2018-2019 Annual Inventory of Council's emissions profile and progress update

Purpose:
To provide a detailed annual inventory of Council's emissions profile and a progress update on meeting the Net Zero Emissions Target by 2025.

Key findings are:

1. Council is on track for meeting target
2. Electricity contract 100% carbon offset
3. 1.5% reduction in electricity sector actual emissions
4. 3% increase in fuel usage has created a 21% increase in the fuel sector cost

Summary
Byron Shire Council has experienced a 19.7% reduction in organisational carbon emissions compared to the previous year. This was predominantly due to the new electricity contract with Powershop that fully offset electricity use from January to June 2019 and the natural decline of landfill gas fugitive emissions. This reduction brings Council on track to meeting the target of net zero emissions so long as this level of electricity offset is maintained in perpetuity.

Figure 1 and Table 1 below show how Council is tracking towards the Net Zero Target.

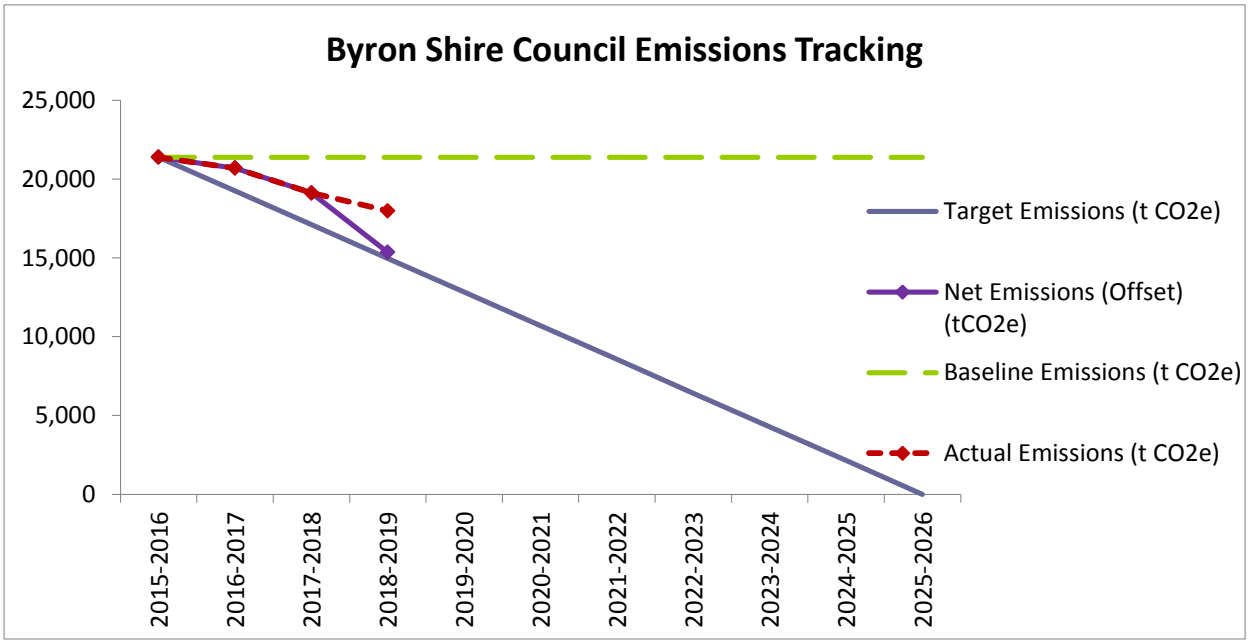

Figure 1 – 2018-19 Emissions tracking towards 2025 target

Table 1 – 2018-19 Actual and net emissions over time

Financial Year	Actual Emissions (tCO^2e)	Net Emissions (Offset) (tCO^2e)	Target (tCO^2e)
2016	21,389	21,389	21,389
2017	20,701	20,701	19,250
2018	19,122	19,122	17,111
2019	17,984	15,358	14,972

Information/Background:

Scopes
Byron Shire Council uses the National Greenhouse Gas and Energy Reporting (NGER) methodology for its monitoring and reporting of carbon emissions. Historically Council has reported its annual emissions inventory across scopes 1 and 2.

This year, Council has introduced a selection of scope 3 emissions. As presented in the Net Zero Emissions Strategy, Council will add more scope 3 emissions to the inventory as technology and processes for monitoring are developed and data becomes available.

The NGER framework defines scopes 1, 2 and 3 as:

- **Scope 1** greenhouse gas emissions are the emissions released to the atmosphere as a direct result of an activity, or series of activities at a facility level. (eg burning of fuel)
- **Scope 2** greenhouse gas emissions are the emissions released to the atmosphere from the indirect consumption of electricity. (eg all electricity used in buildings, pumps ect)
- **Scope 3** emissions are indirect greenhouse gas emissions (other than scope 2 emissions) that are generated in the wider economy. They occur as a consequence of the activities of a facility, but from sources not owned or controlled by that facility's business (eg embodied emissions in the manufacture of paper used at Council).

Organisational Emissions Sectors
Byron Shire Council's emissions inventory is divided into six organisational sectors as outlined in Table 2 below.

Table 2 shows the changes in each sector compared to the previous year as either an increase or decrease (+/-). It also shows the changes in real terms (Without Offset) compared to the reduction due to the offsets (With Offset). The changes in each sector are elaborated in detail in the following sections.

Table 2 – Changes in emissions by sector

Sector	**Without Offset (tCO^2e)**	**With Offset (tCO^2e)**
Electricity	-126	-2,432
Streetlight	1	-319
Fleet *	36	36
Bottled Gas *	1	1
Waste *	-982	-982
Waste Water *	-68	-68
Total	**-1,138**	**-3,763**

***NB – No offsets purchased for these sectors.*

General Electricity

The general electricity sector consists of Council's buildings, facilities, pumping infrastructure and sports/public lighting. Data is captured and analysed through a third party subscription with Azility (previously Planet Footprint). This year Council delivered a 1.5% reduction in electricity use compared to the previous year.

In January 2019 Council switched electricity retailers to Powershop which supplies 100% carbon offset energy. Figure 2 shows both the actual emissions generated from Council's energy use (dotted red line) and the net result having offset half the year's electricity (solid purple line).

Table 3 – General Electricity Emissions

Financial Year	Emissions (tCO^2e)	Net Emissions (offset) (tCO^2e)	Electricity (MWh)	Cost ($)
2016	4,750	4,750	5,654	$ 1,155,601
2017	4,865	4,865	5,792	$ 1,205,135
2018	4,678	4,678	5,705	$ 1,261,592
2019	4,553	2,247	5,621	$ 1,290,919 *

**Costs have increased despite the consumption decreasing due to the higher cost per kWh.*

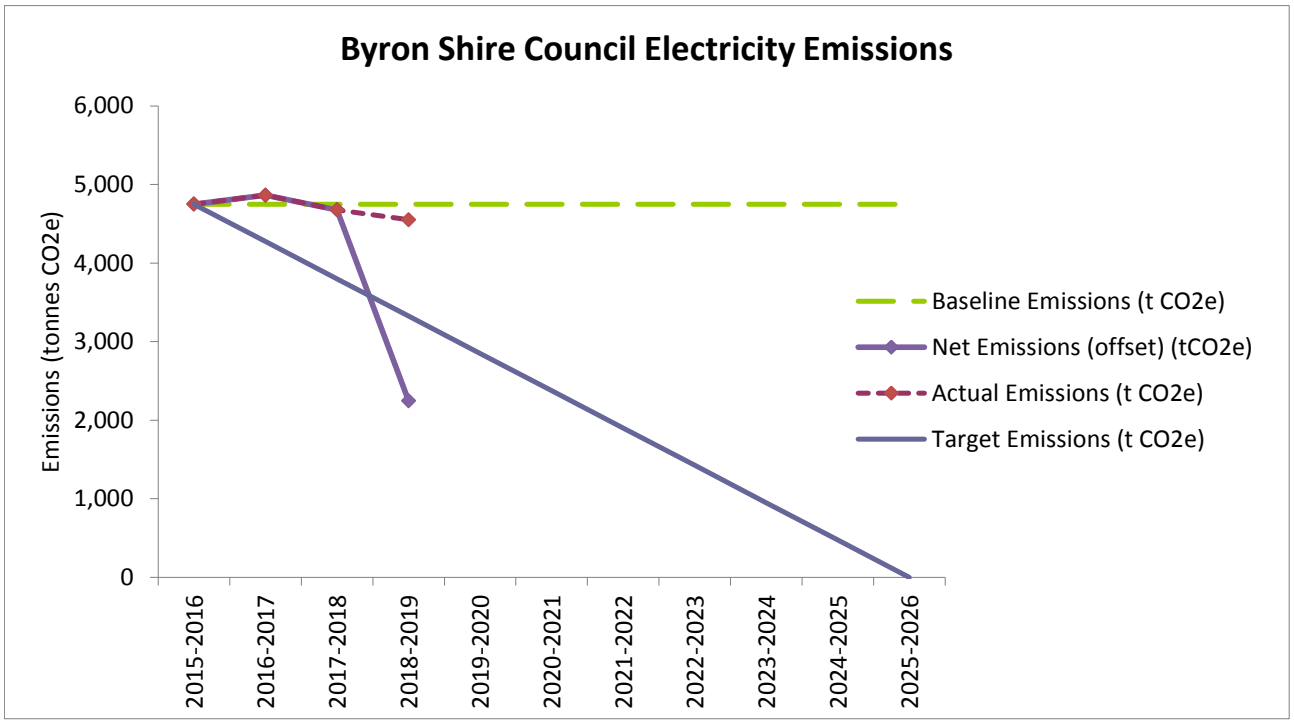

Figure 2 – General Electricity Emissions (Offset and Actual)

Streetlights

Streetlight energy use has remained constant due to delays in the bulk LED upgrade in the Byron Shire. A trial of 260 LED streetlights is due to be installed in Ocean Shores by December 2019. This will have a minor effect on the total energy use and will not be visible in the inventory until the 2019-2020 reporting period. Council will be pursuing a cost benefit analysis of the bulk roll out LED street lighting as a matter of priority with Essential Energy.

Emissions have reduced by 50% compared to the previous year due to the offset of half the year's electricity emissions from the new Powershop contract. This is shown by the purple line in Figure 3.

Table 4 – Streetlight Emissions

Financial Year	Emissions (tCO^2e)	Net Emissions (Offset) (tCO^2e)	Electricity (MWh)	Cost ($)	Number of Streetlights
2016	636	636	757	$ 314,425	1890
2017	635	635	765	$ 336,809	1897
2018	633	633	772	$ 315,504	1922
2019	633	314	782	$ 355,420	1941

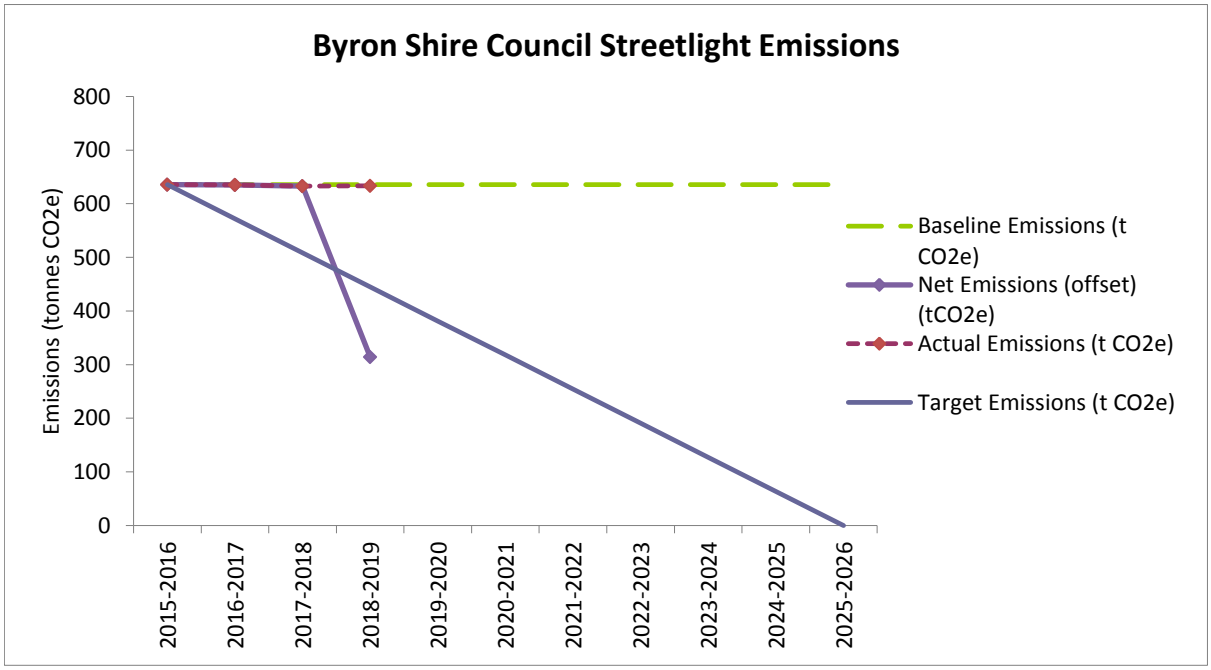

Figure 3 – Streetlight Emissions (Offset and Actual)

Fleet

This year Council has experienced a 3% increase in fuel usage which has created a 21% increase in cost compared to the previous year. Emissions relating to the fleet sector include all fuel used in the light passenger vehicles, heavy plant and equipment as well as petrol operated tools (whipper snippers and generators etc). Data is sourced from the Caltex Star card system for passenger vehicles (51% of total fuel use) and from purchases of bulk fuel delivered to the depot, quarry and landfill (49% of total fuel use).

Council's fleet sector will need to investigate and implement significant changes if progress is to be made towards meeting the net zero emissions target by 2025. The Fleet Team Leader is currently looking at Council's complete fuel infrastructure, including the software used for data capture and reporting. The current infrastructure has passed its recommended life span and the fuel management processes currently used are inefficient. The new system will include a fuel card system for all plant and equipment to allow relevant and accurate data capture. This will enable Council to provide meaningful and accurate reports on fuel usage and emissions. A detailed report outlining costs and options, with a recommendation will be tabled at an ET meeting by the end of 2019

Table 5 – Fleet Emissions

Financial Year	Emissions (tCO^2e)	Fuel (kL)	Cost ($)
2016	1,279	482	$ 482,922
2017	1,128	427	$ 438,480
2018	1,134	435	$ 523,606
2019	1,171	452	$ 633,308

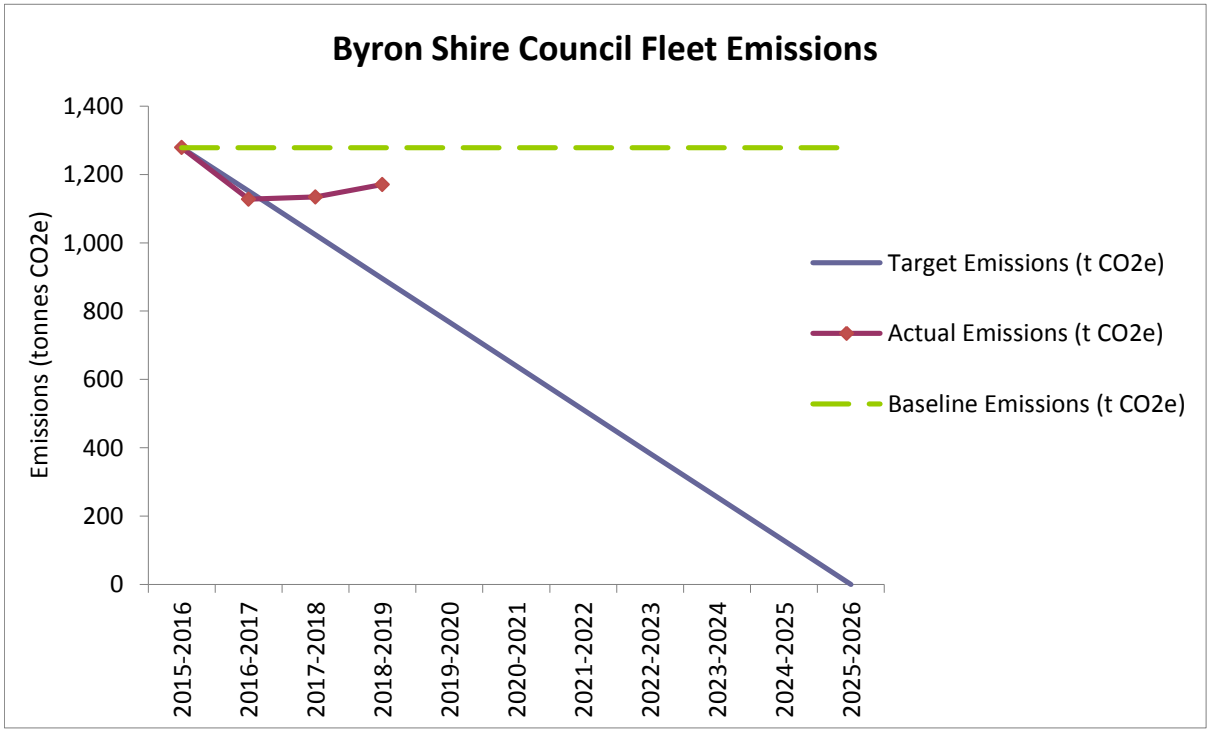

Figure 4 – Fleet Sector Emissions

Bottled Gas

Bottled gas is used at Council's holiday parks and child care centres for cooking and hot water heating. The hot water heating is a boost system to solar at First Sun Holiday Park and was installed as an efficiency measure taken in 2016. The minimal nature of emissions from bottled gas compared to other sectors does not warrant further action at this stage. It is recommended as assets come to their natural end of life either the most efficient appliance is chosen or transition to induction (electric) cooking is made.

Table 6 – Bottled Gas Emissions

Financial Year	Emissions (tCO^2e)	LPG (kL)	Cost ($)
2016	41	27	$ 17,913
2017	39	25	$ 14,931
2018	36	23	$ 12,342
2019	37	24	$ 14,972

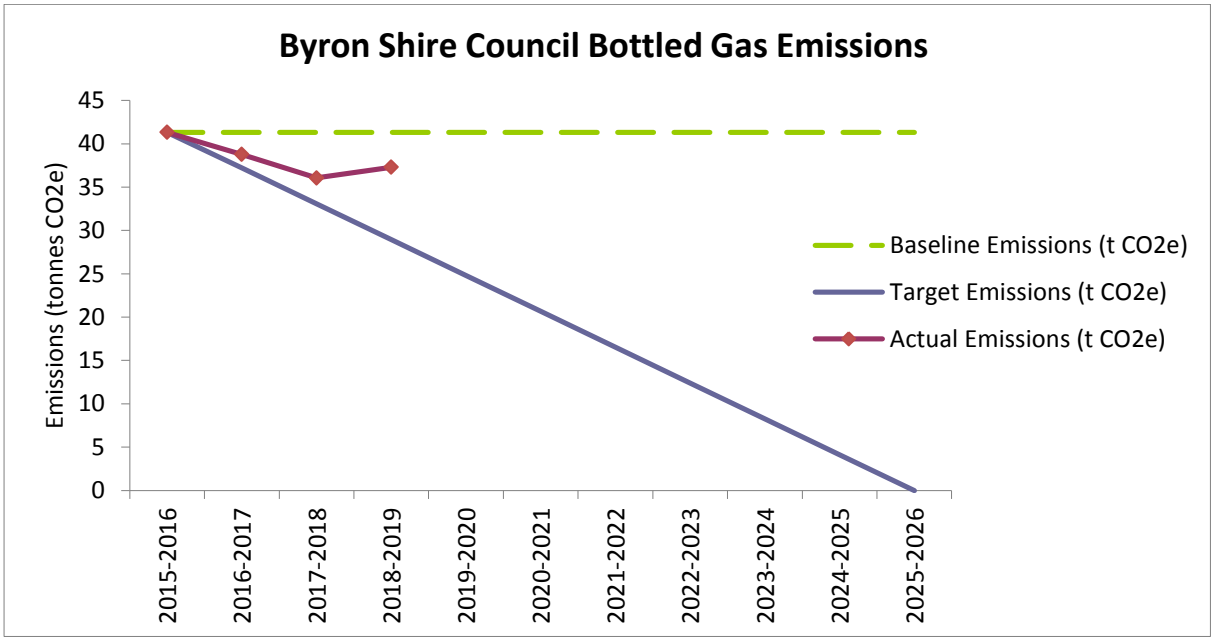

Figure 5 - Bottled Gas Emissions

Waste Fugitive Emissions

Byron Shire Council's closed landfill emits fugitive emissions from the legacy waste buried within. The methane gas flare captures a portion of gas rising up and converts the methane to carbon dioxide thus reducing the global warming potential of the gas. The fugitive emissions will decline as the waste inside the landfill naturally decomposes. The methane gas flare has been certified to create Australian Carbon Credit Units (ACCU's) which are currently sold. This means that Council cannot count all of the reduction associated with the methane gas flare for its own reduction efforts.

Council sold the rights to count a reduction of 1,697tonnes of CO^2e from its emissions footprint. In light of the net zero target Council may decide to not create and sell the associated ACCU's to enable the reduction to be associated with Council's own carbon footprint. Staff will review the need to sell of ACCU's at the end of the next agreement period in light of the net zero emissions target.

Additionally, Council commenced composting at the Myocum Resource Recovery Centre in 2019. The composting operations have added an extra 166 tonnes of carbon emissions to the waste sector due to small pockets of anaerobic decomposition in the compost pile. The addition of composting emissions is shown as a slight plateauing in the downward trend in Figure 6. Both the composting and fugitive emissions of the Myocum landfill are considered scope 1 emissions.

Table 7 – Waste Sector Scope 1 Emissions

Financial Year	Total Emissions (tCO^2e)	Total Flare (tCO^2e)	ACCU's Sold (tCO^2e)	Composting (tCO2e)	Net Emissions (tCO2e) *
2016	15,931	5240.7	2729	0	13,420
2017	14,283	3538.8	1903	0	12,648
2018	12,852	3096.9	1723	0	11,478
2019	11,607	2372.4	1095	166.0	10,496

** Net Emissions = Total Emissions – Total Flare + ACCU's Sold + Composting*

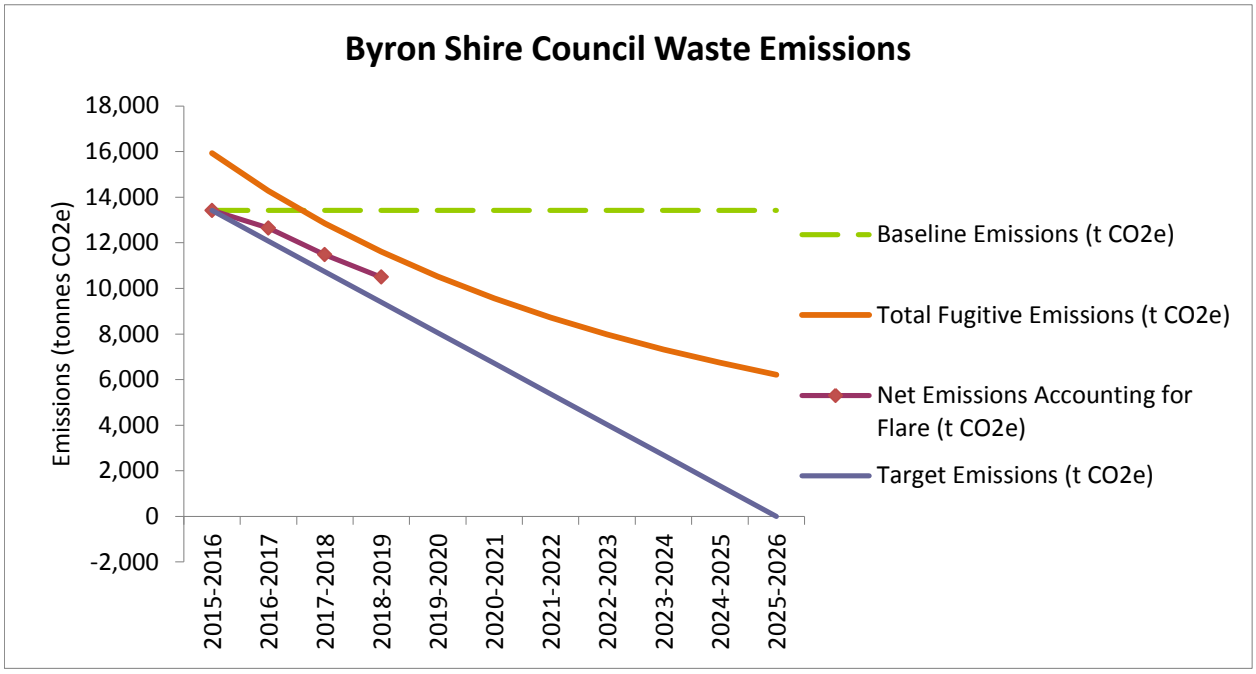

Figure 6 – Waste Sector Scope 1 Emissions

Waste Water Fugitive Emissions

The fugitive waste water emissions declined this year by 68 tonnes compared to the previous year. Fugitive waste water emissions are created during the processing of waste water at Council's sewage treatment plants (STPs) and are greatly affected by rain events due to the potential for inflow and infiltration to the sewer system. The drier than normal year has created a reduction in emissions as there was a decrease in overall flows into the STPs and the facilities can operate at a higher treatment efficiency without storm flows.

Whilst solar and energy efficiency projects at the sewage treatment plant continue to drive down operational emissions these projects have no effect on the scope 1 fugitive emissions. The major influence to keep these emissions low are water efficiency measures to reduce waste water generation, minimising inflow and infiltration, and treatment operations effectiveness and efficiencies.

Table 8 - Waste Water Fugitive Emissions

Financial Year	Emissions (tCO^2e)	Flow (ML)
2016	1,264	3,255
2017	1,387	3,542
2018	1,162	3,349
2019	1,094	3,327

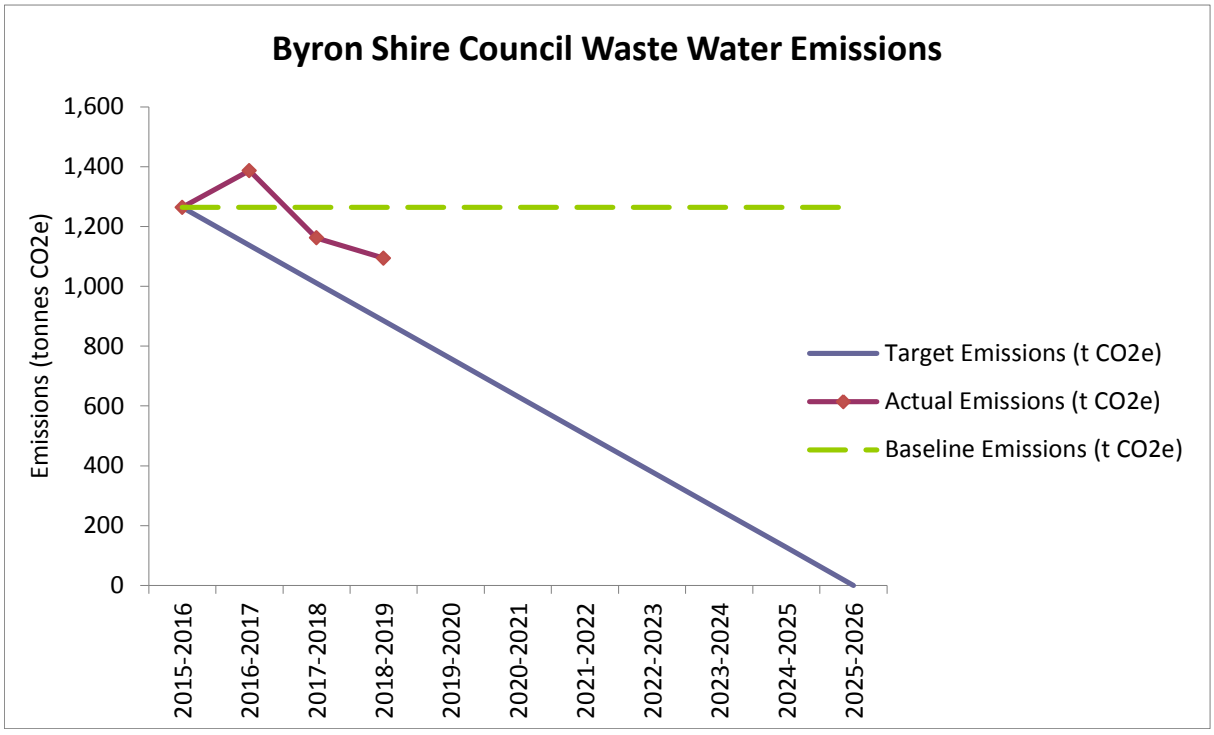

Figure 7 - Waste Water Fugitive Emissions

Scope 3 Emissions

Scope 3 emissions are emissions associated with the operation of organisations outside of Council's control such as contractors and suppliers. This year Byron Shire Council has endeavoured to capture a selection of scope 3 emissions. The process has highlighted some simple and minor changes that can be made to reduce the emissions impact of Council's business dealings.

1. Corporate Paper Use

All of Council's printing paper is certified carbon neutral under National Carbon Offset Standard by the manufacturer, Australian Paper. Council's current supplier of envelopes (Quality Plus Printers) uses 100% recycled paper, however the envelopes are not carbon neutral and it was not possible to find out the embodied emissions for this product. Council is in the process of requesting Quality Plus Printers to source envelopes that are both recycled and carbon neutral or investigate other suppliers.

Table 9 – 2018-19 Paper Use

Type	Amount	Emissions
A4	90,000 sheets	0
A3	13,000 sheets	0
Letter Head	35,000 sheets	0
Envelopes	120,000 recycled envelopes	Unknown

2. Corporate Air Travel

Corporate air travel has the potential to be a major contributor to Council's emissions. However, it has not been possible to capture the total number of flights as there isn't a central purchasing system for flights. Currently, flights can be booked through a number of different avenues within Council depending on the purpose of travel. Council is in the process of implementing a compulsory business rule the carbon neutral option at the point of purchase with the airline provider for all corporate air travel. Most major airlines including Virgin and Qantas (including Jetstar) offer this option for a small additional fee.

3. Pop Car

The "Pop Car" car share service began being trialled by Council in September 2019. Council's subscription currently includes carbon offsetting at a small additional fee and all usage can be monitored via Council's Pop Car membership platform. Staff travel from Pop Car will be monitored and reported in future years.

4. Waste Collection Service

Byron Shire Council contracts its waste collection service to Solo Resource Recovery. As part of this contract Solo monitors the fuel use for the collection and transfer of Byron Shire waste and then offsets the associated emissions with international carbon credits (VCU's – Verified Carbon Units). For the 2018-19 financial year 595 tonnes of VCU's were purchased for Byron Shire Council.

5. Water Supplied to Council Assets

Byron Shire Council purchases water from Rous Country Council and supplies its own water from the Laverty Gap Weir. All associated emissions from the water supplied from the Laverty Gap Weir are accounted for in previous scope 1 and 2 emissions outlined earlier in this report. The water supplied by Rous County Council has emissions related to its collection, transfer and treatment.

For the 2018-19 financial year 110 tonnes of emissions were created to supply Council assets with 57.9 ML of water. Table 10 outlines the emissions for water use on Council assets in each suburb.

Table 10 – 2018-19 Water Supplied to Council Assets

2018-19 Water Use	ML	Emissions (tCO^2e)
BANGALOW	3.2	6.1
BILLINUDGEL	0.0	0.1
BRUNSWICK HEADS	1.6	3.1
BYRON BAY	34.3	65.2
NEW BRIGHTON	0.6	1.1
OCEAN SHORES	8.9	17.0
SOUTH GOLDEN BEACH	0.0	0.0
SUFFOLK PARK	9.2	17.5
Grand Total	**57.9**	**110.0**