barrier to doing more to protect and enhance the natural environment. The implementation of financial incentives may increase the uptake of private land conservation activities.

The study also found that pest plants and animals is the environmental issue of most concern for rural landholders in Moorabool (CCMA 2013b).

Strengthening community connection to the natural environment is also important in developing resilient communities that are prepared and adaptable to climate related impacts. Climate change presents complex challenges for communities, with the potential to generate impacts to livelihoods that are dependent on natural resources such as agriculture, horticulture, forestry and tourism, as well as impact health and well-being.

Strategic objectives for community as land stewards

1. Increased community awareness of the local natural values in Moorabool Shire.
2. Participation in community based NRM groups and activities is encouraged and supported by Council.
3. Increased engagement with new rural and semi-rural landholders on best practice NRM activities.
4.2 SUSTAINABLE COUNCIL
4.2.1 Energy Efficient & Clean Energy Council

At a glance

- In 2013/14 Council’s greenhouse emissions from its operations including buildings, open space and fleet were 4,271 tonnes and council energy costs were just over $1 million. This is up from 3389 tonnes in 2003/04. These figures were from two different sources and methodologies and so it’s not possible to compare directly, however it does suggest significant growth in emissions consistent with Council having taken only minimal action to curb its greenhouse emissions in that time.
- The break down into sectors of greenhouse emissions was: Fleet 38%. Street lighting 37%, Buildings 25%.
- The share of total energy costs of each sector was: Fleet 57%, Buildings 27%, Street lighting 16%.
- Climate change represents one of the biggest threats to the economic viability, social structure, human health and environmental health of the Shire over the next 50 years.

Energy Efficient and Clean Energy Council vision

There is a measurable improvement in energy efficiency of Council operations and an increase in clean energy use in order to achieve a carbon neutral council by 2031.
Context

In 2012, the Victorian Government published its first biennial report on climate change and greenhouse gases, *Report on Climate Change and Greenhouse Gas Emissions in Victoria*. The report noted that “the overall warming of the climate in Victoria over the past century has been linked to GHG-related climate change. The recent decline in autumn rainfall and the southward shift in some rain-bearing weather systems may also be partially caused by greenhouse-gas related climate change. Continued global GHG emissions, depending on their level, are likely to lead to warmer conditions in Victoria, reduced rainfall in some seasons, and sea level rise.”

The relationship between GHG emissions and climate change was further reinforced in 2013 when the Intergovernmental Panel on Climate Change (IPCC) released its latest global assessment of climate change science, *Climate Change 2013: The Physical Science Basis*. Contribution of Working Group I to the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (Climate Change 2013: The Physical Science Basis). AR5 stated that warming of the climate system is unequivocal, and many of the changes observed since the 1950s are unprecedented over decades to millennia.

Source: Western Alliance for Greenhouse Action *Low Carbon West, A Strategy for a Transition to a Low Carbon Economy in the WAGA Region*, p.3.

There is clearly a need for action to reduce greenhouse emissions at all levels of government. Moorabool Shire has the opportunity to contribute to reducing Victoria’s and global greenhouse emissions whilst reducing its cost overheads from the carbon-intensive aspects of council operations including buildings, open space, street lighting, fleet and waste. It can also support local businesses and the community to reduce their greenhouse emissions.

The Shire has previously done some work to reduce its and the community’s greenhouse emissions through its *Greenhouse Local Action Plan 2007* which aimed to reduce the Shire’s emissions by 20% and the community’s emissions by 10% on 2003/04 levels. A clear assessment of that program has not yet been undertaken.

As part of the Sustainable Environment Strategy project, Ironbark Sustainability has undertaken an Energy and Water assessment of Council’s operations (Ironbark Sustainability 2015). The inventory enables council to benchmark its current use and expenditure of electricity, gas, transport fuel and water. It also shows the greenhouse emissions associated with council energy use.

The inventory shows that in 2013/14 Council’s greenhouse emissions from its operations including buildings, open space and fleet were 4,271 tonnes and council energy costs were just over $1 million. This is up from 3389 tonnes in 2003/04, as calculated for the *Greenhouse Local Action Plan 2007* (part of the ICLEI Cities for Climate Protection Program). These figures are therefore derived from two different sources and methodologies and so it’s not possible to compare directly, however it does suggest significant growth in emissions consistent with Council having taken only minimal action to curb its greenhouse emissions in that time.

In addition, in 2014 Council engaged Ironbark Sustainability to undertake an assessment of costs and greenhouse emissions of street lighting in the shire including a business case for switching to low emission globes (Ironbark Sustainability 2014a). This report presents a compelling case for the financial and environmental savings that can be achieved by investing in switching to low energy street lighting. In total, the projects considered in the analysis are expected to cost between $0.66 million and $1.13 million. Net lifetime cost savings (after project costs are removed) are projected to be between $3.86 million and $5.05 million, depending on technology type and increase in electricity and maintenance costs. Project costs include materials (e.g., globes), labour (the installation), project management, potential expertise and/or consultants, Written Down Value (WDV) and net Avoided Cost (AC), and does not include community
education or council staffing costs. The project becomes cash flow positive in 5 to 7 years depending on which technology and implementation timeframe is adopted.

The Energy & Water inventory includes this street lighting summary, as well as the energy and water used in Council buildings, open space and Council fleet for financial year 2013/14. (Please note that not all utility bills were available and some smaller facilities were not included therefore these figures are likely to be under-estimated.)

For the 2013/14 financial year, the inventory showed that the breakdown of the Shire's greenhouse emissions by sector in 2013/14 was: Fleet 38%, Street lighting 37%, Buildings 25%. The share of total energy costs of each sector was: Fleet 57%, Buildings 27%, Street lighting 16% (Figure 7). This shows that Fleet was the largest proportion of Shire energy costs and reductions in fleet energy use will bring substantial cost savings.

Figure 6. Energy consumption costs (2013/14)

Figure 7. Greenhouse gas emissions (2013/14)
The inventory shows that significant financial and greenhouse savings could be achieved if Council were to undertake a range of retrofit actions to buildings and open space and made changes to the Council fleet. If the Shire were to undertake all actions listed to bring its standard to that of a “best practice” Council, the financial savings would be around $204,098 per annum in combined energy and water savings after costs (most of this relates to energy saving rather than water). The majority of cost savings would be from building improvements, followed by energy efficient street lighting and fleet adjustments (Figure 6).

![Figure 6. Current vs. Possible Costs if Moorabool Shire achieved Best Practice in Energy & Water](image)

If the Shire were to implement all of the identified actions to bring it to current “best practice”, the greenhouse savings would be significant – a total reduction of approximately 1,800 tonnes of greenhouse emissions per year, which is a 42% reduction on 2013-14 emissions. If existing streetlight globes were replaced with energy efficient LEDs it is projected that the greenhouse emissions from street lighting could be cut by up to 77%. If efficiency measures for buildings were introduced, the greenhouse emissions savings for building energy use could be up to 47%. For fleet changes, the greenhouse emissions savings for running Council’s fleet could be up to 2%.

When comparing Moorabool Shire to current best practice, the majority of energy saving actions are yet to be implemented at Moorabool. This presents an enormous opportunity to the Shire to upgrade its building stock, open space, street lighting and fleet to achieve both major cost savings as well as benefiting the environment by cutting its greenhouse emissions.

In terms of prioritising which actions to take in retrofitting buildings and open space, Ironbark have calculated the greatest cost savings and payback periods – see Figure 7 below. It shows that solar photovoltaic panels would provide the largest annual savings with the investment being returned within 9 years. Smaller, lower cost actions such as LED light globes and low flow showerheads have shorter payback periods but over the long term would not achieve as large total savings. There are clearly numerous building efficiency upgrades to save energy and/or water that would save the Shire significant costs with a payback period of less than 15 years.
The Western Alliance for Greenhouse Action (WAGA), of which Moorabool Shire is a member council, launched its strategy Low Carbon West: A Strategy for a Transition to a Low Carbon Economy in the WAGA Region in 2014. This strategy provides a range of pathways and actions for member councils to deliver in partnership with all sectors including residential and non-residential buildings, freight, residential transport, waste, and agriculture to improve energy efficiency and cut greenhouse emissions. The actions identified would reduce greenhouse emissions from the region by 14% compared to business as usual. It presents numerous opportunities for Moorabool to partner with larger councils to benefit from initiatives to reduce Moorabool greenhouse emissions, for example bulk purchasing of solar photovoltaic panels to offer to its community.

**Strategic objectives for Energy Efficiency & Clean Energy**

1. To reduce the amount of electricity and gas used, and the associated greenhouse emissions, for Council operations per dollar spent by Council.
2. To increase the proportion of renewable energy used in Council’s operations.
3. To shift Council’s procurement towards low emissions products and services.
4.2.2 Water Efficient Council

At a glance

- In 2013/14 Council’s water consumption from its operations including buildings and open space was 20,884 kL of metered potable water. This mains water consumption cost council $38,400.
- Council also uses significant amounts of water sourced from rainwater and stormwater collection and sourced directly from the river for irrigation.

Water Efficient Council vision

There is less water used in the operations of Council with a transition away from potable mains water use to rainwater, stormwater and recycled water.
Context

Mains water supply in Moorabool can be quite variable due to regular droughts experienced in the region – the most intense recent drought being the Millennium drought from 1995 to 2009 to which was associated with a hot and dry El Nino weather pattern. The impacts of that drought were felt for many years, with government drought assistance continuing until 2012.

During drought periods water supply reservoirs dip to extremely low levels and all sections of the community are placed on water restrictions to ration consumption in order to maintain supply. Ground water is also depleted due to increased usage of bore water in the face of water restrictions.

However future projections for rainfall for the region are that temperature rises associated with human-induced climate change are almost certain to result in decreased rainfall in Victoria and so future droughts and water shortages are very likely. Therefore council needs to prepare for the inevitable future droughts by delivering its operations much more efficiently in terms of water use.

Council has already taken steps over the years to reduce its water consumption and to find more sustainable sources. Open space irrigation has been reduced by using more drought tolerant (low-water) turf and landscaping. Alternative sources such as storm water retention and rainwater tanks have also been used, with many buildings in the shire now having rainwater tanks.

As part of the Sustainable Environment Strategy project, Ironbark Sustainability has undertaken an Energy and Water assessment of Council’s operations (Ironbark Sustainability 2015). The inventory enables council to benchmark its current use of mains potable water as captured by water bills for council buildings and open space.

The Water inventory for financial year 2013/14 shows that council used 20,884 kL of mains water for buildings and open space from available water bills (some small facilities did not have bills available). This represented a total water bill cost of $38,400. This does not include any water sourced from rainwater tanks or stormwater retention or pumped from the river for irrigation, of which an unknown but sizeable proportion is sourced for open space irrigation and facilities.

Significant water savings could be achieved if Council were to undertake a range of retrofit actions to buildings and open space to reduce water consumption and use of mains potable water. However exact cost and water saving estimates through such actions are difficult to provide until a detailed building and open space water assessment and plan is developed.

Strategic objectives for a Water Efficient Council

1. Improve water efficiency of Council buildings and operations.
2. Transition from using potable water to using recycled water or stormwater for Council operations and facilities.
4.2.3 Sustainable Transport in Council

At a glance
- In 2013/14 Council generated 1,602 tonnes of greenhouse gas emissions from the use of its vehicle fleet. This represented 38% of its total corporate greenhouse emissions.
- Energy consumption (diesel, petrol, unleaded and LPG) to fuel council’s transport fleet cost it $572,228 in 2013/14.
- Simple improvements in vehicle efficiency through upgrading Council’s fleet could save $11,445 per annum.

Sustainable Transport Council vision

We will reduce the greenhouse emissions from the transport used for Council operations.
Context

The direct greenhouse emissions and fuel costs associated with councils transport are predominantly from:

- Heavy equipment for council works, particularly the backhoe, large trucks and tippers.
- Staff use of fleet passenger cars to travel to work meetings

Greenhouse emissions from fleet is the largest sector of council’s emissions profile, according to Ironbark’s inventory, being 38% of emissions from energy in 2013/14 – greater than buildings, open space or street lighting (see Figure 6 and 7 in Energy Efficient Council). Fleet is also a larger total cost than these other energy use sectors, representing 57% of council’s energy costs. Therefore any action that council can take to reduce its fuel consumption for fleet will save it significant operating costs and greenhouse emissions.

Ironbark has estimated that actions to improve the efficiency of vehicles, largely by using more fuel-efficient vehicles, could save 2% of these costs and emissions (based on best practice comparisons). However if more behaviour change was achieved to reduce and avoid staff usage of fleet vehicles or to drive more efficiently, greater gains could be achieved.

The Fleet Policy was updated in 2015 with the aim to progress towards a more fuel efficient fleet by 2021. In addition options to improve the existing fleet booking system are being considered.

Another related transport impact is staff travel to work. Although the greenhouse emissions associated with this are not considered the direct ownership of council, this is an area that council can have an influence. As an employer, it is also the responsibility of council to assist its staff to travel in the most cost effective, healthy and sustainable method possible.

Strategic objectives for sustainable transport in Council

1. Reduce greenhouse emissions from vehicle usage for Council operations.
2. Reduce greenhouse emissions from staff travel to and from work through supporting a reduction in car trips.
4.3 SUSTAINABLE PLACES

Photo: Moorabool Shire Council

Residential development Photo: Suzie Brown

Photo: Moorabool Shire Council
4.3.1 Climate Adaptation

At a glance

- Climate change projections show the most serious impacts in Moorabool Shire are very likely to occur from as early as 2030 including: extreme bushfire and extreme heat, with associated drying of the land, and reduction in rainfall and increased risk of drought.
- The risks of this climatic change on the operations of council and the community are very serious and include numerous issues such as: financial costs of replacing damaged assets and maintaining stressed assets, inadequate building standards to cope with extreme weather, poor planning for the impacts of climate change, and the slowing of the regional economy.

Climate Adaptation vision

*We will support and deliver activities to reduce impact of and vulnerability to future climate change on the Moorabool Shire community.*
Context

As part of current operations, significant work has been undertaken to ensure that Council is ready to respond to natural events, such as flood and fire, through the Community Emergency Risk Assessment (CERA) process.

With the forecast increase in average temperatures and fire and flood events resulting from climate change over the next 40 years, it is important that Council considers actions to manage for this eventuality.

The Western Alliance for Greenhouse Action (WAGA) developed the Climate Change Adaptation Strategy 2013-2020 and Action Plan 2013-30 which set out the key risks and a plan of action for its member councils to respond to the priority climate change risks for the region, as described in the WAGA Climate Change Risk Assessment 2011.

These documents show that the greatest risks to Moorabool Shire from climate change are the extreme bushfire and extreme heat risks, with associated drying of the land, and the reduction in rainfall and increased risk of drought.

A summary of the climate impacts and risks for Melbourne’s west as outlined in the WAGA reports is as follows:

1. **Higher average temperatures and solar radiation**
   - Increasing average temperatures over time with a high degree of certainty.
   - By 2030, average daily maximum temperatures are likely to rise by 0.5 to 1.5°C over most of Victoria; by 2070, they are likely to rise by 0.7 to 5.0°C compared to 1990. There will be more hot days and fewer cold days. Widespread decreases in atmospheric moisture are likely.

2. **Reduced rainfall, but heavier rainfall during rain events**
   - Although average annual and seasonal total rainfall is expected to decline, the intensity of heavy daily rainfall is likely to rise in most seasons. However, fewer rain days are anticipated, along with more droughts. These heavy rains could contribute to soil erosion and movement.
   - Reductions in the total average annual rainfall of around four per cent are expected, with the greatest percentage reductions occurring in spring (7%) compared with 1990 figures. In Melbourne, the average long-term stream flow into water supply catchments could be reduced by up to 11 per cent by 2020, and as much as 35 per cent by 2050. Projections suggest that annual runoff to the Maribyrnong and Werribee Rivers could reduce by five to 30 per cent by 2030.

3. **Increasing intensity and frequency of extreme weather events**
   - Without global action to reduce emissions, by 2070 Melbourne’s average number of days above 35°C is likely to increase from 9 to 26. An increase in the frequency, intensity and duration of heat waves may also amplify the risk of heat-related health problems, particularly in urban areas. Higher temperatures may also shift energy use from winter heating to summer cooling.
   - “Extreme” fire danger days are expected to increase by 12 to 38 per cent by 2020, and by 20 to 135 per cent by 2050. Between 2000 and 2007, Victoria experienced a 62 per cent increase in fire weather warnings. By 2020, they may occur twice as often, and by 2050 four to five times as often. This means the Melbourne region would experience catastrophic fire days once every 2.4 years on average, instead of the current average of once every 33 years.

The WAGA climate adaptation work also involved identifying the major risks or threats to the region that each council needs to plan for and mitigate the impact of. It is important to note that WAGA only included risks that were applicable to entire WAGA region or multiple councils. There are likely to be other risks...
unique to Moorabool and not shared by other councils in the WAGA region, therefore council needs to consider additional possible risks when doing its climate adaptation planning.

The major risks to Moorabool Shire council are summarised in the table below from the WAGA Strategy. As it shows, the risks are many and the threat is extremely serious. Council needs to plan for these likely impacts to avoid danger and even greater economic cost to its community.

**Strategic objectives for climate adaptation**

1. To ensure that Moorabool Shire has understood the risks of climate change on council operations and taken actions to prepare for and mitigate these risks.

2. To ensure that council has understood the risks of climate change to the community and is working with the community to help them prepare for and mitigate the risks.
4.3.2 Sustainable Community Transport

At a glance

- Journey to work ABS Census data shows that in 2011 72% of Moorabool residents travelled to work or study by car, either as driver or as a passenger.
- A further 5.4% took the train, which refers to those commuting to Melbourne train line stops or to Ballarat or between Ballan and Bacchus Marsh.
- A further 2.2% walked to their place of work or study and only 0.2% cycled.
- Only 0.3% took the bus to work or study, suggesting a very low patronage of the local bus system.


Sustainable Transport Infrastructure & Engagement vision

There is a reduction in vehicle trips in the Shire as a result of Council’s provision, promotion and advocacy for community transport infrastructure and programs to support cycling, walking and public transport.
Context

Transport behaviour in the Moorabool Shire is heavily car dependent, which is not unusual for a peri-urban shire. ABS Census data on residents’ mode of traveling to work (Journey to Work data) shows that in 2011 72% of Moorabool residents travelled to work or study by car, either as driver or as a passenger. A further 5.4% took the train, which refers to those commuting to Melbourne train line stops or to Ballarat or between Ballan and Bacchus Marsh. A further 2.2% walked to their place of work or study and only 0.2% cycled. Only 0.3% took the bus to work or study, suggesting a very low patronage of the local bus system7.

In Moorabool Shire there are affordable and direct connections by train from Ballan and Bacchus Marsh to Melbourne and Ballarat, however community feedback suggests more frequent services would be desired. The bus network is quite limited, with services mainly in Bacchus Marsh. Community feedback also suggests better coordination between bus and train services would assist increased uptake of public transport use.

Cycling and walking are well-utilised within townships and Council continues to work to improve cycling and walking access particularly in Bacchus Marsh.

In 2014 and 2015 Council has completed the Moorabool Hike & Bike Strategy and Bacchus Marsh Integrated Transport Strategies which aim to improve the connectivity of existing road networks and promote greater cycling and walking by constructing interconnected cycling and walking paths to link key destinations.

Strategic objectives for Sustainable Transport infrastructure and engagement

1. Ensure transport infrastructure in Bacchus Marsh and Ballan is integrated to support greater linked use between modes and better planning for active transport modes.

2. Provide cycling and walking infrastructure to support increased use of these modes instead of driving.

3. Support the increased use of public transport in the Shire in place of car travel.

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4.3.3 Urban development and planning

At a glance
- At the time of the 2011 Census, Moorabool had an estimated resident population of 31,000 representing growth of around 2% each year since 2002, increasing to over 3% during 2013/14.
- The population is expected to increase to 54,418 by 2041 (id 2015).
- The population in Moorabool is relatively young. The median age is 39.4 years. Around one third of the population is under 24 years of age, and the next largest group (23%) is parents and homebuilders (35 to 49 years). Whilst 19% of the population is aged 60 years and over.
- Population is concentrated in the townships of Bacchus Marsh (60%) and Ballan (20%).
- Due to the continued growth of western Melbourne, it is expected that Bacchus Marsh will accommodate an additional population in the order of 37,000 by 2041.


Urban development and planning vision

We will support development that respects and conserves Moorabool Shire’s natural environment and reduces future environmental impacts from increased population growth and new development.
Context

Moorabool Shire is centrally located between Melbourne and Ballarat with easy access to Geelong and Bendigo via highways and transport, making it an attractive destination for those seeking affordable housing, a rural lifestyle and access to employment and services in major cities.

Population growth since 2002 has been at about the state average and is projected to be considerably higher than average to 2022 (Department of Health 2013). This is reflected in the most recent population data, showing that during the 2013/14 year the growth rate was 3.3% (a 36% increase on the average annual growth rate of 2.1%). The population is expected to grow from the current population of 31,000 to approximately 49,000 by 2036 however given the recent increased rate of growth this projected figure may be reached sooner (Moorabool Shire 2014).

Moorabool is a young community with approximately one third of the population aged 24 years or younger. The next highest group are those in the ‘parent and homebuilder’ demographic’, aged 35 – 49 years (accounting for approximately 23% of the total population). Approximately 19% of the population is aged 60 years and over (ABS 2011).

Most of the growth in the Shire is concentrated in the east, around Bacchus Marsh. Currently, more than half of the Shire’s population lives in Bacchus Marsh and surrounds (approximately 19,032), followed by Ballan (6,534). The remaining population is distributed across a number of small towns, hamlets and farming areas within the Shire. Council has identified Bacchus Marsh and Ballan as the main locations for future growth, as they already have established infrastructure to accommodate new growth (Moorabool Shire 2014).

Moorabool Shire is currently developing an Urban Growth Strategy and a Rural Growth Strategy in response to population growth pressures and other land use issues such as the preservation of significant natural environments and agricultural land. Central to these strategies is the Moorabool 2041 Strategy, which will guide planning and future decision making in the Shire over the coming decades to 2041. Moorabool Shire is also a member of the Peri-Urban Group of Rural Councils, which aims to promote a comprehensive vision for the peri-urban region of the Melbourne metropolitan fringe.

The increasing population means that now more than ever it is imperative that a balance is struck between accommodating this present growth and protecting the natural environmental values and the needs of future generations. Council is well placed to demonstrate leadership in environmentally sensitive and sustainable development. This can be achieved through land use planning decisions that protect natural resources, productive agricultural land and landscape aesthetics. Council can also influence new residential and commercial development to ensure higher environmental standards for new buildings as well as water-, renewable energy- and biodiversity-sensitive urban streetscapes.

There will be challenges for Council in achieving sustainable development. These include, but are not limited to:

- Managing and restricting development pressure in areas of high biodiversity and landscape values (particularly in areas that have high conservation significance, but are not well understood by the community such as grasslands)
- Early identification of biolink and connectivity opportunities and protecting these areas from development
- Protecting productive agricultural land from development
- Advocating for and engaging the community in more sustainable, environmentally sensitive urban developments and settlements.
Strategic objectives for urban development and planning

1. To ensure that attention to natural values are embedded within structure planning processes to allow for protection of natural assets.

2. Access and collate the most up-to-date data sets to support strengthened environmental policies within Moorabool’s planning scheme aimed at protecting natural assets.

3. Improve access to and connectivity between residents and open space and natural reserve areas.

4. Use the planning process to improve the standard of new residential or commercial buildings or renovations in the Shire.

5. New residential or mixed use precincts are designed with sustainability at the core of their structure plan including support for cycling/walking/public transport, abundant recreation space, greenspaces and biodiversity, shops or services within walking distance, water sensitive urban design, stormwater reuse and design for passive solar or solar panels.
4.4 LIVE & WORK SUSTAINABLY

Blackwood Photo: Allen Moore

Pick Your Own or freshly picked Strawberries

Photo: Moorabool Visitor Information
4.4.1 Clean Energy and Energy & Water Efficient Community

At a glance

- There were 3888 small-scale solar PV systems installed in the shire between 2001 and 2015 (which had deemed the associated renewable energy certificates).
- Household CO₂ emissions 8.2 tonnes per capita, 1.4 tonnes higher than WAGA average.
- Average CO₂ emissions from residential travel 10.7 tonnes per household, which is 3.3 tonnes higher than the average for other WAGA Councils.

Clean Energy & Energy & Water Efficient Community vision

There is a measurable decrease in greenhouse emissions and potable water use in the Moorabool business and residential community.
Context

As outlined in the climate adaptation section, the impacts of climate change are likely to be severe, and have already been felt in the last two decades in the form of heatwaves, drought and extreme bushfire. It is crucial that the whole community be informed about climate change and be engaged to play their role in reducing its impacts. One of the main actions households and businesses can take is to reduce their greenhouse emissions from their home energy, transport or business energy needs.

In 2006 a SGS Economic and Planning report found that, when compared to the 7 Councils in the Western Alliance for Greenhouse Action (WAGA), CO₂ emissions per capita from Moorabool residents were 1.4 tonnes above the average for all WAGA Councils. The report found that this was largely as a result of higher than average emissions resulting from residential travel.8

In addition, to handle the increased incidence of heatwaves it benefits residents’ health and safety if their homes are retrofitted to keep them cooler in summer (and warmer in winter) – vulnerable groups such as the elderly and families with infants need priority for this assistance.

These actions often also cut household energy bills, and many energy efficiency actions have a very short payback period (see the Figure 1 in the Energy Efficient Council section). In addition solar PV has become a very good investment as panel prices have come down whilst energy bills have risen. Therefore the payback period is now quite short for installing panels.

Due to limited resources, Council currently does very little work in the energy efficiency and clean energy engagement area, other than provide information on its website. In 2009 Council ran a well-received bulk buy program of solar photovoltaic (PV) systems, which allowed residents to buy a discounted rooftop solar system which was pre-arranged with a reputable supplier.

Between 2001 and May 2015 there were 3,888 small-scale solar systems installed in the Shire9 – these were the systems for which the renewable energy certificates were deemed via the Federal Clean Energy Regulator, so it is possible there were more systems than this, as well as the systems that were installed prior to 2001.

Currently there are very few Victorian government programs for the community on energy efficiency or renewable energy as a result of the recent change of government. Previous government programs have mostly ceased and were very few anyway. The new government has stated that climate action is a priority therefore it is likely that funding and programs for councils and communities will arise in the 2015-19 period. Council needs to maintain close communications with Sustainability Victoria and the Department of Environment, Land, Water and Planning (DELWP) to seek out opportunities to offer its community.

As outlined in the sections on Water Efficient Council and Climate Adaptation, Victoria experienced regular droughts and these are becoming more severe as a result of climate change. The 1995-2009 drought was probably Australia’s worst ever drought and resulted in water supply reservoirs reaching dangerously low levels and some drying up completely. The community were put on high-level water restrictions to reduce consumption, whilst water saving measures such as rainwater tanks and efficient showerheads and toilets were well implemented.

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As the likelihood of future drought is high, continued action to increase household water efficiency and increase the use of rainwater collection is needed to ‘future-proof’ our water supplies. This is more difficult during the current period of higher water levels and few water restrictions, but council and water authorities can continue to play a key role in supporting action.

**Strategic objectives for Clean Energy and Water & Energy Efficient Community**

1. Council to advocate to other levels of government to reduce the cost burden on residents of energy through funded energy and water efficiency and renewable energy programs.

2. Council to work with water authorities and energy retailers to gather data about community water and energy usage and opportunities for greater efficiency.

3. Council to develop a Water & Energy Efficient Communities engagement strategy to promote existing State Government programs that assist the community to:
   a) Reduce greenhouse emissions from electricity and gas use
   b) Increase the proportion of energy coming from renewable energy sources for community power needs
   c) Improve water efficiency of businesses and residences in Moorabool
   d) Increase the use of greywater, rainwater tanks and stormwater harvesting methods to replace the use of potable mains water in businesses and residences.
4.4.2 Local Food

At a glance

- There are 3 community gardens in the Shire.
- Moorabool is blessed with a higher level of local produce produced in the Shire at market gardens and on farms, enabling greater opportunity for the community to buy locally.
- It is unknown what proportion of the community grows its own backyard produce, but the larger average block sizes in the shire suggest it is likely a higher proportion of residents grow their own than in higher density municipalities in Melbourne.

Local Food vision

There is a measurable increase in the community growing their own food and buying more of their food from local food producers.
Context

As the impacts of climate change are felt, there are a number of climate impacts which threaten our food supply including:

- Water shortages due to drought reducing rainfall and water storages
- Heatwaves causing the loss or drop in quality of produce
- Bushfire causing the loss of crops, livestock and grazing land
- Unpredictable impacts of pests such as insects damaging food production.

Peak oil, where the cost of oil becomes more and more expensive as extraction becomes more difficult, could result in the cost of food increasing dramatically since many inputs to large-scale food production rely on oil (transport, fertilizer, machinery etc.).

Moorabool Shire has a large supply of local food, with the presence of market gardens as well as small to large-scale agricultural production on farms. Supporting this local food production, connecting it to local residents, and also supporting local residents to grow some of their own food are all important actions.

Council has put some energy into supporting the development of community gardens in the Shire in recent times and there are now at least three community gardens: Darley community art garden, Hospital Garden Ballan, Friendship Garden at Ballan.

Moorabool Environment Group does a range of activities to support people growing their own food, buying locally and growing in the community gardens. The Bacchus Marsh Produce Swap is one example, where residents are invited once a month to meet to exchange or offer excess produce.

Strategic objectives for Local Food

Moorabool Shire to promote activities that:

1. Increase local production of food by residents and businesses in Moorabool Shire.
2. Increase local sales and consumption of locally produced food in Moorabool Shire.
3. Increase participation in community food production activities including community gardens, food swaps and local farmers markets.
References


Ironbark Sustainability (September 2014b) Council Buildings – Results and Trends from over 1,000 Sustainable Small Facility Assessments (author Lucy Carew-Reid, Ironbark Sustainability). Ironbark Sustainability, Melbourne.


Appendix 1: Strategic and legislative framework

**National**

<table>
<thead>
<tr>
<th>Legislation</th>
<th>Policy Strategy and Agreements</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Aboriginal and Torres Strait Islander Heritage Act 1984</td>
<td>• A Directory of Important Wetlands in Australia (EA 2001)</td>
</tr>
<tr>
<td>• Australian Heritage Commission Act 1975 (Register of the National Estate)</td>
<td>• Australia’s Biodiversity Conservation Strategy 2010–2030</td>
</tr>
<tr>
<td>• Environment Protection and Biodiversity Conservation Act 1999</td>
<td>• Australian Pest Animal Strategy 2007</td>
</tr>
<tr>
<td>• Native Title Act 1993</td>
<td>• National Framework for the Management and Monitoring of Australia’s Native Vegetation (2001)</td>
</tr>
<tr>
<td>• Water Act 2007</td>
<td>• National Indigenous Reform Agreement (Closing the Gap)</td>
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<td></td>
<td>• National Water Quality Management Strategy (1992)</td>
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<td></td>
<td>• Strategy for Australia’s National Reserve System 2009–2030</td>
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<td></td>
<td>• The Australian Weeds Strategy (revised 2007)</td>
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<td></td>
<td>• Wetlands Policy of the Commonwealth Government of Australia 1997</td>
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**State**

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<thead>
<tr>
<th>Legislation</th>
<th>Policy Strategy and Agreements</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Aboriginal Heritage Act 2006</td>
<td>• Biosecurity Strategy for Victoria 2009</td>
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<tr>
<td>• Catchment and Land Protection Act 1994</td>
<td>• Indigenous Partnership Framework 2007-10 (reviewed 2010)</td>
</tr>
<tr>
<td>• Climate Change Act 2010</td>
<td>• Invasive Plants and Animal Policy Framework 2010</td>
</tr>
<tr>
<td>• Cooperative Management Agreement 2004</td>
<td>• Native Vegetation Management – A Framework for Action (Revised 2005)</td>
</tr>
<tr>
<td>• Crown Land (Reserves) Act 1978</td>
<td>• Policy for Sustainable Recreation and Tourism on Victoria’s Public Land 2002</td>
</tr>
<tr>
<td>• Environment Protection Act 1970</td>
<td>• State Environment Protection Policy (Waters of Victoria 1988)</td>
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<tr>
<td>• Fisheries Act 1995</td>
<td>• State Environment Protection Policy (Groundwaters of Victoria) 1997</td>
</tr>
<tr>
<td>• Flora and Fauna Guarantee Act 1988</td>
<td>• Sustainability Charter for Victoria’s State Forests 2006</td>
</tr>
<tr>
<td>• Forests Act 1958</td>
<td>• 2009 Victorian Bushfires Royal Commission</td>
</tr>
<tr>
<td>• Heritage Rivers Act 1992</td>
<td>• Victorian Bushfire Strategy 2008</td>
</tr>
<tr>
<td>• Land Act 1958</td>
<td>• Victorian Landcare Program Strategic Plan 2012</td>
</tr>
<tr>
<td>• National Parks Act 1975</td>
<td>• Victorian Flood Management Strategy 1998</td>
</tr>
<tr>
<td>• Planning and Environment Act</td>
<td>• Victorian Waterway Management Strategy 2013</td>
</tr>
<tr>
<td>• State Environment Protection Policy (Waters of Victoria) 2003</td>
<td>• Victoria’s Salinity Management Framework 2000</td>
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<tr>
<td>• Sustainable Forests (Timber) Act 2004</td>
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<tr>
<td>• Traditional Owner Settlement Act 2010</td>
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<td>• Assessment Council Act 2001</td>
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<tr>
<td>• Victorian Conservation Trust Act 1972</td>
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<td>• Water Act 1989</td>
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<td>• Wildlife Act 1975</td>
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</table>
Regional

### Legislation
- N/A

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<thead>
<tr>
<th>Policy Strategy and Agreements</th>
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<tbody>
<tr>
<td>Central Highlands Regional Growth Plan 2014</td>
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<tr>
<td>South West Landscape Assessment Study 2012</td>
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<tr>
<td>Grow West Implementation Plan 2013</td>
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<tr>
<td>Corangamite Regional Catchment Strategy 2013</td>
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<td>Corangamite Waterway Strategy 2014 – 2022</td>
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<tr>
<td>Corangamite Landcare Support Plan 2013</td>
</tr>
<tr>
<td>Corangamite Invasive Plant and Animal Management Strategy</td>
</tr>
<tr>
<td>Corangamite Soil Health Strategy 2006 – 2012</td>
</tr>
<tr>
<td>Corangamite Native Vegetation Plan 2003 – 2008</td>
</tr>
<tr>
<td>Corangamite Wetland Strategy 2006 - 2011</td>
</tr>
<tr>
<td>Port Phillip and Westernport Regional Catchment Strategy</td>
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<tr>
<td>Port Phillip and Westernport Healthy Waterways Strategy 2013</td>
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<tr>
<td>Port Phillip and Westernport Native Vegetation Plan 2006</td>
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<tr>
<td>Port Phillip and Westernport Rabbit Action Plan 2003</td>
</tr>
<tr>
<td>Port Phillip and Westernport Weed Action Plan 2003</td>
</tr>
<tr>
<td>Western Alliance for Greenhouse Action (WAGA) (2011) Climate Change Risk Assessment</td>
</tr>
<tr>
<td>Western Alliance for Greenhouse Action (WAGA) (2014) Low Carbon West: A Strategy for a Transition to a Low Carbon Economy in the WAGA Region</td>
</tr>
</tbody>
</table>
Appendix 2: Bioregions and ecological communities of Moorabool Shire

Bioregions of the Moorabool Shire

Bioregions are a landscape-scale approach to classifying the environment using a range of attributes such as climate, geomorphology, geology, soils and vegetation. Bioregions capture the patterns and ecological characteristics in the landscape. There are 28 bioregions identified across Victoria (DEPI 2014).

Within Moorabool Shire there are two bioregions that characterise the landscape. An overview of these bioregions is provided in Table 4.

Table 4. Bioregions of Moorabool Shire

<table>
<thead>
<tr>
<th>Bioregion</th>
<th>Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Victorian Uplands</td>
<td>Dominated by Lower Palaeozoic deposits giving rise to dissected uplands at higher elevations, amongst granite and sedimentary terrain metamorphic and old volcanic rocks, which have formed steeply sloped peaks and ridges. Supports grassy woodlands and forests (DEPI 2014). Extends across the north of the Shire.</td>
</tr>
<tr>
<td>Victorian Volcanic Plains</td>
<td>Vast open areas of grasslands and small patches of open woodland. Dominated by Cainozoic volcanic deposits that formed extensive flat to undulating basaltic plain with stony rises, old lava flows, numerous volcanic cones and old eruptions points and is dotted with shallow lakes both salt and freshwater. Numerous volcanic cones (scoria and basalt) dot the landscape (DEPI 2014). South of the shire. Supports productive agricultural land.</td>
</tr>
</tbody>
</table>

Ecological communities

The large areas of protected reserves within Moorabool Shire provide good examples of intact remnants of original ecosystems. These areas are important habitat and refuge for threatened flora and fauna that are known to occur in the Shire. Council reserves and many of the roadsides across the Shire also provide important habitat values for threatened flora and fauna.

The natural environment of Moorabool Shire also provides important ecosystem services for humanity like clean water, fresh air, food, fuel and energy. Subsequently, the use of natural resources to provide these services has resulted in significant change to the natural, or ecological, function of the landscape in Moorabool Shire.

Steps are being taken to restore the ecological function of the landscape, with landholders, Landcare, programs such as Grow West and Council undertaking activities to rehabilitate the natural environment and restore some of their former ecological function. These activities, and proposed actions such as increasing the connectivity between reserves and patches of remnant habitat, will contribute to the protection and restoration of ecological communities within the Shire.
There are five ecological communities in the Shire that are listed under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*. These are identified in Table 5.

**Table 5. Endangered ecological communities in Moorabool Shire (DoE 2014)**

<table>
<thead>
<tr>
<th>Ecological community</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grassy Eucalypt Woodland of the Victorian Volcanic Plain</td>
<td>Critically endangered</td>
</tr>
<tr>
<td>Natural Temperate Grassland of the Victorian Volcanic Plain</td>
<td>Critically endangered</td>
</tr>
<tr>
<td>Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains</td>
<td>Critically endangered</td>
</tr>
<tr>
<td>White Box-Yellow Box-Blakely’s Red Gum Grassy Woodland and Derived Native Grassland</td>
<td>Critically endangered</td>
</tr>
<tr>
<td>Grey Box (<em>Eucalyptus microcarpa</em>) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia</td>
<td>Endangered</td>
</tr>
</tbody>
</table>

In addition, there are 32 threatened species (17 fauna species and 15 flora species) that are listed under the *EPBC Act*, as well as 11 migratory species. Two of these species are critically endangered:

- Golden Sun Moth (*Synemon plana*)
- Plains Rice-flower (*Pimelea spinescens subsp. spinescens*) (DoE 2014).
Moorabool Shire Sustainable Environment Strategy
Implementation Plan 2016 - 2021

Moorabool Shire Council
# Contents

1. About the Implementation Plan .......................... 1
2. Reading the Implementation Plan ......................... 3
3. Implementation Plan 2016 - 2021 ....................... 4
1 About the Implementation Plan

This Implementation Plan outlines the activities over the next 5 years that Moorabool Shire Council will undertake to help achieve the objectives and visions identified within the Moorabool Shire Sustainable Environment Strategy that aim to see improvements to the natural environment by 2041.

The Implementation Plan should be read in conjunction with the Sustainable Environment Strategy.

Four strategic directions are identified in the Sustainable Environment Strategy. These include:

- ENVIRONMENTAL STEWARDSHIP
- SUSTAINABLE COUNCIL
- SUSTAINABLE PLACES
- LIVE AND WORK SUSTAINABLY

A number of priority areas have been identified within each strategic direction. There are twelve priority areas in total (Figure 1).

![Figure 1. Strategic directions and priority areas for the Moorabool Shire Sustainable Environment Strategy](image)

Within this Implementation Plan, actions have been assigned to each priority area.

The Sustainable Environment Strategy is a ten-year document. The actions identified in this Implementation Plan are for the next five years to 2021. A mid-term review of the Strategy and the actions that have been
implemented will be conducted after five years, after which a new Implementation Plan will be developed for the period 2021-26.

The Implementation Plan will guide the development of annual action plans that will outline designated tasks, responsibilities, timeframes, resources and budgets. Action plans will be prepared, reported on and reviewed each financial year.

The Strategy acknowledges that Council can only have direct control over some issues, for example its own resource efficiency. It can indirectly influence other issues where it's partners share or have greater responsibility, and there are some issues it cannot influence and so can only take an advocacy role. As such the actions in this document are identified as Control, Influence, or Advocacy actions.

The Environment Unit at Moorabool Shire will oversee implementation of this Strategy (refer to the Implementation Plan 2016-26) but many of the actions will be the responsibility of other areas of Council. This includes responsibility for the delivery of the actions identified within this Strategy, as well as monitoring and evaluating the implementation of the strategy over its lifespan. Indeed, the success of the Strategy will depend on the contribution of all areas of Council as part of a whole-Council approach to sustainability.
2 Reading the Implementation Plan

The diagram beneath (Figure 2) provides an outline to interpreting the Implementation Plan.

**STRATEGY VISION**
Moorabool Shire will work to ensure the Shire has healthy ecosystems, productive landscapes, sustainable communities and the capacity to adapt to future environmental challenges.

**STRATEGIC DIRECTIONS**
Four strategic directions set the framework for achieving the Strategy vision. These include: Environmental Stewardship, Sustainable Council, Sustainable Built Environment and Live and Work Sustainably.

**TWELVE PRIORITY AREAS**

**VISION**
A vision has been identified for each priority area, identifying what Council aims to achieve in each area over the life of the strategy. Collectively, the visions for the priority areas will contribute to achieving the overarching Strategy vision.

**OBJECTIVES**
Objectives are identified for each priority area. They state what Council aims to achieve through the implementation of collective actions.

**OUTCOMES**
Outcomes are identified for each action. This is what Council intends to achieve through each action.

**ACTIONS**
Actions are identified for each priority area. These are the activities that Council will undertake to achieve the vision for each priority area.

**MEASURES**
This measures the extent to which the collective implementation of the actions has achieved the objectives and vision for each priority area.

**DATA COLLECTION METHODS**
This identifies the data collection methods required to determine if the intended outcome of an individual action has been achieved.

Figure 2. Outline to interpreting the Implementation Plan
### Strategic Direction 1: Environmental Stewardship

**Priority Area:** PROTECT BIODIVERSITY  
*There is a measurable improvement in the condition of the natural environment in the Shire over the next ten years*

<table>
<thead>
<tr>
<th>MEASURES</th>
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<tbody>
<tr>
<td>• There is an increase in the connectivity of remnant vegetation across the Shire by 2021</td>
</tr>
<tr>
<td>• There is an increase in the condition of native vegetation on Council managed reserves and roadsides by 2021</td>
</tr>
<tr>
<td>• There is a decrease in priority weed species on Council managed reserves and roadsides by 2021 (measured by decrease in density)</td>
</tr>
<tr>
<td>• There is a decrease in rabbit activity on Council managed reserves and roadsides by 2021 (measured by number of mapped warren entrances)</td>
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</table>

<table>
<thead>
<tr>
<th>ACTIONS</th>
<th>OUTCOMES</th>
<th>DATA COLLECTION METHODS</th>
<th>RESPONSIBILITY</th>
<th>SPHERE OF INFLUENCE</th>
<th>TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Review and consolidate existing Biolinks and Open Space Plans for Moorabool Shire, to help guide future land use planning.</td>
<td>Existing Biolinks Plans are reviewed and consolidated and are referred to for future land use planning.</td>
<td>Review Biolinks Plans. Update native vegetation and corridors mapping</td>
<td>LEAD: Environment \nPARTNER: Parks and Gardens, Strategic Planning, DELWP, CMAs, Grow West, Moorabool Landcare Network, Melbourne Water, MLAC, community</td>
<td>Control &amp; Influence</td>
</tr>
<tr>
<td>1.2</td>
<td>Implement the Biolinks Plan for Moorabool Shire.</td>
<td>At least one landscape scale biolink project is implemented with stakeholders and the community.</td>
<td>Review Council environmental works projects.</td>
<td>LEAD: Environment \nPARTNER: Strategic Planning, Parks and Gardens, DELWP, CMAs, Melbourne Water, Moorabool Landcare Network</td>
<td>Control &amp; Influence</td>
</tr>
<tr>
<td>OBJECTIVE 2: Increased knowledge of natural assets including understanding and monitoring of changes in condition on Council managed reserves and roadsides.</td>
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<td>---------------------------------------------------------------</td>
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<tr>
<td><strong>1.3</strong></td>
<td>Work in partnership with the relevant stakeholders to collate existing biodiversity records and expand databases with new data, utilising citizen science</td>
<td>All significant biodiversity assets are identified and mapped.</td>
<td>Review native vegetation mapping, and existing databases including non-government (e.g. Nature Share, Eremaea Birdlines)</td>
<td>LEAD: Environment PARTNER: DELWP, CMAs, Melbourne Water, Grow West, Community Groups</td>
<td>Control &amp; Influence</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OBJECTIVE 3: Strengthen local planning policy to recognise and protect existing natural values.</th>
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<tbody>
<tr>
<td><strong>1.5</strong></td>
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</tbody>
</table>
### OBJECTIVE 4: Increased monitoring and control of the impacts of pest plants and animals on native vegetation

|   | Undertake ecological assessments on Council managed reserves and roadsides to determine current extent of weed and pest infestation, and monitor change over time. | Ecological assessments are complete. A monitoring framework is developed and implemented annually. | Ecological condition assessment of Council reserves and roadsides. | LEAD: Environment  
PARTNER: Melbourne Water, CMAs, DELWP and DEDJTR | Control | 2016/17: collect baseline data  
2018–2021: Annual monitoring |
|---|---|---|---|---|---|---|
| 1.6 | Develop a Pest Plant and Animal Strategy for the Shire. | A Pest Plant and Animal Strategy is developed in conjunction with stakeholders and the community. | Review of Council environmental plans. | LEAD: Environment, Landcare  
PARTNER: DELWP, CMAs, Melbourne Water, community, DEDJTR | Control & Influence | 2017/18 |
| 1.7 | Complete the draft Operational Plan for council conservation reserves and roadsides and implement pest plant and animal control works as identified in the Plan. | Operational Plan is completed. Weed and pest control works are implemented on Council managed reserves and roadsides, as identified in the Plan. | Review of Council Operational Plan for conservation reserves and roadsides. | LEAD: Environment | Control | Ongoing |
| 1.8 | Prepare ‘Landscape Guidelines’ that include consideration of:  
- Waterways  
- Open space  
- Streetscapes | Landscape Guidelines are developed. | Review of local planning provisions. | LEAD: Strategic Planning, Environment  
PARTNER: CMAs & Melbourne Water | Control | 2016/17 |
Priority Area: HEALTHY WATERWAYS

There is a measurable improvement in the condition of waterways and the quality of water across Moorabool Shire over the next ten years.

**MEASURES**

- There is an increase in the connectivity of riparian vegetation across the Shire by 2021
- There is an increase in the condition of remnant and native riparian vegetation on Council managed reserves by 2021
- The quality of urban stormwater is maintained (or improved) by 2021

<table>
<thead>
<tr>
<th>ACTIONS</th>
<th>OUTCOMES</th>
<th>DATA COLLECTION METHODS</th>
<th>RESPONSIBILITY</th>
<th>SPHERE of INFLUENCE</th>
<th>TIMING</th>
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<tbody>
<tr>
<td><strong>OBJECTIVE 1: Better protected and healthier riparian vegetation within the shire.</strong></td>
<td></td>
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</tr>
<tr>
<td>2.1</td>
<td>Review and update appropriate mechanisms to protect high value riparian vegetation</td>
<td>All identified high value riparian vegetation is protected by appropriate mechanisms.</td>
<td>Review of planning zones, overlays and conservation covenants.</td>
<td>LEAD: Environment, Strategic Planning PARTNER: Statutory Planning, DELWP, CMAs. Melbourne Water</td>
<td>Control &amp; Influence</td>
</tr>
<tr>
<td><strong>OBJECTIVE 2: Increased connectivity of riparian vegetation across the shire.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td>Identify and map remnant riparian vegetation across the Shire.</td>
<td>Remnant riparian vegetation is identified and mapped.</td>
<td>Review riparian vegetation mapping.</td>
<td>LEAD: Environment PARTNER: DELWP, CMAs &amp; Melbourne Water</td>
<td>Control</td>
</tr>
<tr>
<td>2.4</td>
<td>Identify opportunities for the connectivity of riparian vegetation within the Biolinks Plan for Moorabool Shire (refer to Action 1.1).</td>
<td>At least one riparian biolink project is implemented with stakeholders and the community by 2021.</td>
<td>Review Council environmental works projects.</td>
<td>LEAD: Environment PARTNER: DELWP, CMAs, Melbourne Water, community</td>
<td>Control &amp; Influence</td>
</tr>
</tbody>
</table>
### OBJECTIVE 3: Improved quality of stormwater runoff.

| 2.5 | Explore opportunities for small scale, localised Water Sensitive Urban Design projects. | Small scale Water Sensitive Urban Design projects are identified and implemented. | Review infrastructure projects. | LEAD: Planning, Environment, Infrastructure<br>PARTNER: Melbourne Water, Parks & Gardens, Corangamite CMA | Control | ongoing |

### OBJECTIVE 4: Potable water supply catchments are protected.

| 2.7 | Support the delivery of actions by the relevant water authorities to improve waterway health. | Actions by the water authorities to improve waterway health are supported by Council. | Review waterway activities. | LEAD: Environment<br>PARTNER: Melbourne Water, CMAs, Community | Advocate | 2016-2021 |
Priority Area: SUSTAINABLE RURAL LAND MANAGEMENT

We will develop agricultural land for agricultural production and preserve rural landscape values and amenity.

MEASURES
- Development of a Small Town Strategy by 2017
- There is an increase in the gross value of agricultural production within the shire by 2018.
- All areas of landscape significance and high amenity are identified and recognised in the planning scheme by 2018.

<table>
<thead>
<tr>
<th>ACTIONS</th>
<th>OUTCOMES</th>
<th>DATA COLLECTION METHODS</th>
<th>RESPONSIBILITY</th>
<th>SPHERE of INFLUENCE</th>
<th>TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OBJECTIVE 1: Adopt planning policies that support increased agricultural development of productive farmland</strong></td>
<td></td>
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</tr>
<tr>
<td>3.1</td>
<td>Review of existing productive agricultural land and agricultural uses</td>
<td>Most important agricultural areas are mapped and integrated into the planning scheme</td>
<td>Review of land capability, planning zones and overlays.</td>
<td>LEAD: Strategic Planning, Environment PARTNER: DELWP, CMAs, Melbourne Water</td>
<td>Control 2017/18</td>
</tr>
<tr>
<td>3.2</td>
<td>Develop land use policies that support agriculture and integrate these into planning scheme</td>
<td>Agricultural output is maximised in areas of highest land quality and protected from residential encroachment.</td>
<td>Interpretation of land capability assessments and revise planning zones and overlays</td>
<td>LEAD: Strategic Planning, Environment</td>
<td>Control &amp; Influence 2018/19</td>
</tr>
<tr>
<td>3.3</td>
<td>Promote the region as a “food bowl” for Melbourne and encourage residents to source local produce</td>
<td>Increased agricultural development and local food production and consumption (especially in urban/rural interface areas)</td>
<td>ABS Agricultural Census &amp; community survey data</td>
<td>LEAD: Strategic Planning, Economic Development PARTNER: DELWP, RDV</td>
<td>Influence and Advocate 2017 - 2021</td>
</tr>
<tr>
<td><strong>OBJECTIVE 2: Plan for land use that is respectful of rural landscape values and amenity</strong></td>
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<tr>
<td>3.4</td>
<td>Develop policies that preserve landscape significance and integrate these into planning scheme, that align with the South West Landscape Assessment Study.</td>
<td>Areas of landscape significance and high amenity are identified and recognised in planning scheme</td>
<td>Review of local planning provisions</td>
<td>LEAD: Planning, Environment PARTNER: DELWP</td>
<td>Control &amp; Influence 2017/18</td>
</tr>
</tbody>
</table>
Priority Area: COMMUNITY AS LAND STEWARDS

There is a measurable increase in community awareness of the natural environment and participation in NRM based activities in the Shire.

MEASURES
- There is an increase in the level of community awareness of local natural values by 2021
- Participation in community based NRM activities has increased by 2021
- There is an increase in engagement activities with new rural and semi-rural landholders on best practice NRM activities by 2021.

<table>
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<tr>
<th>ACTIONS</th>
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<th>DATA COLLECTION METHODS</th>
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<th>SPHERE of INFLUENCE</th>
<th>TIMING</th>
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</thead>
<tbody>
<tr>
<td><strong>OBJECTIVE 1: Increased community awareness of the local natural values in Moorabool Shire</strong></td>
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<tr>
<td>4.1</td>
<td>Update the Council website to provide current information on the local environment e.g. access to bushwalks, existing community groups, private land management practices and ecological information.</td>
<td>The Council website is maintained with up-to-date information.</td>
<td>Review of the Council website.</td>
<td>LEAD: Environment, PARTNER: Marketing and Communications</td>
<td>Influence &amp; Advocate</td>
</tr>
<tr>
<td>4.2</td>
<td>Provide new residents with information packs about the natural local environment and how to access to NRM groups and organisations.</td>
<td>Information packs are developed and distributed to all new residents in the Shire.</td>
<td>Audit of the number of information packs distributed</td>
<td>LEAD: Environment,</td>
<td>Influence &amp; Advocate</td>
</tr>
<tr>
<td>4.3</td>
<td>Conduct a community survey to identify and monitor community awareness of the local natural environment and involvement with on ground activities.</td>
<td>Initial resident survey completed and baseline data collected. Second survey completed by 2020 to monitor change in awareness. Three surveys to be completed between 2016 and 2025.</td>
<td>Community survey</td>
<td>LEAD: Environment Partner: Customer Service, Marketing and Communications</td>
<td>Influence &amp; Advocate</td>
</tr>
</tbody>
</table>
## OBJECTIVE 2: Participation in community-based NRM groups and activities is encouraged and supported by Council

| 4.4 | Support existing Landcare and other community-based environment groups e.g. through the provision of resources, information and funding. | Council provides more equitable support (in the form of resources, information and/or funding) to at least 5 Landcare and or community-based NRM group by 2021. | Review of the number of community groups Council has support and the scale of support provided (resource, information, funding) | LEAD: Environment  
PARTNER: Landcare and other community based groups | Advocate | Ongoing |
| --- | --- | --- | --- | --- | --- |
| 4.5 | Promote, support and encourage existing NRM activities and programs delivered by other agencies e.g. CMAs & Melbourne Water | Council has promoted and supported 10 programs delivered by other agencies. | Review of the number of programs that Council has supported. | LEAD: Environment  
PARTNER: CMAs, Melbourne Water, DELWP | Advocate | Ongoing |

## OBJECTIVE 3: Increased engagement with new rural and semi-rural landholders on best practice NRM activities

| 4.6 | Provide and / or support activities for rural and semi-rural landholders e.g. walking tours & workshops | Council has delivered and / or supported at least 40 community environment activities or events for rural and semi-rural landholders by 2021. | Review of the number of activities Council has conducted | LEAD: Environment  
PARTNER: Landcare, DELWP, CMAs, Melbourne Water | Influence & Advocate | 2016-2021 |
| 4.7 | Work with Landcare to deliver incentives and training to rural and semi-rural landholders to undertake best practice NRM activities | Council has supported the application of 10 grant programs for residents. Council has partnered with Landcare to deliver 20 training programs. | Review of the incentives delivered by Council and Landcare and the rate of uptake from landholders. | LEAD: Environment  
PARTNER: Landcare | Influence & Advocate | 2016-2021 |
STRATEGIC DIRECTION 2: Sustainable Council

Priority area: ENERGY EFFICIENT & CLEAN ENERGY COUNCIL

There is a measurable improvement in energy efficiency of Council operations and an increase in clean energy use in order to achieve a carbon neutral council by 2025.

**MEASURES**

- There is a 15% decrease in the amount of energy (electricity and gas) used for Council operations per dollar spent by 2021.
- There is a 10% increase in the total renewable energy used for Council operations by 2021.
- There is a 30% decrease in the greenhouse emissions generated by Council operations by 2021.

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<th>ACTIONS</th>
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<tr>
<td>5.1</td>
<td>Re-instigate the Shire staff Green Team consisting of staff from across council who are engaged and empowered to run behaviour change and educational initiatives for staff in order to reduce the environmental impacts of council operations. NB the Green Team would look at reducing council energy, water and resource consumption and reducing waste.</td>
<td>Moorabool Shire staff are engaged by the Green Team and are actively reducing their impacts at work including reducing energy, water &amp; resource consumption (e.g. paper), transport emissions, and waste.</td>
<td>Green Team to track each of their initiatives and report back to Council Executive about project outcomes quarterly.</td>
<td>LEAD: Environment Unit PARTNER: Corporate Services</td>
<td>Control Ongoing</td>
</tr>
</tbody>
</table>
### OBJECTIVE 1: To reduce the amount of electricity and gas used, and the associated greenhouse emissions, for Council operations per dollar spent by Council.

<table>
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<tr>
<th>5.3</th>
<th>Review and evaluate <em>Greenhouse Local Action Plan 2007</em> actions and targets. Determine whether a new Greenhouse Action Plan is the next step or whether an alternative plan would be the most suitable e.g. a Buildings and Open Space Energy &amp; Water Action Plan.</th>
<th>Clarity is achieved on council’s best internal process or mechanism for acting on the recommended actions to cut greenhouse emissions.</th>
<th>Review of Greenhouse Local Action Plan 2007 complete. Decision on forward pathway for greenhouse action.</th>
<th>LEAD: Environment</th>
<th>Control</th>
<th>2016/17</th>
</tr>
</thead>
</table>
| 5.4 | Energy use of Council managed buildings  
  - Audit Shire’s owned and managed, facilities\(^1\) in terms of energy use (e.g. Darley Civic Hub & Bacchus Marsh Library) in order to prioritise energy saving actions.  
  - Consider combining this with water audits and creating a Building Energy & Water Plan.  
  - Implement the actions prioritised by energy and cost savings and payback periods.  
  - Investigate most cost effective way to fund the retrofits – e.g. investigate leasing of installed equipment.  
  NB see Ironbark Sustainability report for list of actions\(^2\) | Major council buildings are retrofitted to reduce energy consumption. Policy developed requiring that new Council buildings meet Environmental Sustainable Design (ESD) principles. | Electricity and gas bills of the major facilities are tracked for savings (compared to 2014 benchmark in Ironbark report). | LEAD: Assets, Environment  
PARTNER: Finance, Recreation and Community Development | Control | 2016-2021 |

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\(^1\) Going Solar audited Bacchus Marsh and Ballan service centres in 2011  
\(^2\) Ironbark Sustainability Energy & Water Inventory of Moorabool Shire Environment Strategy, January 2015
### 5.5 Open Space Energy Retrofits

- Audit the Shire’s major open space areas for energy use in order to prioritise energy saving actions.
- Implement the actions prioritised by energy and cost savings and payback periods.
- Investigate most cost effective way to fund the retrofits – e.g. investigate leasing of installed equipment.

**NB** see Ironbark Sustainability report for list of actions\(^3\)

<table>
<thead>
<tr>
<th>Major open space areas are retrofitted to reduce energy consumption.</th>
<th>LEAD: Assets</th>
<th>PARTNER: Finance, Parks &amp; Gardens, Recreation and Community Development</th>
<th>Control</th>
<th>2016-2021</th>
</tr>
</thead>
</table>

### 5.6 Implement the recommendations of the Street lighting business case\(^4\) to switch over streetlights to low energy LED globes.

- Streetlights in the Shire are progressively all switched to low energy globes saving an estimated $124,000\(^5\) off Council energy bills (after changeover costs).

**Street lighting managers to keep data on globe switching and report to Council.**

**Electricity bills for street lighting to be tracked by Finance over time (against 2014 benchmark in Ironbark Business case).**

<table>
<thead>
<tr>
<th>LEAD: Assets</th>
<th>PARTNER: Finance</th>
<th>Control</th>
<th>2016-2019</th>
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</table>

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\(^3\) Ironbark Sustainability *Energy & Water Inventory of Moorabool Shire Environment Strategy*, January 2015

\(^4\) Ironbark Sustainability *Streetlighting Business Case for Moorabool Shire*, 2014

\(^5\) Ironbark Sustainability *Streetlighting Business Case for Moorabool Shire*, 2014
### OBJECTIVE 2: To increase the proportion of renewable energy used in Council’s operations.

| 5.7  | Solar PV on Council buildings  | Solar PV panels are installed on a number of council buildings to reduce long term energy costs and reduce greenhouse emissions from shire operations. | LEAD: Assets  
PARTNER: Finance, Recreation and Community Development | Control | 2017-2021 |
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<tbody>
<tr>
<td></td>
<td>Secure a business case from a reputable solar retailer for installing solar PV panels on a number of Council facilities.</td>
<td>Electricity bills of the facilities with solar installed are tracked for energy &amp; cost savings (compared to 2014 benchmark in Ironbark report).</td>
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<td>Identify the best locations and installations in terms of payback period.</td>
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<td></td>
<td>Identify the best financial model secure funding and install.</td>
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</tbody>
</table>
| 5.8  | Support for renewable energy in the Shire  | Potential alternative energy production opportunities are identified and promoted for economic development and job creation.  
Council’s energy is provided by clean energy, enabling the Shire to be carbon neutral.  
Rates income is brought to the Shire from alternative energy production projects. | LEAD: Environment, Finance and Economic Development  
PARTNER: WAGA and DEDJTR | Control & Influence | 2017-18 |
|      | Identify opportunities for alternative energy production projects in the Shire  | Report on investment options for the wind projects. | | | |
|      | Investigate the Shire partnering with other WAGA Councils to purchase a long term (e.g. 20 years) supply of renewable energy from local renewable energy projects to provide some investment security. | | | | |
|      | Look to purchase 10-20 years of Council’s electricity supply from the alternative energy sources to enable Council operations to be carbon neutral. | | | | |
| 5.9  | Investigate and purchase Greenpower or carbon offsets in the form of renewable energy to offset Council’s remaining carbon emissions after energy efficiency projects have been delivered and local solar and wind has been sourced, as above. Partner with WAGA Councils to seek bulk purchase of Greenpower to reduce cost. Create a plan and work towards Council being certified as a carbon neutral council under the National Carbon Offset Standard by 2026. | Council’s total carbon emissions have been offset to make Moorabool a carbon neutral council.  
Council’s carbon emissions, renewable energy generation and carbon offsets tracked. | LEAD: Finance  
PARTNER: Environment, Assets, Recreation and Community Development | Control | 2021 |
|      | | | | | |
## OBJECTIVE 3: To shift Council’s procurement towards low emissions products and services.

| 5.10 | Revise Council’s Procurement policy to embed sustainability requirements into all purchasing decisions. Investigate re-joining ECOBuy program to support implementation. Specify actions areas where low embodied energy, energy efficient, water efficient, recycled and low waste products and services are sought including:  
- Roads and maintenance (e.g. low emissions concrete, recycled fill, low energy globes or fittings etc.)  
- Council buildings (e.g. energy and water efficient fittings and products as standard)  
- Stationery and supplies (e.g. recycled, recyclable, non-toxic products)  
- Food and catering (e.g. local, organic, fair trade food)  
- Fleet and machinery (i.e. most fuel efficient available)  
Green Team to support education of staff to ensure the policy is enacted. | Council’s environmental impacts (greenhouse emissions, water use, and waste generation) will be reduced by sustainable procurement. Energy, fuel and water bills will be reduced through use of more efficient equipment. Participation in ECOBuy program provides a tracking system for procurement. | LEAD: Finance, Environment  
PARTNER: Infrastructure, Recreation and Community Services Green Team | Control | 2017 - ongoing |
Priority area: WATER EFFICIENT COUNCIL

There is less water used in the operations of Council with a transition away from potable mains water use to rainwater, stormwater and recycled water.

**MEASURES**

- There is a 10% decrease in the amount of water (potable and non-potable) used for Council operations and facilities by 2021.
- There is a 20% increase in the amount of recycled water used in Council operations and facilities by 2021.
- There is a 10% increase in the proportion of water coming from non-potable sources used for Council operations and facilities by 2021.

<table>
<thead>
<tr>
<th>ACTIONS</th>
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<th>TIMING</th>
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</thead>
</table>
| 6.1 Audit all Council facilities for opportunities to improve water efficiency and install water efficient fittings (tap aerators, toilet regulators, and efficient showerheads).  
  - Install simple fittings during the audit  
  - Fix leaks during the audits  
  - Audit to identify larger retrofit actions for later installation (including rainwater tanks – see Action 6.3 below)  
  - Identify any important education or behavioural changes that could save water in high use facilities (e.g. signage, staff policies etc.).  
  - Develop Water Asset Strategy | Council buildings and facilities are retrofitted for greater water efficiency into the long term. Leaks are repaired. Water consumption in these buildings is reduced. Council water bills are reduced. | Auditors to provide data on retrofitted items, leaks repaired etc. Water bills tracked by finance to show changes in consumption and costs (against 2014 benchmark in Ironbark report). | LEAD: Assets  
PARTNER: Finance, Private auditor such as Green Plumber | Control | 2017-2018 |
6.2 Investigate other uses of water in the Shire, such as irrigation, road maintenance etc., for opportunities to reduce water consumption and switch to non-potable water.
   - Identify main users of water in Council and set up a working group of these users to develop and implement opportunities.

Water use (potable & non potable) by the Shire is reduced, reducing pressure on local water supplies and reducing Shire water bills. Working group to report on actions. Water bills tracked by finance to show changes in consumption and costs (against 2014 benchmark in Ironbark report).

LEAD: Infrastructure, Recreation and Community Development
PARTNER: Environment, Finance
Control 2017–2021

### OBJECTIVE 2: Transition from using potable water to using recycled water or stormwater for Council operations and facilities.

6.3 Install rainwater tanks in all small and large Council facilities.
   - Audit all Council managed facilities for rainwater tank opportunities (as part of water efficiency audit above).
   - Investigate funding opportunities to implement a program of installing rainwater tanks in any facilities that do not have them, for connection to toilets, laundries, garden taps etc.

Rainwater tanks are installed in all Council facilities that have the capacity to replace potable mains water with rainwater for some or all usage. Facilities management to report on the audit of facilities and the numbers of rainwater tanks installed.

LEAD: Assets
PARTNER: Recreation and Community Development, Environment, Water Authorities, Finance
Control 2016-2018

6.4 Work with water authorities to investigate opportunities for recycled water provision from sewage treatment or other sources that could provide fit-for-use water to Council, businesses and industry in Moorabool.

Recycled water opportunities have been investigated and plans developed to provide available recycled water for fit-for-use industrial or Council activities. Water authorities to report on opportunities and amounts of recycled water provided.

LEAD: Infrastructure, Strategic Planning, Economic Development
PARTNER: Water authorities
Influence & Advocate 2016-2021
Priority area: SUSTAINABLE TRANSPORT IN COUNCIL

We will reduce the greenhouse emissions from the transport used for Council operations.

PROGRESS INDICATORS & TARGETS

- There is a 15% decrease in the greenhouse emissions from transport used in Council operations by 2021.
- There is a reduction in car usage for staff travelling to and from work.

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<tr>
<th>ACTIONS</th>
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<tbody>
<tr>
<td>7.1</td>
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<td>Control</td>
<td>2016-17 – Working group 2017-2021 - Implementation</td>
</tr>
</tbody>
</table>

OBJECTIVE 1: Reduce greenhouse emissions from vehicle usage for Council operations.

- Establish a working group to identify current opportunities, and set a clear pathway to reduce fleet usage and emissions, and improve sustainable transport options to work, including:
  - Establish minimum vehicle numbers to service staff requirements during work hours;
  - Vehicle fleet to continue shift to more greenhouse efficient vehicles using the Australian Government’s Green Vehicle Guide;
  - Promote alternative transport support for staff including staff bike facilities and Public transport options, and use of electronic meeting technology such as video conferencing and Skype.

- Implement agreed actions.

- Council fleet reduced in number and improved in efficiency. Greenhouse emissions from staff travel to/from and for work are reduced.

- Fleet managers to track fleet numbers, fuel efficiency and total usage in greenhouse emissions.

LEAD: Fleet management
PARTNER: Staff working group
### OBJECTIVE 2: Reduce greenhouse emissions from staff travel to and from work through supporting a reduction in car trips.

| 7.2 | Work with Staff Green team and/or other staff committee to identify actions that will support Council staff to reduce the car trips involved in travel to and from work. Actions would include:  
  - Ensuring cycling is supported by workplace showers, and bike and gear storage space.  
  - Facilitating carpooling between staff.  
  - Incentivising public transport, cycling or walking use instead of car use to travel to work.  
| There are fewer car trips for staff to travel to and from work. Staff have gained health benefits from switching to active transport modes. | Survey of staff about travel modes to/from work. | LEAD: Environment, Green Team | Control & Influence | 2017-2021 |
STRATEGIC DIRECTION 3: Sustainable Places

Priority area: CLIMATE ADAPTATION

We will support and deliver activities to reduce impact of and vulnerability to future climate change on the Moorabool Shire community.

MEASURES

- Climate change adaptation action plan for Moorabool is developed by 2017 and actions are implemented fully by 2026
- Number of trees planted in urban areas in the Shire is increased year on year to 2021

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<tbody>
<tr>
<td><strong>OBJECTIVE 1:</strong> To ensure that Moorabool Shire has understood the risks of climate change on council operations and taken actions to prepare for and mitigate these risks.</td>
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<tr>
<td>8.1 Formally endorse the Western Greenhouse Alliance (WAGA) Climate Adaptation Strategy and Action Plan.</td>
<td>WAGA Climate Adaptation Strategy and Action plan is endorsed and helps to create opportunities for climate resilience activities in the Shire.</td>
<td>Endorsement of WAGA Climate Adaptation Strategy passed at a Council meeting.</td>
<td>LEAD: Strategic Planning, Environment</td>
<td>Control</td>
<td>2016/17</td>
</tr>
<tr>
<td>8.2 Understand the climate change risks to Moorabool Shire and develop an action plan to mitigate these risks (informed by the WAGA Climate Adaptation Strategy and Action plan).</td>
<td>A climate adaptation action plan is developed specific to Moorabool and the actions are implemented.</td>
<td>Development of Action plan. Delivery of the actions is monitored and reviewed.</td>
<td>LEAD: Infrastructure, Strategic Planning, Risk PARTNER: Environment, Assets</td>
<td>Control &amp; Influence</td>
<td>2016/17 Develop Action Plan 2017-2021 Implement actions</td>
</tr>
</tbody>
</table>
### OBJECTIVE 2: To ensure that council has understood the risks of climate change to the community and is working with the community to help them prepare for and mitigate the risks.

<table>
<thead>
<tr>
<th>8.3</th>
<th>Educate the community about the risks of climate change related extreme weather and other climate impacts to assist people to prepare and manage future impacts, including:</th>
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<tbody>
<tr>
<td>8.3.1</td>
<td>Heatwave response education</td>
</tr>
<tr>
<td>8.3.2</td>
<td>Helping vulnerable groups improve their homes to deal with extreme heat</td>
</tr>
<tr>
<td>8.3.3</td>
<td>Drought preparation</td>
</tr>
<tr>
<td>8.3.4</td>
<td>Bushfire management and emergency response</td>
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<td>8.3.5</td>
<td>Rainfall intensity and storm water</td>
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</tbody>
</table>

Information and engagement is delivered to the community including:

- Information on council web site
- Public meetings and workshops
- Specific outreach on key issues to vulnerable groups
- Emergency management plans are prepared by council for extreme events including bushfires or storms.

Assessment of information and engagement needs as outlined in Climate Change Adaptation action plan.

**LEAD:** Emergency Management

**PARTNER:** CFA, Communications, Dept. of Health & Human Services, Community Services

**Control & influence**

2016/17 Ongoing

<table>
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<tr>
<th>8.4</th>
<th>Develop Tree Strategy that identifies actions to increase tree canopy coverage in urban areas, with a focus on new urban areas that are lacking in tree coverage.</th>
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</table>

An increase in tree planting in urban areas is achieved year on year.

Tree planting program is tracked by council to report on numbers of trees planted.

**LEAD:** Strategic and Statutory Planning, Infrastructure

**PARTNER:** Developers (for new developments)

**Control**

2016-2021
Priority area: SUSTAINABLE COMMUNITY TRANSPORT

There is a reduction in vehicle trips in the Shire as a result of Council’s provision of community transport infrastructure and programs to support cycling, walking and public transport.

MEASURES

- There is a 5% increase in the number of residents travelling to work by non-car-based modes by 2021 (as measured by the ABS Census).
- Public transport patronage has increased to 7.5% of total trips within and connecting to the Shire by 2021 (reported by public transport operators).
- A 5% increase in cycle trips in the Shire by 2021 (as measured by Bicycle Victoria Super Tuesday)

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<tbody>
<tr>
<td><strong>OBJECTIVE 1:</strong> Ensure transport infrastructure in Bacchus Marsh and Ballan is integrated to support greater linked use between modes and better planning for active transport modes.</td>
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<tr>
<td>9.1 Support actions that assist in the delivery of the Bacchus Marsh Integrated Transport Study for Bacchus March that provide improvements in walking and cycling paths, public transport routes and connections and the supporting facilities alongside planned road improvements.</td>
<td>Integrated Transport Study has identified best ways to improve transport infrastructure and services in Bacchus Marsh.</td>
<td>Delivery of Integrated Transport Study.</td>
<td>LEAD: Recreation Services, Engineering Services</td>
<td>Control, Influence &amp; Advocate</td>
<td>ongoing</td>
</tr>
<tr>
<td><strong>OBJECTIVE 2:</strong> Provide cycling and walking infrastructure to support increased use of these modes instead of driving.</td>
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<tr>
<td>9.2 Continue to deliver the Moorabool Hike &amp; Bike Strategy (2014) to construct interconnected cycling and walking paths to link key destinations. In addition:</td>
<td>Safe, accessible and enjoyable cycling and walking routes are provided and incentivise more residents to cycle or walk.</td>
<td>Pre and post-construction counts of walkers and cyclists along key routes. Bicycle Victoria Super Tuesday bike count.</td>
<td>LEAD: Infrastructure PARTNER: Strategic Planning, Recreation Services, VLine/ Vic Track, Moorabool Environment Group, Schools, Traders etc.</td>
<td>Control &amp; Influence</td>
<td>2016/17 - 2021</td>
</tr>
</tbody>
</table>
- Provide secure bike parking at train stations, shops, services areas.
- Ensure safe lighting and security around train stations and on walking paths at night.
- Sheltered rest stops

9.3 Deliver a behaviour change and community awareness campaign to promote cycling and walking in the Shire as part of promoting the new cycle/walk paths as part of Hike & Bike Strategy.

| LEAD: Strategic Planning, Environment | 2016/17: collect baseline travel data
| PARTNER: GIS, Bicycle Victoria, Communications, Infrastructure, Recreation and Community Development, PTV, Moorabool Environment Group, Schools, Traders etc. | Influence & Advocate |
| 2020/21: monitor against baseline data after paths have been constructed |

More residents are aware of the new safe and accessible cycling and walking paths and the connection to train stations and shops etc. Residents are incentivised to switch from driving to walking or cycling to these destinations.

Mode of travel to work survey (ABS Census), Cycle and walk counts along key routes (pre and post construction).

OBJECTIVE 3: Support the increased use of public transport in the Shire in place of car travel.

9.4 Work with bus companies and V/Line to ensure bus and train timetables are optimally connecting to allow more residents to take the bus to/from the station for onward travel.

Advocate to V/Line and state government to increase train services on the Ballarat line stopping at Bacchus March and Ballan.

Promote existing public transport options

| LEAD: Infrastructure Development, Marketing & Communications, Bus companies, V/Line, Public Transport Victoria, Allied Health Professionals |
| Influence & Advocate |
| 2017/18 |
| 9.5 | Work with PTV and bus companies to better understand the community's travel needs in order to provide more useful bus services bringing people to destinations at the times they need to travel.  
- Support community travel surveys to be undertaken  
- A working group of bus companies, State government Transport department, Moorabool Environment Group and Council to devise a more extensive and effective bus routes and timetables.  
- A joint promotions campaign to be delivered to promote the use of buses (and trains) in the Shire. | Bus services are better meeting the travel needs of residents and patronage of buses has increased with a corresponding decrease in car trips. | Bus patronage data. | LEAD: Infrastructure  
PARTNER: Recreation and Community Development, Bus companies, Public Transport Victoria, Allied Health, Merrimu Services, Advocate 2017/18 |
Priority Area: URBAN DEVELOPMENT & PLANNING

We will support development that respects and conserves Moorabool Shire’s natural environment and reduces potential adverse impacts from increased population growth.

MEASURES

- Council’s environmental data sets are up-to-date by 2018
- There is a 15% increase in the average star rating of new buildings in the Shire by 2021
- All new residential or mixed use developments are designed and built with sustainable design including support for cycling/walking/public transport, abundant recreation space, greenspaces and biodiversity, shops or services within walking distance, water sensitive urban design, stormwater reuse and design for passive solar or solar panels.

<table>
<thead>
<tr>
<th>ACTIONS</th>
<th>OUTCOMES</th>
<th>DATA COLLECTION METHODS</th>
<th>RESPONSIBILITY</th>
<th>SPHERE of INFLUENCE</th>
<th>TIMING</th>
</tr>
</thead>
</table>
| 10.1    | • Ensure Local Planning Policy Framework (LPPF) amplifies State Planning Policy Framework (SPPF) and apply appropriate tools.  
• Ensure decision makers are aware of State Planning Policy Framework and Local Planning Policy Framework environmental information and tools | Natural environmental assets are considered where appropriate in planning decisions | Planning Scheme review table  
Planning permit report audit | LEAD: Strategic Planning, Environment  
PARTNER: Statutory Planning, DELWP | Control | 2017/18 |
| 10.2    | Partner with agencies with data on natural assets to integrate information into Council data sets | User-friendly Council environmental data sets are up-to-date and are reflected in planning scheme (as appropriate) to assist planning decision making process and Council operations (e.g. best practice) | Review of data sources within partner agencies  
Ecological assessments | LEAD: Environment, Assets  
PARTNER: DELWP, CMAs, Melbourne Water, Strategic Planning | Control and Influence | 2019/20 |

OBJECTIVE 3: Improve access to and connectivity between residents and open space and natural reserve areas.
### 10.3 Investigate opportunities to expand the Ballan Nectar Project and other similar projects e.g. Knox Garden for Wildlife program

<table>
<thead>
<tr>
<th>LEAD: Environment</th>
<th>PARTNER: Community</th>
<th>Control and Influence</th>
<th>Ongoing</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Ballan Nectar Project, or other similar projects, are implemented</td>
<td>Review environmental activities</td>
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</tbody>
</table>

### OBJECTIVE 4: New residential or mixed use precincts are designed with sustainability at the core of their structure plan including support for cycling/walking/public transport, abundant recreation space, greenspaces and biodiversity, shops or services within walking distance, water sensitive urban design, stormwater reuse and design for passive solar or solar panels.

<table>
<thead>
<tr>
<th>10.4 Work with MAV to advocate for improved Ecological Sustainable Design principles in the Victorian Planning Provisions</th>
<th>Strengthen environmental controls in clauses 54 and 56 of the Victorian Planning provisions to improve:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Connectivity to public transport, walking and cycling (active transport) infrastructure</td>
<td></td>
</tr>
<tr>
<td>• Walking/cycling distance to services and recreation space</td>
<td></td>
</tr>
<tr>
<td>• Abundant green spaces and protected biodiversity</td>
<td></td>
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<tr>
<td>• Water sensitive urban design</td>
<td></td>
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<tr>
<td>• Water efficiency including use of recycled water, rainwater and stormwater where possible</td>
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<tr>
<td>Solar access to all buildings for passive solar and solar PV</td>
<td>Gazetted change to Victorian Planning Provisions as a result of advocacy</td>
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</table>

<table>
<thead>
<tr>
<th>LEAD: Strategic planning</th>
<th>PARTNER: Statutory planning, Environment, Infrastructure, MAV</th>
<th>Advocate</th>
<th>Ongoing</th>
</tr>
</thead>
</table>

STRATEGIC DIRECTION 4: Live and Work Sustainably

Priority area: ENERGY EFFICIENT & CLEAN ENERGY COMMUNITY

*There is a measurable decrease in greenhouse emissions and potable water use in the Moorabool business and residential community.*

### MEASURES

1. Council to advocate to other levels of government to improve energy and water efficiency and renewable energy programs while reducing the cost burden of residents.
2. Council to work with water authorities and energy retailers to gather data about community water and energy usage and opportunities for greater efficiency.
3. Council to develop a Water & Energy Efficient Communities engagement strategy to assist the community to:
   a. Reduce greenhouse emissions from electricity and gas use.
   b. Increase the proportion of energy coming from renewable energy sources for community power needs.
   c. Improve water efficiency of businesses and residences in Moorabool.
   d. Increase the use of greywater, rainwater tanks and stormwater harvesting methods to replace the use of potable mains water in businesses and residences.

### ACTIONS | OUTCOMES | DATA COLLECTION METHODS | RESPONSIBILITY | SPHERE of INFLUENCE | TIMING
--- | --- | --- | --- | --- | ---
**OBJECTIVE 1:** Council to advocate to other levels of government to reduce the cost burden on residents of energy through funded energy and water efficiency and renewable energy programs.

| 11.1 | Council to work with the Western Alliance for Greenhouse Action (WAGA) to advocate to state and federal governments to:  
- Expand roll out of energy and water efficiency programs to houses and small businesses  
- Improve policy to support households and businesses to take up renewable energy, for example a stronger feed-in tariff | State and Federal government and influences and supported to expand energy and water efficiency programs. | Council and WAGA to monitor progress of government programs. | LEAD: Environment, WAGA PARTNER: Sustainability Victoria, DHHS | Advocate | 2017-19 |
<table>
<thead>
<tr>
<th>Objective</th>
<th>Description</th>
<th>Action</th>
<th>Lead</th>
<th>Partner</th>
<th>Control</th>
<th>Year</th>
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<tbody>
<tr>
<td>11.2</td>
<td>Improve the content and functionality of Council’s web site to promote greater community uptake of sustainable living, including energy efficiency, renewable energy, water saving, local food growing and waste reduction.</td>
<td>The community is provided with better information to take action to reduce their environmental impacts.</td>
<td>LEAD: Environment, PARTNER: Marketing and Communications</td>
<td>Control</td>
<td>2016/17</td>
<td></td>
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<tr>
<td>11.3</td>
<td>WAGA and Council staff to work with water and energy retailers to collate data on Shire residential and business water and energy consumption and renewable energy take up with a view to developing an efficiency program in partnership.</td>
<td>WAGA and Council and retailers have gathered data on water and energy consumption in the Shire to use it to guide outreach activities.</td>
<td>LEAD: WAGA, Environment PARTNER: energy and water retailers</td>
<td>Influence</td>
<td>2017-18</td>
<td></td>
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<td></td>
<td>Provide small grants to support water and energy efficiency, especially for low income households</td>
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<td></td>
<td>Work with Sustainability Victoria to roll out community resource efficiency programs to the Moorabool Shire.</td>
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<td></td>
<td>Include links and programs for taking action.</td>
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<td></td>
<td>Include case studies of council achievements to reduce energy, water &amp; waste to show leadership.</td>
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</table>

OBJECTIVE 2: Council to work with water authorities and energy retailers to gather data about community water and energy usage and opportunities for greater efficiency.
**OBJECTIVE 3:** Council to develop a Water & Energy Efficient Communities Engagement Strategy to assist the community to:

- Reduce greenhouse emissions from electricity and gas use.
- Increase the proportion of energy coming from renewable energy sources for community power needs.
- Improve water efficiency of businesses and residences in Moorabool.
- Increase the use of greywater, rainwater tanks and stormwater harvesting methods to replace the use of potable mains water in businesses and residences.

| 11.4 | Council to develop and implement a strategy to assist and engage residents and businesses to improve their water and energy efficiency.  
- Use data gathered in 11.3 to guide plans.  
- Work with water and energy retailers. | A strategy has been developed. | Data collected with retailers above to guide the strategy. | LEAD: Environment SUPPORT: Community development, Moorabool Environment Group, WAGA | Influence | 2018-2019 |
### Priority area: LOCAL FOOD

*There is a measurable increase in the community growing their own food and buying more of their food from local food producers.*

#### MEASURES

- There is a 10% increase in the number of residents or businesses producing some of their own food by 2021
- Increase in participation in community food production activities including community gardens, food swaps and local farmers markets.

<table>
<thead>
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</tr>
</thead>
</table>
| **OBJECTIVE 1: Increased local production of food by residents and businesses in Moorabool Shire**

12.1 Support residents and businesses to commence producing their own food in their gardens. Run food gardening workshops

More residents are producing and consuming more food in their own gardens.

Community survey

LEAD: Community Services

PARTNERS: Environment, Moorabool Environment Group, Landcare

Influence 2017-2019

| **OBJECTIVE 2: Increased local sales and consumption of locally produced food in Moorabool Shire**

12.2 Support increased market opportunities for local food producers to sell to local buyers

- Bring local food producers and local retailers or food buyers (eg cafes, caterers, fruit shops)
- Support increased use of local farmers markets
- Promote Cultivate local food producers website to connect producers to suppliers/caterers etc.

More of the food produced in Moorabool is being consumed in the Shire.

Survey of local food producers and retailers

LEAD: Economic Development, Cultivate

PARTNERS: Environment, Moorabool Environment Group, Farmers markets, Moorabool Landcare Network

Influence 2017-2020

| 12.3 Council to review its catering and food purchasing and seek to increase the use of local suppliers

Council is sourcing a greater proportion of its food from local producers.

Assessment of Council food purchasing.

LEAD: Finance

PARTNERS: Environment unit, Economic Development

Control 2016-2017 |
<table>
<thead>
<tr>
<th>Objective</th>
<th>Action</th>
<th>Outcome</th>
<th>Lead</th>
<th>Partner</th>
<th>Control/Influence</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.4</td>
<td>Support the development of community gardens or other local food growing projects in the Shire. Provide community grants and provide land.</td>
<td>2 community gardens or food growing projects have been set up and are used by local residents to grow their own food.</td>
<td>LEAD: Community Development, Environment \ Partner: Community groups, Moorabool Environment Group</td>
<td></td>
<td>Control/Influence</td>
<td>2017-2020</td>
</tr>
<tr>
<td>12.5</td>
<td>Promote community food activities and local food businesses to residents and businesses through Moorabool Shire newsletters, web site, events, noticeboards etc.</td>
<td>Local food activities and businesses are well promoted and supported by the Moorabool community.</td>
<td>LEAD: Marketing &amp; Communications and Tourism \ Partner: Community food projects and groups</td>
<td></td>
<td>Advocate</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>