Low Carbon Livingstone 2030

Livingstone SHIRE COUNCIL

A STRATEGY TO REDUCE LIVINGSTONE SHIRE COUNCIL'S CARBON FOOTPRINT

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INTRODUCTION

Livingstone Shire Council endeavours to be a positive example to the community by managing its resources efficiently and sustainably. This Carbon Strategy is a further commitment by Council to support a sustainable future for the Livingstone community and continues the organisation's journey towards reducing its carbon emissions.

While there is no legislative requirement for Council to have a plan to reduce carbon emissions as a response to climate change, Council wishes to continue to take the initiative to be resource efficient by taking direct, local action, which many other local governments throughout Australia have chosen to do.

Being a coastal locality, Livingstone Shire is vulnerable to the predicted impacts of climate change in relation to coastal inundation, cyclones and sea level rise. There are many other potential impacts as well. These include habitat loss, species extinctions, reduced water quantity and quality, more intense weather events etc. It is in Council's and the community's interest to contribute to global mitigation of those impacts by reducing Council's carbon emissions.

It also makes good financial sense to take action to reduce Council's direct reliance on fossil based energy. With the cost of traditional energy sources steadily increasing, Council has a responsibility to reduce its usage as far as practicable, to improve its energy efficiency and to become better insulated against future price fluctuations. This action may also inadvertently lead to other economic opportunities in the Livingstone community through new industries and business ventures.

The Strategy aims to achieve a reduction in current emissions, based on an inventory of data collected between 2014-18, by 30% by 2030. The key actions required for achieving this target includes:

1. Calculating emissions as best as possible in accordance with the Greenhouse Gas Protocol; and
2. Reducing emissions wherever possible through behavioural change, energy efficiency projects, renewable energy projects, and where necessary through carbon offsets.

PURPOSE AND UNDERLYING PRINCIPLES

The purpose of the Strategy is to establish a decision-making framework to provide a cost-effective way forward for Council to achieve a reduction in its emissions. It sets out some key actions that will define, drive and prioritise abatement activities to achieve a reduction in Council's carbon footprint.

The principles that underpin the Strategy are:

1. The Strategy recognises Council's role to provide leadership and set an example of best practice for the community. It also recognises that Council will share any knowledge gained through delivery of the Strategy. Although this Strategy is targeted specifically at Council operations and activities, Council also acknowledges its role in providing eventual leadership for the Livingstone community's transition towards a lower carbon emissions' future.

2. There is also recognition that there is a moral obligation for Council to "do its bit" in response to the serious long-term threat that climate change poses. This includes threats to the local economy, the Livingstone Shire environment and residents' lifestyle. Council assumes an obligation to act beyond legislative requirements to help create a truly sustainable future. Council also acknowledges that action to mitigate climate change is the shared responsibility of governments at all levels, businesses, communities and individuals.

3. It is acknowledged that there are often multiple benefits associated with reducing Greenhouse gas emissions. Actions to reduce emissions can result in financial, environmental, health and/or social rewards. Implementing the Strategy will also enhance Livingstone Shire's resilience and adaptability.

4. This principle supports actions being developed and prioritised according to their ability to affect change. Council will ensure its decisions are effective by applying appropriate and up-to-date analysis and risk-management tools.

POLICY CONTEXT

International

In December 2015, the international community unanimously adopted an ambitious agreement to decarbonise the global economy and to limit the impact of climate change. The UNFCCC COP21Paris Agreement commits 195 nations to hold the increase in global average temperature to "well below" 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels. The Intergovernmental Panel on Climate Change (IPCC) has recently released a special report (2018) on the impacts of global warming of 1.5C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development and efforts to eradicate poverty.

Australian Government

The Australian Federal Government became a member of the Kyoto Protocol in 2008 and has a current commitment to reduce the nation's emissions by 26-28 percent on 2005 levels by 2030. This builds on Australia's 2020 target of reducing emissions by five per cent below 2000 levels. The targets will be achieved through a credible policy suite that is already reducing emissions, encouraging technological innovation and expanding the clean energy sector. Australia is also a signatory to the historic global climate agreement under the United Nations Framework Convention on Climate Change (UNFCCC) at the 21st Conference of the Parties (COP21) in Paris (30 November to 12 December 2015).

The Paris Agreement sets in place a durable and dynamic framework for all countries to take climate action from 2020, building on existing international efforts in the period up to 2020. Key outcomes include:

- A global goal to hold average temperature increase to well below 2°C and pursue efforts to keep warming below 1.5°C above pre-industrial levels.
- All countries to set mitigation targets from 2020 and review targets every 5 years to build ambition over time, informed by a global stocktake.
- Robust transparency and accountability rules to provide confidence in countries' actions and track progress towards targets.
- Promoting action to adapt and build resilience to climate impacts.
- Financial, technological and capacity building support to help developing countries implement the Agreement.

Queensland Government

Through its paper Advancing Climate Action Queensland, the Queensland Government has noted that, due to a lack of climate action over recent years, the state's emissions "will increase … 34 per cent by 2030 on 2000 levels". The State Government is pursuing a range of strategies including development of a climate adaption strategy, implementing a coastal hazards adaptation program, as well as pursuing opportunities for alternative energy and changed land management practices.

Local Government

A number of local governments around Australia have already established carbon reduction targets. Adelaide City Council is aiming to be carbon neutral by 2025. Byron Shire is aiming to be Australia's first 'net zero emissions' region by 2025. Brisbane City Council is committed to being carbon neutral by 2031. Sydney City intends to reduce emissions by 70% by 2030. Frankston intends to be carbon neutral by 2025, while the Sunshine Coast Regional Council is building a $50 million 15 megawatt solar farm which will offset 100% of Council's electricity consumption from its facilities and operations. Meanwhile, Moreland City Council in the northern suburbs of Melbourne became carbon neutral for Council operations in 2012 (as certified under the National Carbon Offset Standard - Carbon Neutral Program). Essentially many local governments in Australia are proactively taking action to reduce their carbon footprints and utilising the various technologies available to advance their carbon agendas.

Livingstone Shire Council

Livingstone Shire Council has recently updated its Environmental Policy to better align Council direction in environmental sustainability with corporate governance. The Environmental Sustainability policy includes climate change as one of its guiding principles where Council will develop and implement climate change mitigation actions which aim to reduce the potential impact of climate change on Council's operations. Council is also participating in the Queensland government's Queensland Climate Resilience Councils programme and the Climate Council's Cities Power Partnership programme.

TARGET

The Strategy proposes that Council operations and service activities will reduce current carbon emissions, based on data collected between2014-18, by 30% by 2030. This is an ambitious target that will be dependent upon ongoing commitment by future Councils. It may also be impacted by the changing economic, environment, and social factors, technological advances, and legislative changes.

The target will become one of Council's sustainability indicators to ensure progress can be tracked and reported over time.

Achievement of the target requires:

- Detailed actions that will drive and prioritise carbon emission abatement activities.
- A cost-benefit analysis model which identifies net benefits of potential carbon emission reduction projects.
- Ongoing commitment of annual funding (operating and capital), which will need to be augmented by grants and funding from other levels of government and other industries.
- Ongoing data collection, use of credible carbon measurement techniques, plus effective monitoring and reporting systems.
- Flexibility to adjust to the rapid pace of technological change and shifting cost efficiencies that may arise.
- An appropriate internal governance framework plus internal champions to drive the necessary changes.
- Participation by Council's employees to drive organisational behaviour change.
- An internal and external communications plan.

BACKGROUND

According to the Department of Environment and Science (2016), climate projections for Central Queensland will see a number of significant changes. This includes:

- Higher temperatures with maximum, minimum and average temperatures are projected to continue to rise. For the near future (2030), the annually averaged warming is projected to be between 0.4 and 1.5°C above the climate of 1986–2005. By 2070, the projected range of warming is 1.0 to 3.8°C, depending on future emissions. The region's current summer average temperature is 27°C. This could rise to over 28°C by 2030 and to over 30°C by 2070.
- There is likely to be a substantial increase in the temperature reached on the hottest days, and an increase in the frequency of hot days and the duration of warm spells.
- A substantial decrease in the frequency of frost risk days is projected by the end of the century.
- Fire weather is a measure of fuel dryness and hot, dry, windy conditions. Across the region, when and where fire does occur, there is high confidence that fire behaviour will be more extreme.
- High climate variability is likely to remain the major factor influencing rainfall changes in the next few decades. Rainfall projections for 2070 show little change or a decrease, particularly in winter and spring. However, rainfall is naturally highly variable and this will continue to be a major factor in the next decade. The intensity of heavy rainfall events is likely to increase.
- By late this century, under a high emissions scenario, it is likely that eastern parts of the region will experience more time in drought.
- Sea level is projected to rise by 0.8m above present day levels by 2100.
- Higher sea levels will increase the risks of coastal hazards such as storm tide inundation.
- Sea surface temperature has risen significantly across the globe over recent decades and warming is projected to continue. The ocean will become more acidic due to dissolved carbon dioxide, with acidification proportional to emissions growth.

The amalgamated Rockhampton Regional Council, including Livingstone Shire, participated in the International Council for Local Environmental Initiatives (ICLEI) Cities for Climate Protection (CCP) Program (2008-2013). Participation in the programme provided the opportunity to start assessing the emissions amounts and types and to start formulating mitigation options. Nevertheless minimal action resulted before Livingstone de-amalgamated from Rockhampton commencing 1 January 2014.

Following de-amalgamation, Council began to investigate opportunities for carbon reduction and renewable and energy efficiency options with the development of an internal discussion paper Renewable Energy Options for Livingstone Shire Council (October 2016). The paper provided a context for renewable energy, the various energy efficiency and renewable energy opportunities available to Council, and a basic carbon audit using available data was undertaken.

Ultimately the paper recommended that for Council to take advantage of the potential opportunities to improve its energy efficiency, uptake renewable energy initiatives and consequently reduce its carbon footprint and save on money, a carbon audit of its operations and an organisational carbon strategy would need to be undertaken. Consequently, a carbon audit of the organisation was commissioned.

CARBON AUDIT

As a first step in establishing the Strategy, Council engaged Pacific Environment to undertake an independent audit of Council's operations and services, to develop a greenhouse gas emissions inventory and to provide potential mitigation options to Council to reduce the emissions.

Greenhouse Gases are defined as gases that absorb long-wave radiation within the atmosphere trapping reflected heat. There are 6 main Greenhouse Gases in our atmosphere including:

1. Carbon Dioxide (CO2)
2. Nitrous Oxide (N2H)
3. Methane (CH4)
4. Hydrofluorocarbons (HFC's)
5. Perfluorocarbons (PFC's)
6. Sulfur Hexafluoride (SF6)

Greenhouse gases do not, in themselves, cause a direct local impact, but are important in the global context of climate change. The Australian Federal parliament passed the National Greenhouse and Energy Reporting Act 2007 (the 'NGER Act') in September 2007. The NGER Act establishes a mandatory corporate reporting system for greenhouse gas emissions, energy consumption and production. The National Greenhouse Accounts (NGA) Factors was prepared by the Department of the Environment and Energy and is designed for use by companies and individuals to estimate greenhouse gas emissions. Although the NGA Factors draws on methods listed in the NGER Measurement Determination, it is not published for the purposes of reporting under the NGER Act but is rather intended to apply to a broader range of greenhouse gas inventories. The methods described in the NGA Factors are consistent with international guidelines and are subject to international expert review each year.

The greenhouse gas emissions associated with Council's activities are methane (CH4), nitrous oxide (N2O) and carbon dioxide (CO2). The emissions of these greenhouse gases are all expressed as tonnes of carbon dioxide equivalents (t CO2-e). Council's carbon footprint includes Scope 1, Scope 2 and Scope 3 emissions. The definition of each scope, in accordance with the Greenhouse Gas Protocol (World Resources Institute, 2004), is as follows:

- *Scope 1* - Direct Greenhouse gas emissions occur from sources that are owned or controlled by the company, for example, emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.; emissions from chemical production in owned or controlled process equipment.

- *Scope 2* – Indirect Scope 2 accounts for Greenhouse gas emissions from the generation of purchased electricity consumed by the company. Purchased electricity is defined as electricity that is purchased or otherwise brought into the organisational boundary of the company. Scope 2 emissions physically occur at the facility where electricity is generated.

- *Scope 3* – Scope 3 is an optional reporting category that allows for the treatment of all other indirect emissions. Scope 3 emissions are a consequence of the activities of the company, but occur from sources not owned or controlled by the company. Some examples of scope 3 activities are extraction and production of purchased materials; transportation of purchased fuels; and use of sold products and services.

CARBON AUDIT (Cont.)

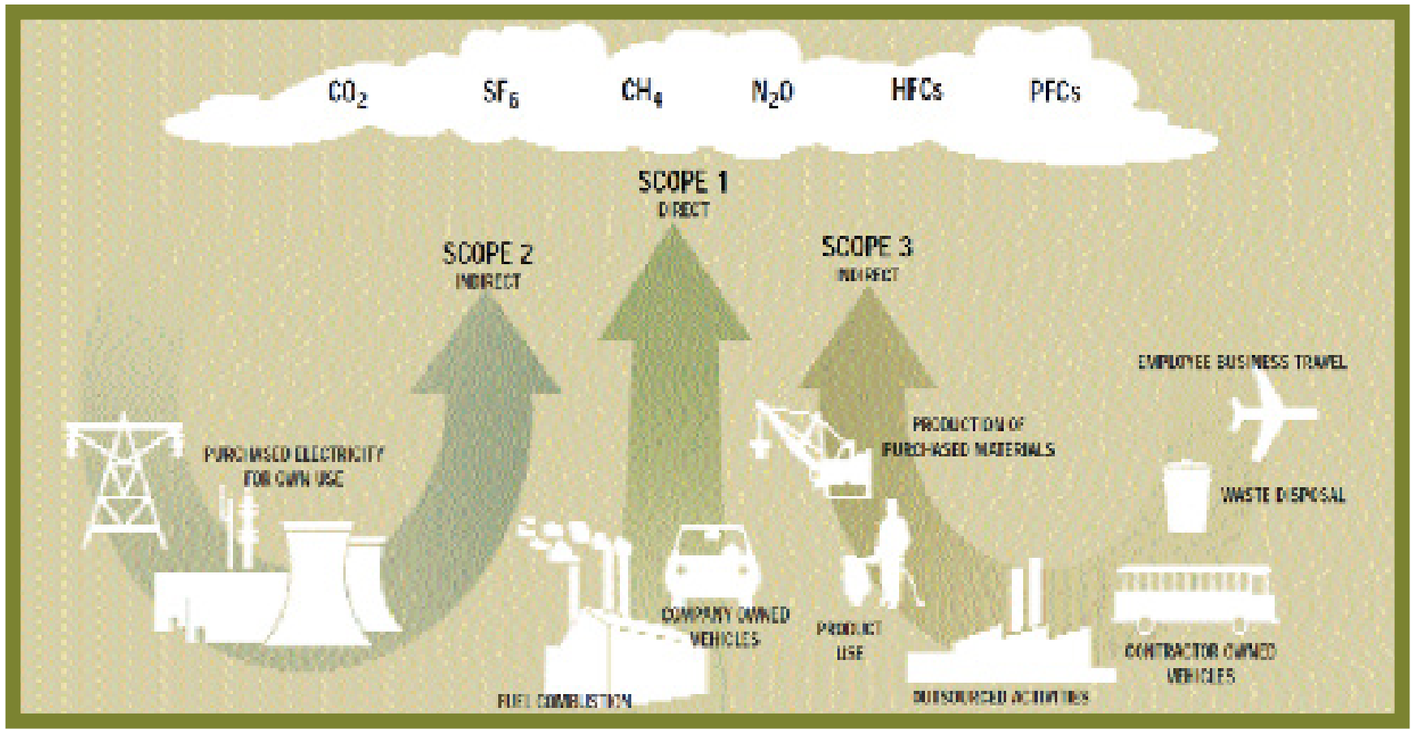


Figure 1 - Greenhouse gas emitting activities and their Scopes *(Hobsons Bay City Council 2013)*

The results of the assessment shows that total greenhouse gas emissions for Livingstone Shire Council is 27,346 tonnes CO2-e based on available data for 2014-15.

Table 1 shows that Scope 1 emissions are the dominant type of carbon emissions released (i.e. 77% of total Scope 1, 2 ¬and 3 emissions). Table 2 and Figure 2 present Council's emissions for each emission source.

Overall, the landfill (Scope 1 emissions) is the highest contributor to Council's carbon footprint (i.e. 84% of Council's Scope 1 emissions and 65% of total emissions associated with Council's activities), as depicted in Table 2 and Figure 2.

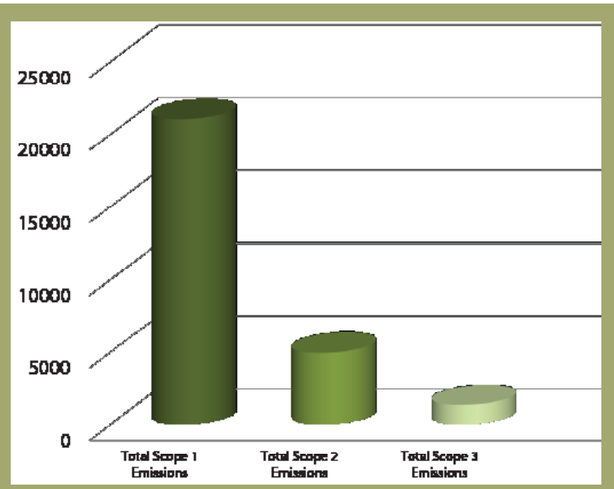
The second highest emission source corresponds to fuel consumption in vehicles and equipment, making up 7% of Council's total carbon footprint, as shown in Figure 2.

According to Table 1, the combined electricity consumption from the grid used to supply all Council's facilities and operations constitute 18% of Council's total carbon footprint, which is substantial.

The majority of the electricity consumption occurs at the Water Treatment Plants and Sewerage Treatment Plants (i.e. a total of 48% of Scope 2 emissions, as per Table 2). *(Pacific Environment 2018)*

Table 1- Breakdown of Scope Emissions *(Pacific Environment 2013)*

Description	Emissions (t CO2-e/year)	Contributions
Total Scope 1 Emissions	21,014	77%
Total Scope 2 Emissions	4,971	18%
Total Scope 3 Emissions	1,360	5%
Total Emissions	**27,346**	**100%**



CARBON AUDIT (Cont.)

Table 2 - Council's Estimated Annual Carbon Footprint - Detailed *(Pacific Environment 2018)*

Emission Category	Description	Emissions (t CO2-e/year)	Contribution
Scope 1	*Fuel combustion - transport and stationary*	*1,987*	*9.5%*
	Methane fugitive emissions - landfill	*17,695*	*84.2%*
	Methane fugitive emissions - STPs and WTPs	*1,332*	*6.3%*
	Total Scope 1 Emissions	**21,014**	**100%**
Scope 2	*Buildings/Facilities*	*598*	*12.0%*
	Water	*1,775*	*35.7%*
	Sewerage	*1,103*	*22.2%*
	Waste	*11*	*0.2%*
	Parks/Recreation	*291*	*5.9%*
	Street Lights (Council Maintained)	*152*	*3.1%*
	Street Lights (Ergon Maintained)	*1,041*	*20.9%*
	Total Scope 2 Emissions	**4,971**	**100%**
Scope 3	***Business Travel***	***27***	***2.0%***
	Air Travel	*27*	
	Rail	*Negligible Source*	
	Taxi	*0.52*	
	Car Hire	*Negligible Source*	
	Ferry	*Negligible Source*	
	Employee Commute	***195***	***14.3%***
	Car	*187*	
	Motorbike	*4*	
	Bus	*3*	

CARBON AUDIT (Cont.)

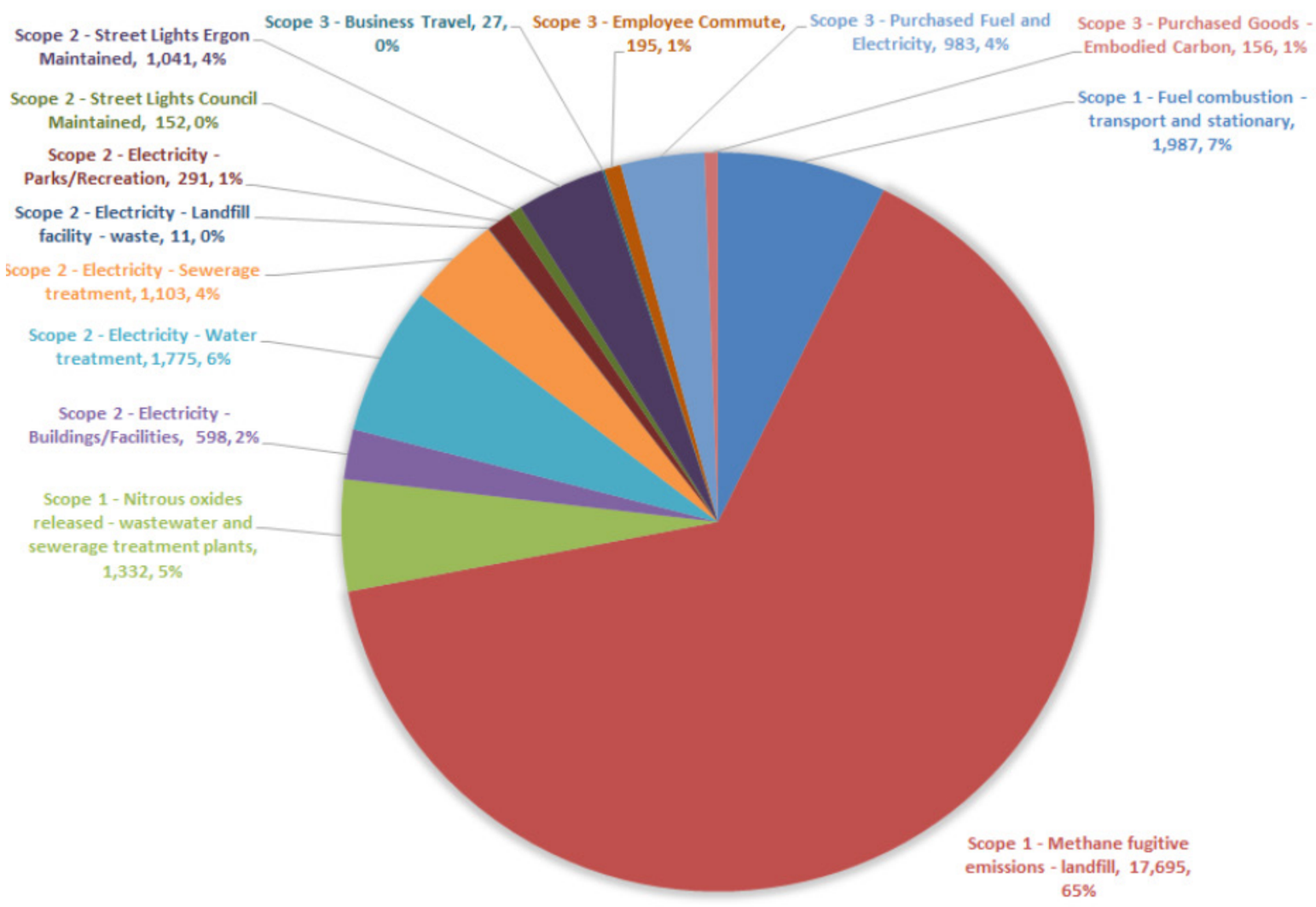


Figure 2 - Council's Carbon Footprint Contributors (Scope 1,2 and 3 Emissions in tonnes and %) *(Pacific Environment 2018)*

It is clear that activities with the most opportunity to reduce emissions come from:

1. Waste management services.
2. Electricity consumed at Council buildings & facilities (incl. Street Lights).
3. Fuel consumed by Council's Fleet and Plant

There is also a clear opportunity to support actions in these above areas through other complementary actions such as:

1. Data Management and Reporting
2. Governance
3. Education and Awareness Raising
4. Energy management
5. Building and Facility Management
6. Carbon Sinks
7. Setting a target for reducing carbon emissions

DECISION MAKING FRAMEWORK

In seeking to achieve best practice Council's approach to achieving lower net carbon emissions will be based on the following prioritised hierarchy for decision making:

1. AVOID
Avoid generating emissions through behaviour change initiatives such as: Switching off equipment (auto shut down computers at night), Using natural ventilation (buildings & vehicles), Resetting thermostats (use economy settings), Reducing car trips (use technology for meetings), and Rationalising equipment (reduce number of refrigeration units, printers, etc.).

2. REDUCE
Reduce energy use by energy efficiency measures such as: Replacing light fittings with LED or other low energy lamps, Installing motion sensors on lighting, Utilising alternative fuels, and Replacing fleet with best in class fuel efficient, hybrid or electric vehicles (fit for purpose).

3. CHANGE
Change to renewable energy sources such as: Installing solar photovoltaic panels on Council buildings or at Council facilities, Installing small or large scale generation schemes (e.g. at landfill sites), and Purchasing accredited GreenPower®.

4. OFFSET
Use offsets such as: Purchase of eligible carbon offset units (from Clean Energy Regulator) and Bio-sequestration (tree planting).

As shown in the hierarchy above, actions that avoid or reduce emissions should be prioritised ahead of any renewable energy generation. The purchase of carbon offsets would only be pursued after emissions have been reduced and energy sources switched to renewable resources to the fullest extent practical. This hierarchy is recognised as environmental best practice for energy and greenhouse gas emission management.

STRATEGY IMPLEMENTATION

This Strategy acts as a link between Council's Corporate Plan commitments and the implementation of environmental sustainability initiatives through Council's annual Operational Plan. Council acknowledges that actively pursuing a coordinated approach to environmental sustainability will better integrate economic, environmental, social and governance considerations across all decision-making processes. Adoption of this Strategy will also enable Council to build on its commitment to a sustainable future, embed environmental sustainability into the core business of Council and influence the continuing quality of life, prosperity and liveability of our Region.

This Strategy will be supported by:

- Continued development of our regional and community partnerships to ensure we make the best use of limited resources and avoid duplication of effort or missed opportunities.
- Strong environmental sustainability leadership, supported by a clear environmental sustainability governance framework and internal Council working groups.
- An annual action plan, which details the desired programs and resources required to implement the carbon strategy.
- Budget for implementing the annual action plan, subject to annual Council budget approvals and other sources such as government grants and incentive programs.
- An annual engagement and communications plan to ensure that Council employees, its partners and the community are engaged and informed during the life of the Strategy. This will be delivered through Council's programs, events, Council meetings, newsletters, notices, website and social media.
- Regular monitoring and evaluation, in conjunction with the quarterly review of the Operational Plan, to determine the extent to which actions within the Strategy are being successfully implemented, meeting their objectives and effectively engaging Council and the community to advance sustainability.
- An annual update on implementation of this Strategy at the end of each financial year as part of Council's annual reporting process to ensure accountability and transparency.

Funding and resources

Implementation of the Strategy will be progressed through the Action Plan and through Council's annual budget process via the allocation of operating and capital funds and the provision of adequate resources (people & systems) for specific projects. Opportunities for grants from other tiers of government and other sources will also be sought to assist in the delivery of the required actions. Partnership arrangements will also be considered, where appropriate.

Employee engagement

To deliver significant change it is vitally important that Council employees are involved in the process. Council's employees will need to integrate carbon emissions' implications into planning and decision-making for all activities, including their day-to-day use of facilities and equipment.

Effective employee engagement will be achieved by:

- The Executive Leadership Team being champions for the Strategy and Action Plan.
- An effective communication plan that will provide the activity with the necessary profile in Council and also inform the community on achievements and milestones.
- Identifying appropriate resources to co-ordinate the Strategy and Action Plan delivery.
- Establishing an internal Council Carbon Technical Working Group to act as ambassadors for lower carbon emissions, to assist in the implementation of the strategy, and to oversee monitoring, evaluation, reporting and review of the Strategy.
- Creating opportunities for all employees to provide input.
- Providing opportunities to celebrate successes and milestones.

External engagement

Council will lead by example. It will communicate its learnings and share its knowledge with the community. Council may provide advice to residents and community groups who are wishing to reduce their own emissions and will endeavour to work closely with community based organisations that are working with the community to achieve a lower emissions future.

MONITORING AND REVIEW

The Strategy and associated Action Plan will be reviewed to ensure they are on track to achieve Council's goals. Council will make amendments as required and ensure that progress reporting is being regularly undertaken. The following review process will be undertaken.

- Re-inventory of the organisation's emissions.
- Assessment of progress against targets.
- Analysis of the costs and benefits of actions compared with the cost and benefits of purchasing certified offsets.
- Measurement of the impact of implemented actions.
- Review of the Action Plan to ensure that it can still meet the Strategy objectives.
- Compilation of information for the annual reporting to include, where possible, the total cost per tonne of CO2e saved.
- Ensure the above approach remains appropriate in respect of legislative, political, economic, scientific, technological and social contexts.

GLOSSARY

Carbon Neutral
Means reducing carbon emissions where possible and using offsets to compensate for the remainder to achieve zero net emissions.

Carbon Offset
Is a credible method of reducing emissions of carbon dioxide or greenhouse gases made in order to compensate for an emission made elsewhere.

Climate Change
A change in the pattern of weather, and related changes in oceans, land surfaces and ice sheets, occurring over time scales of decades or longer that may be caused by natural or human induced activities.

C02-e
Is an abbreviation of 'carbon dioxide equivalent' and is the internationally recognised measure of greenhouse emissions. There are many types of greenhouse gases. Six such gases are controlled by the Kyoto protocol, which include: Carbon Dioxide (CO2), Nitrous Oxide (N20), Methane (CH4), Hydrofluorocarbons, Perfluorocarbons and Sulfur Hexafluoride (SF6).

Direct Emissions
Carbon emissions that are caused directly by actions taken by the owner or controlling entity.

Carbon Footprint
An inventory of all greenhouse gases produced to directly or indirectly support human activities within a defined boundary based on available data. Can also be referred to as a Carbon Footprint. The words greenhouse gas and carbon have become synonymous in everyday speech.

Greenhouse Effect
The trapping of the sun's warmth in a planet's lower atmosphere, due to the greater transparency of the atmosphere to visible radiation from the sun than to infrared radiation emitted from the planet's surface.

Greenhouse Gas
Any of the atmospheric gases that contribute to the greenhouse effect by absorbing infrared radiation produced by solar warming of the Earth's surface. They include carbon dioxide (CO2), methane (CH4), nitrous oxide (NO2), and water vapour.

Greenhouse (GHG) Protocol
Is an international accounting tool that sets the global standard for how to measure, manage, and report greenhouse emissions.

GreenPower®
The GreenPower® Program is a government managed scheme that enables Australian households and businesses to displace their electricity usage with certified renewable energy, which is added to the grid on their behalf to decrease greenhouse emissions due to electricity generation.

Indirect Emissions
Carbon emissions that occur outside of the organisation but are generated upstream or downstream as a consequence of the organisation's actions.

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Appendix One - Action Plan

Achieving a 30% reduction in corporate carbon emissions by 2030 is an ambitious goal and presents a great challenge for Livingstone Shire Council. However through collaborative effort, partnerships and commitment the goal is highly achievable. The Action Plan below outlines the key actions under each of the key topic areas, who in Council will take the lead responsibility, timeframes, cost and estimated savings.

CARBON EMISSIONS REDUCTION ACTION PLAN

Topic Area	Action	Theme (Behavioural Change, Energy Efficiency, Renewable Energy, Carbon Offsets)	Council Responsibility	Timeframe (< 1 year, 1-5 years, > 5 years)	Cost Estimate	Comments
Landfill	*Investigate capture and combustion of Landfill Gas to produce electricity for the Yeppoon Sewerage Treatment Plant and other buildings located on the Yeppoon landfill site.*	*Renewable Energy*	*Water and Waste Services*	*<1 year*	*$900,000 - $1,000,000*	*Estimated savings pf $117k per annum, 13,000 + CO2-e, based on estimate of landfill gas content.*
	Investigate Capture and Flaring of Landfill Gas to reduce carbon footprint of Yeppoon Landfill	*Renewable Energy*	*Water and Waste Services*	*<1 year*	*Nil*	
	Introduce incentive programs to reduce waste going to landfill	*Behavioural Change*	*Water and Waste Services*	*<1 year*	*$1200*	*Cloth nappy and sanitary products cashback scheme - cost for 2020-21*
	Implement Gas Resource Assessment and Pumping Trial	*Renewable Energy*	*Water and Waste Services*	*1-5 years*	*$140,000*	*Based on 6 test wells and temporary placement of collection system and flare for a test. Costs will also need to be considered for ongoing monitoring of lysimeter (5 years), ongoing weeding and maintenance of irrigation (12 months)*
Street Lights	*Develop a program with Ergon Energy regarding retrofitting street lights under their control.*	*Energy Efficiency/ Renewable Energy*	*Infrastructure Planning/ Engineering Services*	*1-5 years*	*Nil*	*Savings TBQ*
	Develop a programe with Ergon Energy regarding retrofitting gifted street lights	*Energy Efficiency/ Renewable Energy*	*Infrastructure Planning/ Engineering Services*	*>5 years*	*$60,000 per year (70 lights)*	*Savings TBQ*
	Implement a program to retrofit current street lights under Council control with LED and solar lights.	*Energy Efficiency/ Renewable Energy*	*Infrastructure Planning/ Engineering Services*	*1-5 years*	*$50,000 per year (30 lights)*	*Savings TBQ*
	Mandate use of LED and solar street lights in new road developments through policy and guidelines.	*Energy Efficiency/ Renewable Energy*	*Infrastructure Planning/ Engineering Services*	*1-5 years*	*Nil*	*N/A*
Fleet & Plant	*Audit Council's Fleet and Plant to ascertain numbers of type of use/need*	*Energy Efficiency*	*Fleet Services*	*<1 year*	*Nil*	*N/A*
	Implement a driver behaviour program including; driver responsibility at induction, efficient driving, EcoDriver training, utilising appropriate vehicle for use, car pooling	*Behavioural Change*	*Human Resources/Fleet Services*	*1-5 years*	*TBQ*	*N/A*
	Establish a Vehicle Pool at each office to allow Council staff to book Council vehicles for use (and where possible car pool).	*Behavioural Change*	*Customer Support*	*1-5 years*	*Nil*	*N/A*
	Investigations into use of Biofuels, E10 in Council vehicles and fleet	*Energy Efficiency*	*Fleet Services*	*1-5 years*	*Nil*	*N/A*
	Investigations into electric vehicles and charging station networks	*Renewable Energy*	*Fleet Services*	*<1 year*	*Nil*	*N/A*
	Adopt Green Vehicles Guide and purchase 'fit for purpose' vehicles and plant	*Behavioural Change*	*Fleet Services*	*<1 year*	*TBQ*	*Savings*
	Encourage staff to use digital functions rather than travel to meetings in Council vehicles	*Behavioural Change*	*Sustainability/Communi-cations and Marketing*	*< 1 year*	*Nil*	*N/A*

Topic Area	Action	Theme (Behavioural Change, Energy Efficiency, Renewable Energy, Carbon Offsets)	Council Responsibility	Timeframe (< 1 year, 1-5 years, > 5 years)	Cost Estimate	Comments
Data Management & Reporting	*Ensure that all relevant data is collected to enable the understanding of emissions profiles and the identification of savings and the tracking of efficiency of actions.*	*All*	*Sustainability*	*< 1 year*	*Nil*	*N/A*
	Investigate opportunities for data management systems (eg. C3) for carbon inventories and monitoring and reporting estimated emissions savings.	*All*	*Information Systems*	*< 1 year*	*TBQ*	*N/A*
	Conduct annual or biannual carbon audit of all Council operations	*All*	*Sustainability*	*<1 year*	*Nil*	*TBD*
	Report annually on implementing actions from the Strategy/Action Plan	*All*	*Sustainability*	*<1 year*	*Nil*	*N/A*
Governance	*Establish a Carbon Technical Working Group to develop and implement an organisational Carbon Strategy*	*All*	*Sustainability*	*<1 year*	*Nil*	*N/A*
	Develop an Energy Efficiency Policy to ensure that all new Council projects incorporate energy efficiency.	*Energy Efficiency*	*Sustainability/Governance*	*1-5 years*	*Nil*	*N/A*
	Identify training and information needs for staff involved in carbon management.	*Behavioural Change*	*Human Resources*	*<1 year*	*Nil*	*N/A*
	Investigate environmentally and financially sustainable investment opportunities as well as the potential for divestment opportunities away from non-environmental/ ethical activities.	*Behavioural Change*	*Finance*	*1 - 5 years*	*Nil*	*N/A*
	Establish an organisational position on climate change.	*Behavioural Change*	*Sustainability*	*<1 year*	*Nil*	*Environmental Sustainability Policy*
	Investigate opportunities to utilise the Environmental Levy for community energy efficiency and renewable energy projects and initiatives	*All*	*Sustainability*	*<1 year*	*Nil*	*TBQ*
Education & Awareness Raising	*Promotion including fact sheets, internal newsletters and e-media on energy efficiency and carbon footprint reduction, including turning off lighting, computers, and other electrical equipment, expansion of online/digital use instead of paperwork, think before you print, Reduce/Reuse/Recycle.*	*Behavioural Change*	*Sustainability/Communications and Marketing*	*<1 year*	*$10k per annum*	*Sustainable Livingstone programme*
	Establishment of a Green Team to drive behavioural change and deliver smaller energy efficiency programs and projects.	*Behavioural Change*	*Sustainability*	*<1 year*	*$5k per annum*	*TBQ*
	Toolbox talks/Staff roadshows/forum on climate change/energy efficiency/carbon reduction.	*Behavioural Change*	*Sustainability*	*1 - 5 years*	*Nil*	*Sustainable Livingstone programme*
	Conduct a campaign to encourage staff to walk, ride or use public transport to get to and from work. (eg. Ride to Work Day event)	*Behavioural Change*	*Sustainability/ Communications and Marketing*	*< 1 year*	*Nil*	*Sustainable Livingstone programme*

Topic Area	Action	Theme (Behavioural Change, Energy Efficiency, Renewable Energy, Carbon Offsets)	Council Responsibility	Timeframe (< 1 year, 1-5 years, > 5 years)	Cost Estimate	Comments
Energy Management	*Ensuring Council buildings/facilities are on the most appropriate power tariff*	*Energy Efficiency*	*Facilities Management*	*<1 year*	*TBQ*	*Savings TBQ*
	Investigate the opportunity for the purchase of 'Green Power'	*Energy Efficiency*	*Procurement*	*< 1 year*	*Nil*	*N/A*
	Incorporate 'green' procurement practices into both the Procurement Policy and Directive	*Behavioural Change*	*Procurement*	*< 1 year*	*Nil*	*N/A*
	Trial of power optimisers/microinverters and 'smart meters' in Council buildings	*Energy Efficiency*	*Facilities Management*	*1-5 years*	*$10k*	*Savings TBQ*
Buildings & Facility Management	*Develop a program to gradually retrofit existing lights in Council buildings and facilities to LED or Solar lights.*	*Energy Efficiency/ Renewable Energy*	*Facilities Management*	*5 years*	*TBQ*	*Savings TBQ*
	Investigate opportunities to retrofit solar panel and battery suites in existing suitable buildings/facilities.	*Renewable Energy*	*Facilities Management*	*1-5 years*	*Nil*	*eg. 'The Hub' potential capital outlay circa $100,000*
	Establish centralised waste stations in buildings and facilities for disposal of general waste and recyclables (rather than individual bins).	*Behavioural Change*	*Water and Waste Services*	*< 1 year*	*TBQ*	*N/A*
	Investigate composting of food waste at Council sites.	*Behavioural Change*	*Water and Waste Services*	*< 1 year*	*TBQ*	*N/A*
	Investigate opportunities to improve energy efficiency at high carbon emitting sites eg. STP's and WTP's.	*Energy Efficiency*	*Water and Waste Services/ Facilities Management*	*1-5 years*	*Nil*	*N/A*
	Update the data centre to run on fewer physical servers so less power is used.	*Energy Efficiency*	*Information Services*	*1-5 years*	*TBQ*	*N/A*
	Investigate opportunities to roll out another 'Sustainable House' project	*All*	*Facilities Management*	*1-5 years*	*TBQ*	*N/A*
	Investigate opportunity for community floating solar farm at Cooberrie off-stream storage to power water supply.	*Renewable Energy*	*Water and Waste Services*	*>5 years*	*TBQ*	*N/A*
	Construction of solar array adjacent to Yeppoon Sewerage Treatment Plant as a renewable energy source for the facility.	*Renewable Energy*	*Major Projects*	*1-5 years*	*$3 million*	*Savings TBQ*
Carbon Sinks	*Conduct an audit of Council managed properties to ascertain carbon sink potential*	*Carbon Offsets*	*Sustainability/Natural Resource Management*	*< 1 year*	*Nil*	*Savings TBQ*
	Roll-out a 'Greening Livingstone' program on Council managed land through utilising endemic, hazard resilient and high carbon producing species and ultimately creating new carbon sinks.	*Carbon Offsets*	*Natural Resource Management/Open Spaces*	*1-5 years*	*TBQ*	*Savings TBQ*
	Develop carbon farming projects with relevant stakeholders which enhance biodiversity and increase carbon production.	*Carbon Offsets*	*Sustainability / Natural Resource Management*	*1- 5 years*	*TBQ*	*External funding to be sought*

Livingstone
SHIRE COUNCIL

Low Carbon Livingstone 2030

A Strategy to Reduce Livingstone Shire Council's Carbon Footprint

October 2020