Town of Cottesloe

Greenhouse Gas Reduction Plan

June 2012

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Executive Summary

Following Council's commitment to become a carbon neutral municipality, this Greenhouse Gas (GHG) Reduction Plan represents the next step in the Town of Cottesloe's response to climate change. It lays out the framework for reducing GHG emissions from the Town's operations before the use of carbon offsets to balance remaining emissions to zero.

To ensure meaningful GHG abatement is achieved prior to the purchase of any offsets, internal abatement targets have been set to underpin the overall goal of zero net emissions (that is, carbon neutrality). These targets are:

- 15% reduction on 2009/10 levels by 2015
- 20% reduction on 2009/10 levels by 2020

With the Town's operations responsible for a total of 806 tonnes $CO_{2\text{-}e}$ in 2009/10, these targets are equivalent to internal abatement of 121 tonnes $CO_{2\text{-}e}$ by 2015 and 161 tonnes $CO_{2\text{-}e}$ by 2020.

As reported within the *Town of Cottesloe Carbon Inventory Report for 2010-2011*, a change to the emissions factor for calculating waste emissions resulted in a reduction of the Town's reportable emissions of 76.8 tonnes $CO_{2\text{-}e}$ between 2009/10 and 2010/11. It is envisaged that this change, combined with the abatement projects outlined within this Plan will make the proposed targets achievable.

This GHG Reduction Plan follows an approach of least-cost abatement. Recommended projects representing the best value for money in terms of the volume of $CO_{2\text{-}e}$ abated will be implemented first (allowing for cash flow considerations and further investigation where necessary). This approach will see the Town not only achieve its goal in Carbon abatement, but also reduce expenditure through improved energy efficiencies.

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1 Background

1.1 The Climate Change Challenge

Climate change, often referred to as global warming, is a shift in global weather patterns and conditions. Much research has gone into understanding climate change and it is widely accepted that the burning of fossil fuels and the subsequent increase of atmospheric greenhouse gases (GHGs) is the cause of the climatic change the world is currently experiencing[1].

Within Australia, climate change is expected to result in hotter days and nights; reduced rainfall, but more intense rain periods; rising sea levels and more extreme weather conditions such as bushfire, long periods of drought, severe storms and flooding[2].

Climate change is often referred to as the 'greatest ecological, economic and social challenge of our time'. It requires the concerted efforts of countries, communities and individuals around the globe to meet the challenge. The response is two-fold:

- Adapt to the effects of climate change that can no longer be avoided.
- Work to reduce the concentrations of GHGs within the atmosphere and avoid the worst impacts of climate change.

The Australian Government's response to climate change includes the ratification of the Kyoto Protocol in 2007; the setting of targets; and the introduction of a number of initiatives to encourage the uptake of clean energy technologies and reduce our dependence on fossil fuels. The Town of Cottesloe (the Town) believes that we all have a part to play in helping Australia achieve our goals and avoid the worst impacts of climate change. As such, this document outlines the Town's approach to reducing corporate greenhouse gas emissions.

1.2 Town of Cottesloe: Responding to Climate Change

Situated on the coastline of Perth, the Town of Cottesloe is a small council known for its idyllic beaches and relaxed outdoor lifestyle. This lifestyle is very much a product of the quality of the environment and the favourable climate of the region. Climate change poses a threat not only to the natural and man-made assets within the Town, but also to the way of life of the broader Cottesloe community. The Town has acknowledged this threat and has been acting to respond to climate change.

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[1] Australia. Commonwealth Science and Industrial Research Organisation. 2012. *State of the Climate – 2012*. http://www.csiro.au/Outcomes/Climate/Understanding/State-of-the-Climate-2012.

[2] Australia. Commonwealth Science and Industrial Research Organisation. 2007. *Climate Change in Australia: Technical Report 2007*. *http://www.csiro.au/Organisation-Structure/Divisions/Marine--Atmospheric-Research/Climate-Change-Technical-Report-2007.aspx*.

1.2.1 Previous Actions

The preparation of this GHG Reduction Plan is one of a number of actions the Town has undertaken in response to climate change. The Town's previous actions include a range of mitigation and adaptation activities, such as:

- Participation in the ICLEI Cities for Climate Change Protection Program.
- The development of a Climate Change Policy.
- The commitment to achieve carbon neutrality by 2015.
- The completion of a risk assessment on the vulnerability of the Cottesloe Foreshore to the potential impacts of climate change.
- The development of the Local Climate Change Adaptation Action Plan 2011-2016.
- Purchasing offsets to reduce the impact of Council fleet emissions.
- Sourcing 'Green Power' at the Town's Administration Building.
- Engaging the community on climate change and sustainability through the 'Living Smart' program and participating in the 'Travel Smart' program.

1.2.2 Relationship to Peak Oil

In June 2011, Council acknowledged the threat posed by 'Peak Oil' to the Town including the Council, Cottesloe businesses and the Cottesloe community. Their response was to recommend the development of an oil consumption reduction target; reduce its reliance on oil-based products; raise awareness of Peak Oil issues amongst Cottesloe businesses and the community and; use the Carbon Neutral Program as a means of addressing vulnerability to peak oil in a holistic manner.

This GHG Reduction Plan forms part of the Town's response to Peak Oil. By aiming to achieve carbon neutrality and implementing carbon abatement projects, the Town is working to reduce their oil consumption with the aim of reducing GHG emissions. In achieving this, the Town will reduce its vulnerability to Peak Oil issues.

1.2.3 The National Carbon Offset Standard (NCOS)

The National Carbon Offset Standard is an Australian Standard designed to help businesses and organisations become carbon neutral. Organisations and products can be certified as NCOS-compliant, providing a means of reassuring consumers as to the validity of carbon neutral claims.

The Town of Cottesloe plans to achieve carbon neutrality in line with NCOS requirements to allow for certification in the future. This GHG Reduction Plan forms part of the NCOS requirement for an Emissions Management Plan (EMP).

2 Town of Cottesloe Emissions Profile

2.1 Baseline Inventory

For the purposes of measuring emissions and monitoring the Town's performance against this GHG Reduction Plan, 2009/10 has been selected as the baseline year. During this year, the Town was responsible for emitting 806 tonnes CO_{2-e}. The breakdown of emissions for the baseline year is shown in the following chart:

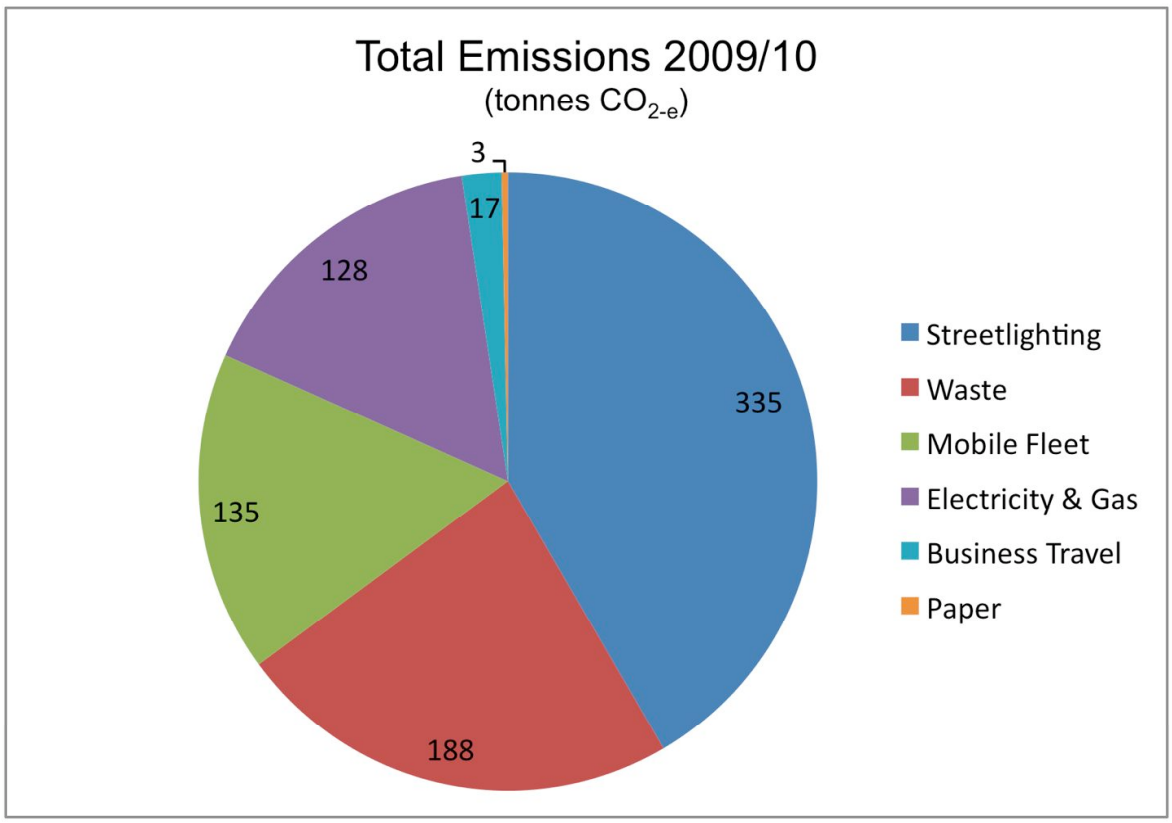

Figure 1: Town of Cottesloe Baseline Emissions (2009/10)

Emissions associated with electricity for Street Lighting were responsible for the largest component (42%) of the Town's emissions. Waste, Mobile Fleet and Electricity & Gas made up the majority of the remaining emissions with Business Travel and Paper use responsible for less than 3% of total emissions.

Details of the inputs and calculations used to determine these emissions can be found in the *Town of Cottesloe Carbon Inventory Report for 2009-2010*.

3 Goals and Targets

3.1 Achieving Carbon Neutrality

The Town has set a goal of achieving carbon neutrality as soon as practical and before 2015. To achieve this, the Town has adopted the following four step methodology:

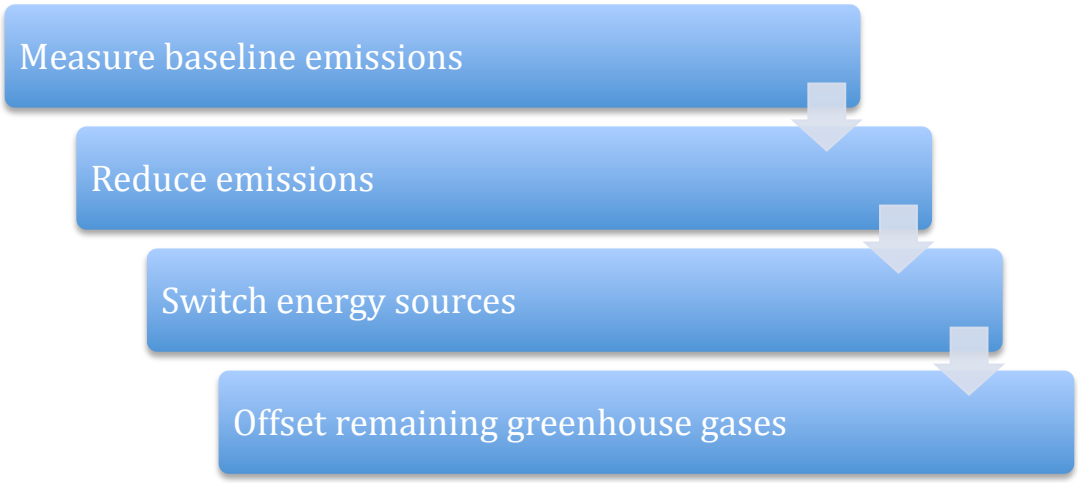

Figure 2: The Town of Cottesloe's methodology for achieving carbon neutrality

Under this approach, the Town aims to reduce GHG emissions as much as possible before switching energy sources (i.e. the purchase of green power) and purchasing carbon credits or offsets. This GHG Reduction Plan represents the action plan for stage 2: Reduce Emissions.

3.2 Target Setting

Whilst carbon neutrality can be achieved solely through the purchase of offsets, the Town has set targets stipulating a minimum level of abatement to be achieved through emissions reductions activities by 2015 and 2020.

The Goal	To achieve carbon neutrality as soon as practical and before 2015
2015 Target	Zero net emissions with internal abatement responsible for 15% reduction on 2009/10 levels by 2015
2020 Target	Zero net emissions with internal abatement responsible for 20% reduction on 2009/10 levels by 2020

Figure 3: The Town of Cottesloe's Goals and Targets

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4 Approach

In preparing this GHG Reduction Plan, the Town aimed to follow a consultative and holistic approach to ensure a broad and meaningful action plan was developed. To achieve this, the following activities were undertaken:

1. Staff survey to identify opportunities and barriers for GHG reductions.
2. Target setting workshop with management to agree meaningful and achievable targets.
3. Audit of energy consumption and waste generation at the Civic Centre and Administration Building to identify and assess GHG reduction opportunities.

As a result of these activities, the targets outlined in this Plan were established and a list of potential GHG reduction projects was identified.

4.1 Prioritising Actions: Marginal Abatement Cost Curve

When determining which abatement activities to pursue, the Town will follow an approach of 'least-cost abatement'. This will see the Town implement GHG abatement projects with the lowest cost per tonne of $CO_{2\text{-}e}$ abated as this represents best value for money.

To evaluate potential projects, the Town will use a Marginal Abatement Cost Curve (MACC). The MACC plots a series of abatement projects on a chart in order of increasing marginal abatement cost (that is, the Net Present Value per tonne of $CO_{2\text{-}e}$ abated). Using this methodology, it is possible to see projects that will save the Town money (those with a negative marginal abatement cost) and those that represent better value than purchasing offsets (those with a lower marginal abatement cost than the price of one carbon offset).

The Town's MACC can be seen on the following page (note, a larger version can be found in Appendix A). The MACC highlights a number of abatement opportunities with a negative Marginal Abatement Cost that will save the Town money (for example, installing solar panels on the Administration Building). The majority of these projects are energy efficiency projects designed to reduce electricity consumption, therefore reducing emissions and costs. Details of costs and assumptions used in developing this MACC can be found in the Town's *Abatement Project Register and MACC* available from the Town's Sustainability Officer.

The MACC also highlights two projects with particularly high marginal abatement costs, being the Civic Centre Waste Separation (shown in orange) and Upgrading Streetlights (no grant, shown in light blue). Proceeding with these projects is not recommended.

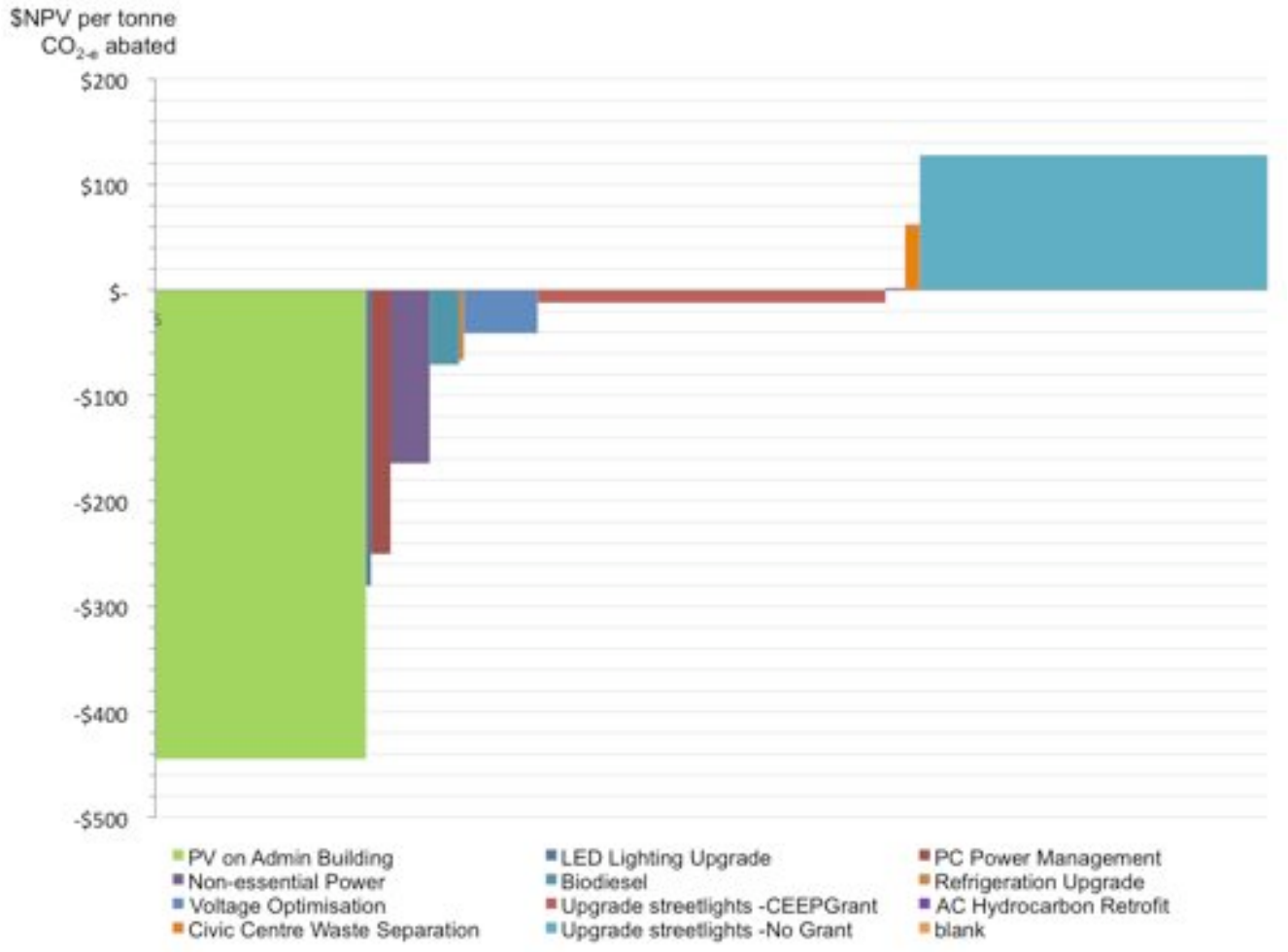

Figure 4: Town of Cottesloe's Marginal Abatement Cost Curve

4.2 Action Plan

Based on the assessment of the Town's MACC, the Action Plan outlined on the next page, has been developed. It is recommended that projects listed within this Plan be implemented to achieve the internal abatement targets.

As reported within the *Town of Cottesloe Carbon Inventory Report for 2010-2011*, a change to the emissions factor for calculating waste emissions resulted in a reduction of the Town's reportable emissions of 76.8 tonnes CO_{2-e}. This is in line with current carbon accounting practices and represents a windfall for the Town. This gain, combined with a reduction of 86.3 tonnes CO_{2-e} from the listed abatement projects will result in the Town achieving the targeted 20% internal abatement (161 tonnes CO_{2-e}) by 2020.

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Project	Upfront Cost	Annual Savings		Project lifetime (yrs)	MAC	Notes
		$$	t CO_{2-e}			
Solar Panels on Admin Building	$45,000	$12,906	19.9	20	-$444.70	Confirm compatibility with Heritage-listed building
LED Lighting Upgrade in the Admin Building	$1,435	$362	0.9	12	-$280.29	
PC Power Management	$200	$1,384	5.5	3	-$250.28	
Non-essential Power shutdown	$6,500	$2,158	6.9	7	-$164.32	Requires a distribution board review before proceeding
Biodiesel	$0	$413.50	5.9	5	-$70.72	Confirm compatibility of biodiesel with all vehicles
Refrigeration Upgrade	$1,425	$376	1.4	5	-$66.09	
Voltage Optimisation	$25,000	$3,654	10.1	10	-$40.94	Requires electrical engineering system design before proceeding
Streetlight Upgrade	$60,000	$5,703	33.0	20	-$12.11	Requires additional $50,000 from CEEP
AC Hydrocarbon Retrofit	$5,200	$840	2.7	7	$1.86	
Total	**$144,760**	**$27,797**	**86.3**			

Table 1: The Town of Cottesloe's Action Plan for carbon neutrality

4.3 Implementation Plan

The projects in the Action Plan are listed in order of increasing Marginal Abatement Cost. That is, the first project represents the best value for money in terms of cost per tonne abated. As such, the Town will aim to implement the projects in this order, with the exception of those projects requiring significant capital investment or further investigation. In these instances they will be implemented as the investigation is completed or when cash flow allows and funding is available.

The implementation of these actions will be managed by the Town's Sustainability Officer in liaison with the appropriate Managers and under direction from Council.

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5 Governance

There are two components to governance for this Plan:

1. Tracking performance against the Plan.
2. Reviewing and updating the Plan as required.

5.1 Tracking Performance

The Town's performance in terms of reducing emissions through internal abatement and achieving carbon neutrality will be monitored as part of the annual Carbon Inventory Report. This report will be modified to include a section on Performance against the Plan.

Should this process indicate the Town is not on track to meet the 2015 or 2020 targets, a review of this GHG Reduction Plan will be initiated.

5.2 Reviewing the GHG Reduction Plan

At a minimum, this GHG Reduction Plan will be reviewed annually for appropriateness and relevance. During this review, the following should be checked:

- Are the goals and targets still appropriate?
- Is the Action Plan up to date?
- Are there new projects that should be assessed on the MACC?
- Is the Plan still in alignment with other federal, state and Town policies?

Out-of-plan reviews may be triggered by other externalities such as changes to GHG accounting methodologies or the availability of new technologies that may represent better value abatement.

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6 Conclusion

The Town of Cottesloe has acknowledged the threat posed by climate change and is actively taking responsibility by committing to become a carbon neutral municipality. Achieving zero net emissions not only ensures the Town plays its part in mitigating the worst effects of climate change, it is also an opportunity to provide leadership to the broader community in terms of responding to climate change.

By setting internal abatement targets, the Town will ensure that meaningful GHG reductions occur before the purchase of any carbon offsets. GHG reduction projects will be implemented in order of least cost abatement, enabling the Town to reduce emissions in a cost effective manner. Furthermore, by targeting energy efficiency projects, the Town will not only be able to reduce emissions, but also save money in the long term as less electricity is required to achieve the same outcomes.

Appendix A – Marginal Abatement Cost Curve